

DETAILED SOLUTIONS

CHAPTER 1 : LARGE NUMBERS

Let's Recall

- Distance between the earth and the moon
= 384400 km.
Number name: Three lakh eighty-four thousand four hundred.
- Largest 6-digit number = 999999.
Smallest 6-digit number = 100000.
- (a) 754894 = Seven lakh fifty-four thousand eight hundred ninety-four.
(b) 500489 = Five lakh four hundred eighty-nine.
- (a) Eight lakh forty-seven thousand one = 8,47,001.
(b) Nine lakh ninety-nine thousand nine hundred ninety-nine = 9,99,999.
- (a) Given number = 424781.
Face value = 2, Place value = 20000.
(b) Given number = 875014.
Face value = 0, Place value = 0
- 540789 > 507489
540789 is greater.

Practice Time 1A

- We arrange the given numbers in the value chart in the following way.

C	Lakhs		Thousand		Ones		
	T	L	T	Th	H	T	O
(a)	4	6	3	4	5	6	1
(b)	4	0	5	6	2	4	9
(c)	7	7	3	2	6	4	3
(d)	8	7	9	2	8	0	4
(e)	7	3	0	3	8	9	6
(f)			5	4	5	8	6

Number name

- Forty-six lakh thirty-four thousand five hundred sixty-one.
- Forty lakh fifty-six thousand two hundred forty-nine.
- Seven crore seventy-three lakh twenty-six thousand four hundred thirty-four.

(d) Eight crore seventy-nine lakh twenty-eight thousand forty-three.

(e) Seven crore thirty lakh thirty-eight thousand nine hundred sixty-three.

(f) Five lakh forty-five thousand eight hundred sixty-four.

2. (a) Five lakh thirty-four thousand nine hundred forty-eight = 5,34,948.

(b) Fifty lakh seventy thousand six hundred ninety-four = 50,70,694.

(c) Six crore sixty-six lakh twenty-four thousand four hundred twelve = 6,66,24,412.

(d) Seven crore seventy-three thousand sixteen = 7,00,73,016.

3. (a) 78,54,475 = Seventy-eight lakh fifty-four thousand four hundred seventy-five.

(b) 7,98,76,560 = Seven crore ninety-eight lakh seventy-six thousand five hundred sixty.

(c) 8,00,78,004 = Eight crore seventy-eight thousand four.

(d) 5,76,54,323 = Five crore seventy-six lakh fifty-four thousand three hundred twenty-three.

(e) 6,00,52,902 = Six crore fifty-two thousand nine hundred two.

(f) 5,99,34,230 = Five crore ninety-nine lakh thirty-four thousand two hundred thirty.

4. Ones = 1, tens = 40, hundreds = 900, thousands = 7000, ten thousands = 80000, lakhs = 700000, ten lakhs = 6000000, crores = 10000000.

Think and Answers (Page 11)

Given number is 6708813. The smallest digit having the same place value and face value is 0.

Practice Time 1B

L	TTh	Th	H	T	O
5	2	4	5	7	4

Place value
7 × 10 = 70

TL	L	TTh	Th	H	T	O
2	9	6	6	4	1	3

Place value
6 × 1000 = 6000

(c)

TL	L	TTh	Th	H	T	O
6	4	9	6	4	0	1

Place value
 \downarrow
 $\blacktriangleright 4 \times 100000 = 400000$

(d)

C	TL	L	TTh	Th	H	T	O
2	0	0	4	2	0	0	2

Place value
 \downarrow
 $\blacktriangleright 0 \times 100000 = 0$

(e)

C	TL	L	TTh	Th	H	T	O
7	8	8	7	7	7	2	3

Place value
 \downarrow
 $\blacktriangleright 7 \times 10000000 = 70000000$

(f)

C	TL	L	TTh	Th	H	T	O
4	3	8	4	8	9	6	0

Place value
 \downarrow
 $\blacktriangleright 8 \times 100000 = 800000$

(g)

L	TTh	Th	H	T	O
1	3	4	0	5	3

Place value
 \downarrow
 $\blacktriangleright 0 \times 100 = 0$

(h)

TL	L	TTh	Th	H	T	O
5	4	3	9	8	1	4

Place value
 \downarrow
 $\blacktriangleright 5 \times 1000000 = 5000000$

(i)

TL	L	TTh	Th	H	T	O
8	4	7	0	3	2	9

Place value
 \downarrow
 $\blacktriangleright 7 \times 10000 = 70000$

2. Given numbers = 8642819.

Place value of digit 8 = 8000000.

Place value of digit 8 = 800.

Difference = $8000000 - 800 = 7999200$.

3. Place value of 6 in 76458 = $6 \times 1000 = 6000$.

Place value of 6 in 611389 = $6 \times 100000 = 600000$.

Sum of the place values = $6000 + 600000 = 606000$.

4. (a) Given number = 2684503.

Predecessor = $2684203 - 1 = 2684502$.

Successor = $2684503 + 1 = 2684504$.

(b) Given number = 7095205.

Predecessor = $7095205 - 1 = 7095204$.

Successor = $7095205 + 1 = 7095206$.

(c) Given number = 5598005.

Predecessor = $5598005 - 1 = 5598004$.

Successor = $5598005 + 1 = 5598006$.

(d) Given number = 4030200.

Predecessor = $4030200 - 1 = 4030199$.

Successor = $4030200 + 1 = 4030201$.

(e) Given number = 67600542.

Predecessor = $67600542 - 1 = 67600541$.

Successor = $67600542 + 1 = 67600543$.

(f) Given number = 90908032.

Predecessor = $90908032 - 1 = 90908031$.

Successor = $90908032 + 1 = 90908033$.

(g) Given number = 30540320.

Predecessor = $30540320 - 1 = 30540319$.

Successor = $30540320 + 1 = 30540321$.

(h) Given number = 88732101.

Predecessor = $88732101 - 1 = 88732100$.

Successor = $88732101 + 1 = 88732102$.

5. (a) Given number = 77856432.

C	TL	L	TTh	Th	H	T	O
7	7	8	5	6	4	3	2

Place value
 \downarrow
 $\blacktriangleright 2 \times 1 = 2$
 \downarrow
 $\blacktriangleright 3 \times 10 = 30$
 \downarrow
 $\blacktriangleright 4 \times 100 = 400$
 \downarrow
 $\blacktriangleright 6 \times 1000 = 6000$
 \downarrow
 $\blacktriangleright 5 \times 10000 = 50000$
 \downarrow
 $\blacktriangleright 8 \times 100000 = 800000$
 \downarrow
 $\blacktriangleright 7 \times 1000000 = 7000000$
 \downarrow
 $\blacktriangleright 7 \times 10000000 = 70000000$

Expanded form of 77856432

$$= 70000000 + 7000000 + 800000 + 50000 + 6000 + 400 + 30 + 2$$

(b) Given number = 95678981.

C	TL	L	TTh	Th	H	T	O	Place value
9	5	6	7	8	9	8	1	
								$\blacktriangleright 1 \times 1 = 1$
								$\blacktriangleright 8 \times 10 = 80$
								$\blacktriangleright 9 \times 100 = 900$
								$\blacktriangleright 8 \times 1000 = 8000$
								$\blacktriangleright 7 \times 10000 = 70000$
								$\blacktriangleright 6 \times 100000 = 600000$
								$\blacktriangleright 5 \times 1000000 = 5000000$
								$\blacktriangleright 9 \times 10000000 = 90000000$

Expanded form of 95678981

$$= 90000000 + 5000000 + 600000 + 70000 + 8000 + 900 + 80 + 1.$$

(c) Given number = 7340718.

TL	L	TTh	Th	H	T	O	Place value
7	3	4	0	7	1	8	
							$\blacktriangleright 8 \times 1 = 8$
							$\blacktriangleright 1 \times 10 = 10$
							$\blacktriangleright 7 \times 100 = 700$
							$\blacktriangleright 0 \times 1000 = 0000$
							$\blacktriangleright 4 \times 10000 = 40000$
							$\blacktriangleright 3 \times 100000 = 300000$
							$\blacktriangleright 7 \times 1000000 = 7000000$

Expanded form of 7340718

$$= 7000000 + 300000 + 40000 + 0 + 700 + 10 + 8.$$

(d) Given number = 86987655.

Expanded form of 86987655

$$= 80000000 + 6000000 + 900000 + 80000 + 7000 + 600 + 50 + 5.$$

(e) Given number = 37898762.

Expanded form of 37898762

$$= 30000000 + 7000000 + 800000 + 90000 + 8000 + 700 + 60 + 2.$$

(f) Given number = 8499385.

Expanded form of 8499385

$$= 8000000 + 400000 + 90000 + 9000 + 300 + 80 + 5.$$

(g) Given number = 76259005.

Expanded form of 76259005

$$= 70000000 + 6000000 + 200000 + 50000 + 9000 + 000 + 00 + 5.$$

(h) Given number = 45600282.

Expanded form of 45600282

$$= 40000000 + 5000000 + 600000 + 00000 + 0000 + 200 + 80 + 2.$$

(i) Given number = 9983451.

Expanded form of 9983451

$$= 9000000 + 900000 + 80000 + 3000 + 400 + 50 + 1.$$

6. Combining the place values of the digits, we get

$$(a) 80000000 + 40000 + 6000 + 50 + 3 = 80046053.$$

$$(b) 70000000 + 70000 + 4000 + 500 + 2 = 70074502.$$

$$(c) 9000000 + 50000 + 9000 + 300 + 4 = 9059304.$$

$$(d) 5000000 + 900000 + 8000 + 70 + 3 = 5908073.$$

$$(e) 40000000 + 400000 + 5000 + 2 = 40405002.$$

Practice Time 1C

1. (a) Place both the numbers in the place value chart.

Here, both numbers have 6 digits.

So, we compare the left-most digits of both numbers.

Since, 8 > 7.

L	TTh	Th	H	T	O
8	0	5	6	3	7
7	0	7	6	5	6

Hence, $805637 > 707656$.

(b) Place both the numbers in the place value chart.

Clearly, the given numbers are of 7-digit and 6-digit numbers, respectively.

TL	L	TTh	Th	H	T	O
2	0	5	6	9	5	3
2	0	6	0	7	5	

Thus, $2056953 > 206075$.

(c) Place both the numbers in the place value chart.

Both numbers are of 7-digits.

So, first, we compare the left-most digits of the two given numbers.

First left-most digits are same, i.e., 8.

Now, compare second left-most digits.

Second, third and fourth left-most digit are also now, comparing fifth left most digit, here $7 < 9$.

TL	L	TTh	Th	H	T	O
8	6	7	0	7	5	7
8	6	7	0	9	5	4

Same Different
($7 < 9$)

So, $8670757 < 8670954$

(d) $44524017 > 44324017$ (Same as above).

(e) $42003600 = 42003600$ (Same as above).

(f) $79000000 < 79999999$ (Same as above).

2. (a) Let us arrange the given numbers in the place value chart.

Here, we can see that there are three 7-digit numbers and one 6-digit number clearly, the 6-digit number is the smallest. In the 7-digit numbers, $7324545 < 7825216 < 8654627$.

TL	L	TTh	Th	H	T	O
	8	6	3	5	3	2
8	6	5	4	6	2	7
7	8	2	5	2	1	6
7	3	2	4	5	4	5

---> 6-digit
---> 7-digit
---> 7-digit
---> 7-digit

So, the ascending order of the numbers are:

$863532, 7324545, 7825216, 8654627$

Same as above.

(b) $2000413, 2050009, 2500496, 5231761$

(c) $6954521, 6954524, 6954530, 6954544$

(d) $7546321, 7546325, 7546452, 7546542$

3. (a) First, we arrange the given numbers in the place value chart and then start comparing.

Clearly, 97479 is the greatest number and 75959 is the smallest number.

Also, 76049 is greater than 75959.

TTh	Th	H	T	O
8	7	9	7	6
7	6	0	4	9
7	5	9	5	9
9	7	4	7	9

So, $97479 > 87976 > 76049 > 75959$.

Same as above.

(b) $654675, 528781, 453170, 452678$

(c) $9400045, 7983678, 7893569, 798667$

(d) $98645321, 9865021, 9864542, 9864521$

4. Smallest digit is 3 (other than 0).

And the other digits in ascending order are 5, 6, 7, and 8.

So, the smallest number formed by the given digits is 305678.

Here, the largest digit from the given digits is 8.

So, the largest number formed by the given digits is 876530.

Thus, smallest number = 305678 and largest number = 876530

5. Smallest digit is 1 (other than 0)

And the other digits in ascending order are 4, 5, 6, 7, 8, 9.

So, the smallest number formed by the given digits is 10456789.

Here, the largest digit from the given digits is 9.

And the other digits in descending order are 8, 7, 6, 5, 4, 1, 0.

So, the largest number formed by the given digits is 98765410.

Thus, smallest number = 10456789 and largest number = 98765410.

6. (a) To form the greatest 7-digit number using the given digits, repeat the greatest digit 7 thrice. Thus, the greatest 7-digit number formed using the given digits is 7775420.

To form the smallest 7-digit number using the given digits, repeat the smallest digit 0 thrice. Thus, the smallest 7-digit number formed using the given digits is 2000457.

Hence, greatest number = 7775420 and smallest number = 2000457.

(b) To form the greatest 7-digit number using the given digits, repeat the greatest digit 9 four times. Thus, the greatest 7-digit number formed using the given digits is 9999756.

To form the smallest 7-digit number using the given digits, repeat the smallest digit 5 four times. Thus, the smallest 7-digit number formed using the given digits is 5555679.

Hence, greatest number = 9999756 and smallest number = 5555679.

(c) 7777320, 2000037

(d) 9999953, 3333359

Think and Answer (Page 19)

We know that 1 million = 10 lakhs

∴ 10 million = $10 \times 10 = 100$ lakhs

Practice Time 1D

1. (a) Sixty-five million twenty-eight thousand one hundred seven = 65,028,107.

(b) Eighty-two million two hundred forty-five thousand = 82,245,000.

(c) Fifty-nine million one hundred six thousand three hundred seven = 59,106,307.

(d) Forty million ninety-three thousand four hundred six = 40,093,406.

(e) Seventy-two million seven thousand seven hundred = 72,007,700.

(f) Ninety-eight million nine hundred ninety-nine thousand ninety-nine = 98,999,099.

2.

	Millions		Thousands			Ones			Number name
	TM	M	HTh	TTh	Th	H	T	O	
(a)	2	5	8	9	0	4	6	7	Twenty-five million eight hundred ninety thousand four hundred sixty-seven.
(b)	4	3	8	6	5	8	9	0	Forty-three million eight hundred sixty-five thousand eight hundred ninety.
(c)		5	0	7	0	0	0	6	Five million seventy thousand six.
(d)	5	2	8	0	0	5	3	1	Fifty-two million eight hundred thousand five hundred thirty-one.
(e)		6	1	0	0	7	8	2	Six million one hundred thousand seven hundred eighty-two.
(f)	2	0	2	0	0	2	0	0	Twenty million two hundred thousand two hundred.

3. (a) $7,89,87,656 = 78,987,656$.

(b) $8,90,07,650 = 89,007,650$.

(c) $8,00,04,905 = 80,004,905$.

(d) $75,40,565 = 7,540,565$.

(e) $9,54,93,207 = 95,493,207$.

(f) $3,48,96,705 = 34,896,705$.

4. (a) 1000 thousands = 1 million

(b) 100 lakhs = 10 millions

(c) 10 millions = 1 crore

(d) 100 thousands = 1 lakh

and replace the digit at ones place by 0.

Thus, 75 becomes 80 after rounding off to the nearest 10.

(b) In 247, the digit at ones place is 7, which is greater than 5.

So, we increase the digits at tens place by 1 and replace the digit at ones place 0.

Thus, 247 becomes 250 after rounding off to the nearest 10.

(c) Same as (a) and (b).

(d) In 4242, the digit at ones place is 2, which is less than 5. So, we replace the digit at ones place by 0. Thus, 4242 becomes 4240 after rounding off to nearest 10.

(e) to (h) — (Same as above).

Practice Time 1E

1. (a) In 75, the digit at ones place is 5, which is equal to 5.

So, we increase the digits at tens place by 1

Detailed Solutions

2. (a) In 414, the digit at tens place is 1, which is less than 5.

So, we replace the digit at tens place and ones place by 0.

Thus, 414 becomes 400 after rounding off to the nearest 100.

(b) In 584, the digit at tens place is 8, which is greater than 5.

So, we increase the digit at hundred place by 1 and replace tens and ones digits by 0.

Thus, 584 becomes 600 after rounding off to the nearest 100.

(c) In 7650, the digit at tens place is 5, which is equal to 5.

So, we increase the digit at hundred place by 1 and replace tens and ones digits by 0.

Thus, 7650 becomes 7700 after rounding off to the nearest 100.

(d) to (h) — (Same as above).

3. (a) In 9373, the digit at hundreds place is 3, which is less than 5.

So, we replace the digit at hundred, tens and ones digit by 0.

Thus, 9373 becomes 9000 after rounding off to the nearest 1000.

(b) In 8720, the digit at hundreds place is 7, which is greater than 5.

So, we increase the digits at thousands place by 1 and replace hundreds, tens and ones by 0.

Thus, 8720 becomes 9000 after rounding off to the nearest 1000.

(c) In 107898, the digit at hundreds place is 8, which is greater than 5.

So, we increase the digits at thousands place by 1 and replace hundreds, tens and ones digit by 0.

Thus, 107898 becomes 108000 after rounding off to the nearest 1000.

(d) to (h) — (Same as above).

4. (a) (i) In 52670 becomes 52670 after rounding off to the nearest 10.

(ii) In 52670, the digit at tens place is 7, which is greater than 5.

So, we increase the digit at hundreds place by 1 and replace tens and ones place by 0.

Thus, 52670 becomes 52700 after rounding off to the nearest 100.

(iii) In 52670, the digit at hundreds place is 6, which is greater than 5.

So, we increase the digit at hundreds place by 1 and replace hundreds, tens and ones place by 0.

Thus, 52670 becomes 53000 after rounding off to the nearest 1000.

(b) (i) In 37645, the digit at ones place is 5, which is equal to 5.

So, we increase the digit at tens place by 1 and replace ones place by 0.

Thus, 37645 becomes 37650 after rounding off to the nearest 10.

(ii) In 37645, the digit at tens place is 4, which is less than 5.

So, we replace the digit at tens and ones place by 0.

Thus, 37645 becomes 37600 after rounding off to the nearest 100.

(iii) In 37645, the digit at hundreds place is 6, which is greater than 5.

So, we increase the digit at thousands place by 1 and replace hundreds, tens and ones digit by 0.

Thus, 37645 becomes 38000 after rounding off to the nearest 1000.

(c) to (h) — (Same as above).

Practice Time 1F

1. (a) $328 = 300 + 10 + 10 + 8 = CCCXXVIII$.

(b) $518 = 500 + 10 + 8 = DXVIII$.

(c) $892 = 500 + 100 + 100 + 100 + 90 + 2 = DCCCXCII$.

(d) $2090 = 1000 + 1000 + 90 = MMXC$.

(e) $785 = 500 + 100 + 100 + 50 + 10 + 10 + 10 + 5 = DCCLXXXV$.

(f) $1600 = 1000 + 500 + 100 = MDC$.

2. (a) $XXXV = 10 + 10 + 10 + 5 = 35$.

(b) $LXXIII = 50 + 10 + 10 + 3 = 73$.

(c) $VII = 5 + 1 + 1 = 7$.

(d) $MIX = 1000 + 9 = 1009$.

(e) $CLXV = 100 + 50 + 10 + 5 = 165$.

(f) $MXXXIV = 1000 + 10 + 10 + 10 + 4 = 1034$.

3. (a) $CDIV = (500 - 100) + 4 = 404 < 406$.

$\therefore CDIV < 406$.

8. Radius of Earth = 6400 km = 6400000 m.
 Radius of Mars = 3390000 m.
 Difference between the radius of Earth and Mars
 $= (6400000 - 3390000)$ m = 3010000 m
 Hence, Radius of Earth is bigger.
 9. Shweta's mother paid for a toy = DCCX = 500 + 100 + 100 + 10 = ₹710.
 Discount on toy = CXV = 100 + 10 + 5 = ₹115.
 So, teddy bear cost = $710 - 115 = 595$.

Roman numbers of 595 = DXCV.
 10. Number of Saplings = MMMDCCLXXXII.
 $= 1000 + 1000 + 1000 + 500 + 100 + 100 + 50 + 10 + 10 + 10 + 2 = 3,782$.
 Indian system of numeration: Three thousand seven hundred eighty-two.
 International system of numeration: Three thousand seven hundred eighty-two.

CHAPTER 2 : OPERATIONS ON LARGE NUMBERS

Let's Recall

1.

Number of toys produced in October =

Number of toys produced in September =

Number of toys produced in November =

Total number of toys produced in three months =

L	TTh	Th	H	T	O
(1)		(2)	(1)	(1)	
	2	2	4	6	6
1	9	0	8	9	5
2	0	5	7	2	5
4	1	9	0	8	6

Thus, 4,19,086 toys produced in three months.

2.

Total population of town =

Population of men in the town =

Population of women in the town =

TL	L	TTh	Th	H	T	O
	(11)	(12)				
(6)	(X)	(Z)	(11)		(6)	(12)
X	Z	Z	X	5	X	Z
4	7	9	7	2	3	7
2	4	3	4	3	3	5

Thus, population of women of the town is 24, 34, 335.

3.

Number of bedsheets produced in one day =

Number of bedsheets produced in one year = 365 days = \times

Total population of town =

C	TL	L	TTh	Th	H	T	O
				(1)		(1)	
				(2)	(1)	(3)	
				(2)	(1)	(2)	
			3	0	4	2	5
					3	6	5
(1)	(1)	(1)	(1)	(1)			
		1	5	2	1	2	5
	1	8	2	5	5	0	0
+	9	1	2	7	5	0	0
1	1	1	0	5	1	2	5

Thus, 1,11,05,125 bedsheets will produce in one year.

$$\begin{array}{r}
 1895 \overline{)53060} \quad (28 \rightarrow \text{Quotient} \\
 - 3790 \\
 \hline
 15160 \\
 - 15160 \\
 \hline
 0 \rightarrow \text{Remainder}
 \end{array}$$

Thus, the rate of rice per kg is ₹28.

Think and Answer (Page 29)

Greatest 9-digit number = 99,99,99,999

Smallest 9-digit number = 10,00,00,000

Their sum = 1,09,99,99,999

Thus, there are 10 digits in the sum.

Practice Time 2A

1. (a)

C	TL	L	TTh	Th	H	T	O
(1)	(1)	(1)	(1)	(1)	(1)	(1)	
	7	8	6	7	8	9	4
+	2	9	5	3	5	0	7
	1	0	8	2	1	4	0
							1

$$\begin{aligned}
 \text{Thus, } 78,67,894 + 29,53,507 \\
 = 1,08,21,401
 \end{aligned}$$

(b)

C	TL	L	TTh	Th	H	T	O
(1)	(1)	(1)	(1)	(1)	(1)		
	9	8	6	7	8	4	9
+	3	4	5	3	5	7	0
	1	3	3	2	1	4	1
							9

$$\begin{aligned}
 \text{Thus, } 98,67,849 + 34,53,570 \\
 = 1,33,21,419
 \end{aligned}$$

(c)

C	TL	L	TTh	Th	H	T	O
(1)		(1)	(1)	(1)			
	6	0	6	9	8	9	0
+	8	4	5	9	5	0	9
	1	4	5	2	9	3	9
							9

$$\begin{aligned}
 \text{Thus, } 60,69,890 + 84,59,509 \\
 = 1,45,29,399
 \end{aligned}$$

(d)

TL	L	TTh	Th	H	T	O
(1)	(1)		(1)	(1)	(1)	
7	9	8	0	0	3	7
+	6	7	8	9	8	7
	8	6	5	9	0	2
						4

$$\begin{aligned}
 \text{Thus, } 79,80,037 + 6,78,987 \\
 = 86,59,024
 \end{aligned}$$

(e)

	L	TTh	Th	H	T	O
(2)	(2)	(2)	(1)	(1)		
2	8	6	9	7	3	
1	7	6	9	5	6	
+	2	9	8	7	6	5
	7	6	2	6	9	4

$$\begin{aligned}
 \text{Thus, } 2,86,973 + 1,76,956 + 2,98,765 \\
 = 7,62,694
 \end{aligned}$$

(f)

	L	TTh	Th	H	T	O
(1)	(1)	(1)	(2)	(1)		
8	7	5	0	3	4	
3	1	5	6	8	2	
+	4	5	6	7	8	9
	1	6	4	7	5	0
						5

$$\begin{aligned}
 \text{Thus, } 8,75,034 + 3,15,682 + 4,56,789 \\
 = 16,47,505
 \end{aligned}$$

2. (a)

TL	L	TTh	Th	H	T	O
(1)	(1)	(1)	(1)	(1)		
3	7	5	8	4	9	1
+	4	2	4	5	7	8
	8	0	0	4	2	7
						2

$$\begin{aligned}
 \text{Thus, } 37,58,491 + 42,45,781 \\
 = 80,04,272
 \end{aligned}$$

(b)

C	TL	L	TTh	Th	H	T	O
							(1)
2	2	4	3	2	6	4	6
+	4	4	2	2	3	1	1
	6	6	6	5	5	7	2

$$\begin{aligned}
 \text{Thus, } 2,24,32,646 + 4,42,23,116 \\
 = 6,66,55,762
 \end{aligned}$$

(c) to (f) — (Same as above).

3. (a)	<table border="1"> <tr><td></td><td>5</td><td>4</td><td>3</td><td>6</td><td>8</td></tr> <tr><td>+</td><td>6</td><td>3</td><td>8</td><td>3</td><td>2</td></tr> <tr><td></td><td>1</td><td>1</td><td>8</td><td>2</td><td>0</td></tr> </table>		5	4	3	6	8	+	6	3	8	3	2		1	1	8	2	0
	5	4	3	6	8														
+	6	3	8	3	2														
	1	1	8	2	0														

(b)	<table border="1"> <tr><td>6</td><td>3</td><td>4</td><td>3</td><td>6</td><td>8</td></tr> <tr><td>+</td><td>4</td><td>9</td><td>3</td><td>6</td><td>4</td></tr> <tr><td></td><td>6</td><td>8</td><td>3</td><td>7</td><td>3</td></tr> </table>	6	3	4	3	6	8	+	4	9	3	6	4		6	8	3	7	3
6	3	4	3	6	8														
+	4	9	3	6	4														
	6	8	3	7	3														

(c)	<table border="1"> <tr><td>7</td><td>2</td><td>6</td><td>4</td><td>3</td><td>8</td></tr> <tr><td>+</td><td>2</td><td>5</td><td>4</td><td>8</td><td>4</td></tr> <tr><td></td><td>9</td><td>8</td><td>1</td><td>2</td><td>8</td></tr> </table>	7	2	6	4	3	8	+	2	5	4	8	4		9	8	1	2	8
7	2	6	4	3	8														
+	2	5	4	8	4														
	9	8	1	2	8														

(d) to (f) — (Same as above).

4. (a) $4326 + 26458 = 26458 + 4326$

(b) $436483 + 71364 = 71364 + 436483$

(c) $56436 + 0 = 56436$

(d) $0 + 364834 = 364834$

(e) $249368 + 1 = 249369$

5. (a)

Number of toy cars manufactured in 2021 =

Number of toy cars manufactured in 2022 = +

Total number of toy cars manufactured in both years =

TL	L	TTh	Th	H	T	O
(1)	(1)	(1)	(1)	(1)	(1)	
		5	7	8	9	4
	9	8	7	3	7	9
1	0	4	5	2	7	3

Thus, 10,45,273 toy cars manufactured by the factory in these two years.

(b)

Number of boys passed in the examination =

Number of girls passed in the examination =

Number of boys failed in the examination =

Number of girls failed in the examination = +

Number of students enrolled in the examination =

L	TTh	Th	H	T	O
(1)	(1)	(2)	(1)		
	7	2	5	8	0
	3	7	9	8	7
		7	4	0	0
		2	5	0	0
1	2	0	4	6	7

Thus, 1,20,467 students enrolled in the examination.

(c)

Number of people visited in the zoo in January =

Number of people visited in the zoo in February =

Number of people visited the zoo in March = +

Total number of people visited the zoo in these three months =

L	TTh	Th	H	T	O
(1)	(1)	(2)	(1)	(1)	
	9	7	9	3	2
	7	5	3	0	7
1	0	5	9	7	5
2	7	9	2	1	4

Thus, 2,79,214 people visited the zoo in these three months.

(d)

A postal van has letters =

Another van has letters = +

Total letters in the two postal vans =

L	TTh	Th	H	T	O
(1)	(1)				
	7	5	6	0	3
	7	8	3	0	0
1	5	3	9	0	3

Thus, 1,53,903 letters are there in the two postal vans.

(e)

TC	C	TL	L	TTh	Th	H	T	O
(1)	(1)	(1)	(2)	(1)	(1)	(2)	(1)	
2	4	1	0	6	6	8	7	4
1	2	9	8	7	7	5	4	1
8	0	7	8	2	4	9	5	
4	5	1	7	2	6	9	1	0

Thus, 45,17,26,910 is the total population of the three states.

Think and Answer (Page 32)

	TC	C	TL	L	TTh	Th	H	T	O
Greatest 9-digit number =	9	9	9	9	9	9	9	9	9
Smallest 9-digit number = -	1	0	0	0	0	0	0	0	0
Their difference =	8	9	9	9	9	9	9	9	9

Think and Answer (Page 33)

Sum of 88888 and
33333 = 122221

L	TTh	Th	H	T	O
(1)	(1)	(1)	(1)		
8	8	8	8	8	
+	3	3	3	3	3
1	2	2	2	2	1

Required number
= 122221 - 3676
= 118545

L	TTh	Th	H	T	O
1	2	2	2	2	1
-					
	3	6	7	6	
1	1	8	5	4	5

Think and Answer (Page 33)

Given number = 8 5 2 3 5 5 8 6
Place values of 5s =

Sum of place values of 5s
= 5000000 + 5000 + 500 = 5005500

Again, given number = 8 5 2 3 5 5 8 6
Place values of 8s =

Sum of place values of 8s
= 80000000 + 80 = 80000080

Subtract the sum of place values of 5s from the
sum of place values of 8s
= 80000080 - 5005500 = 7,49,94,580

Practice Time 2B

TL	L	TTh	Th	H	T	O
	(18)					
(2)	(8)	(15)		(5)	(12)	
(3)	(9)	(5)	4	(6)	(2)	1
-	2	9	6	3	5	4
	0	9	9	1	0	8
						1

Thus, 39,54,621 - 29,63,540 = 9,91,081

C	TL	L	TTh	Th	H	T	O
	(11)						
(3)	(X)	(15)					
(4)	(2)	(5)	9	8	9	7	3
-	1	7	8	3	4	7	0
	2	4	7	6	4	2	7
							1

Thus, 4,25,98,973 - 1,78,34,702 = 2,47,64,271

TL	L	TTh	Th	H	T	O
		(9)	(11)	(10)	(11)	
		(7)	(10)	(X)	(8)	(13)
5	8	0	2	X	Z	Z
-	4	0	2	6	7	8
	1	7	7	5	3	3
						6

Thus, 58,02,123 - 40,26,787 = 17,75,336

(d) to (f) — (Same as above).

Detailed Solutions

2. (a) Arrange the minuend and the subtrahend in columns.

Check					
L	TTh	Th	H	T	O
(5)	(14)				
6	4	3	0	0	5
-	1	7	3	6	4
4	7	0	0	0	5

Check					
L	TTh	Th	H	T	O
(1)					
4	7	0	0	0	5
+	1	7	3	6	4
6	4	3	6	4	8

$$\text{Thus, } 6,43,648 - 1,73,643 = 4,70,005.$$

(b) Arrange the minuend and subtrahend in columns.

Check						
TL	L	TTh	Th	H	T	O
(7)	(18)					
7	8	8	2	4	3	6
-	5	2	9	0	3	6
2	5	9	2	0	7	2

Check						
TL	L	TTh	Th	H	T	O
(1)						
2	5	9	2	0	7	2
+	5	2	9	0	3	6
7	8	8	2	4	3	6

$$\text{Thus, } 78,82,436 - 52,90,364 = 25,92,072.$$

(c) Arrange the minuend and subtrahend in columns.

Check						
TL	L	TTh	Th	H	T	O
(9)						
(7)	(10)	(13)	(5)	(3)	(13)	
8	0	3	6	7	3	6
-	4	2	9	3	6	7
3	7	4	2	7	6	3

Check						
TL	L	TTh	Th	H	T	O
(1)	(1)			(1)	(1)	
3	7	4	2	7	6	3
+	4	2	9	3	6	7
8	0	3	6	4	3	6

$$\text{Thus, } 80,36,436 - 42,93,673 = 37,42,763.$$

(d) to (f) — (Same as above).

5	2	7	3	6	4
-	1	1	2	9	1
4	1	4	4	4	6

6	0	8	0	9	0
-	1	8	0	5	0
4	2	7	5	8	2

4	7	6	4	3	6
-	2	3	9	4	8
2	3	6	9	5	4

5	7	3	6	9	4
-	2	9	4	8	3
2	7	8	8	6	1

6	7	3	6	4	8
-	4	1	7	3	4
2	5	6	3	0	6

8	4	0	3	6	5
-	5	2	9	6	3
3	1	0	7	2	8

$$4. (a) 867383 - 0 = \mathbf{867383}$$

$$(b) 64361 - \mathbf{0} = 64361$$

$$(c) 420805 - 1 = \mathbf{420804}$$

$$(d) 996494 - \mathbf{1} = 996493$$

$$(e) 7143260 - 7143260 = \mathbf{0}$$

$$(f) 243646 - \mathbf{243646} = 0$$

5. (a) $3214567 + 5479410 - 2134571$

Step 1. First add all the numbers having either ‘+’ sign or no sign in front of them.

TL	L	TTh	Th	H	T	O
		(1)				
3	2	1	4	5	6	7
+	5	4	7	9	4	1 0
	8	6	9	3	9	7 7

Step 2. Subtract the numbers having ‘–’ sign in front of it from the sum obtained in step 1.

TL	L	TTh	Th	H	T	O
		(8)	(13)			
8	6	9	9	9	7	7
–	2	1	3	4	5	7 1
	6	5	5	9	4	0 6

Thus, $3214567 + 5479410 - 2134571 = 65,59,406$.

(b) $96457891 - 5467894 - 201345$

C	TL	L	TTh	Th	H	T	O
		(13)	(14)	(16)	(17)	(18)	
(5)	9	8	4	6	7	8	11
9	8	4	6	7	8	9	X
–	5	4	6	7	8	9	4
	9	0	9	8	9	9	7

C	TL	L	TTh	Th	H	T	O
9	0	9	8	9	9	9	7
–			2	0	1	3	4
	9	0	7	8	8	6	5

Thus, $96457891 - 5467894 - 201345 = 9,07,88,652$.

(c) and (d) — (Same as above).

6. (a)

Smallest 9-digit number =
Greatest 7-digit number =

TC	C	TL	L	TTh	Th	H	T	O
	(9)	(9)	(9)	(9)	(9)	(9)	(9)	
(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)
X	8	8	8	8	8	8	8	8
	9	9	9	9	9	9	9	9
	9	0	0	0	0	0	0	1

Thus, their difference is nine crore one (90000001)

(b)

The sum of two numbers =

First number =

Other number =

C	TL	L	TTh	Th	H	T	O
	(16)	(18)					
(6)	8	8	(8)	(15)			
X	X	X	9	6	9	7	4
	8	9	9	5	0	4	0
	6	8	9	6	1	9	3

Thus, the other number is 6,89,61,934.

(c)

Number of votes candidate A got =

Number of votes candidate B got =

Difference =

TL	L	TTh	Th	H	T	O
		(14)	(12)			
		7	4	2		
7	2	8	5	3	X	8
7	1	3	7	3	9	5
0	1	4	7	9	8	3

Thus, Candidate A got 1,47,983 more votes than candidate B.

(d)

$$\begin{array}{l}
 \text{Number of bags of wheat purchased by the government} = \\
 \text{Number of bags of wheat sold by the government} = - \\
 \text{Number of bags left in their stock} =
 \end{array}$$

L	TTh	Th	H	T	O
					(11)
	(4)	(10)	(6)	(X)	(15)
8	8	0	7	2	8
4	0	8	3	6	8
4	4	2	3	5	7

Thus, 4,42,357 bags of wheat left in their stock.

(e)

$$\begin{array}{l}
 \text{Number of bricks purchased for construction} = \\
 \text{Number of bricks used in a building} = - \\
 \text{Number of bricks remained with the contractor} =
 \end{array}$$

L	TTh	Th	H	T	O
	(14)			(14)	
(5)	(4)	(10)	(6)	(4)	(10)
8	8	0	7	5	0
5	8	5	0	5	1
0	6	5	6	9	9

Thus, 65699 bricks remained with contractor.

(f)

$$\begin{array}{l}
 \text{Anil invested in the business} = \\
 \text{Sunil invested in the business} = -
 \end{array}$$

L	TTh	Th	H	T	O
(8)	(15)				
8	8	5	8	9	0
6	8	2	5	8	0

$$\begin{array}{l}
 = 2 \quad 7 \quad 3 \quad 3 \quad 1 \quad 0
 \end{array}$$

Thus, Anil invested ₹2,73,310 more in the business.

Practice Time 2C

1. (a)

Step 1. Expand the multiplier. $123 = 100 + 20 + 3$

Step 2. Multiply by the ones. $2563 \times 3 = 7689$

Step 3. Multiply by the tens. $2563 \times 20 = 51260$

Step 4. Multiply by the hundreds.

$$2563 \times 100 = 256300$$

Step 5. Add all the partial products.

$$7689 + 51260 + 256300 = 3,15,249$$

Thus, $2563 \times 123 = 3,15,249$.

(b) — (Same as above).

TL	L	TTh	Th	H	T	O
			7	8	9	4
				3	0	6
			4	7	3	6
			0	0	0	0
	2	3	6	8	2	0
	2	4	1	5	5	6

Thus, $7894 \times 306 = 24,15,564$.

(e) to (h) — (Same as above).

L	TTh	Th	H	T	O
		(1)	(1)		
		(1)	(1)		
	2	5	6	3	
			1	2	3
(1)	(1)	(1)	(1)		
			7	6	8
			5	1	2
	2	5	6	3	0
				0	0
3	1	5	2	4	9

C	TL	L	TTh	Th	H	T	O
			4	8	7	9	2
					2	1	6
			2	9	2	7	5
			4	8	7	9	2
			9	7	5	8	4
			1	0	5	3	9
					0	7	2

Thus, $48792 \times 216 = 1,05,39,072$.

2. (a) $7557 \times 10 = 75570$
 (b) $78051 \times 100 = 7805100$
 (c) $4655 \times 100 = 465500$
 (d) $97435 \times 100 = 9743500$
 (e) $7263 \times 100 = 726300$
 (f) $5090 \times 1000 = 5090000$

3. (a) $5326 \times 60 = 60 \times 5326$
 (b) $2897 \times 0 = 0$
 (c) $(100 \times 20) \times 5 = (100 \times 5) \times 20$
 (d) $1 \times 5566 = 5566$
 (e) $(500 + 75) \times 16 = 500 \times 16 + 75 \times 16$
 (f) $(708 - 55) \times 25 = 708 \times 25 - 55 \times 25$
 4. (a) (iii) $8753 \times 20 = 175060$
 (b) (iv) $2 \times 5 \times 483 = 10 \times 483 = 4830$
 (c) (i) $4 \times 573 \times 50 = 2292 \times 50 = 114600$
 (d) (ii) $10 \times 3845 \times 10 = 100 \times 3845 = 384500$
 (e) (vi) $900 \times 714 = 9 \times 100 \times 714$
 $= 6426 \times 100 = 642600$
 (f) (v) $4000 \times 36 = 4 \times 1000 \times 36 = 144000$
 5. (a) $250 \times 8 \times 100 = 2000 \times 100 = 200000$
 (b) $5 \times 195 \times 20 = 5 \times 20 \times 195 = 100 \times 195$
 $= 19500$
 (c) $1500 \times 50 \times 2 = 1550 \times 100 = 15500$
 (d) $400 \times 25 \times 4 = 4 \times 100 \times 25 \times 4$
 $= 100 \times 4 \times 100 = 40000$
 (e) $4365 \times 20 \times 5 = 4365 \times 100 = 436500$
 (f) $10 \times 3364 \times 10 = 100 \times 3364 = 336400$
 (g) $50 \times 1000 \times 2 = 100 \times 1000 = 100000$
 (h) $4 \times 6666 \times 25 = 6666 \times 100 = 666600$
 (i) $2005 \times 50 \times 20 = 2005 \times 1000 = 2005000$
 6. (a) Cost of one ceiling fan = ₹3199
 So, cost of 150 ceiling fans = 3199×150

$$\begin{array}{r}
 \text{₹} & 3 & 1 & 9 & 9 \\
 \times & & 1 & 5 & 0 \\
 \hline
 & 0 & 0 & 0 & 0 \\
 1 & 5 & 9 & 9 & 5 & 0 \\
 + & 3 & 1 & 9 & 9 & 0 & 0 \\
 \hline
 \text{₹} & 4 & 7 & 9 & 8 & 5 & 0
 \end{array}$$

Thus, the cost of 150 ceiling fans = ₹479850

(b) Number of items produced every day
 $= 27,628$
 Number of items produced in one year 2 weeks
 $(365 \text{ days} + 14 \text{ days} = 379 \text{ days})$
 $= 27628 \times 379$

$$\begin{array}{r}
 \text{₹} & & 2 & 7 & 6 & 2 & 8 \\
 \times & & & & 3 & 7 & 9 \\
 \hline
 & 2 & 4 & 8 & 6 & 5 & 2 \\
 1 & 9 & 3 & 3 & 9 & 6 & 0 \\
 + & 8 & 2 & 8 & 8 & 4 & 0 & 0 \\
 \hline
 \text{₹} & 1 & 0 & 4 & 7 & 1 & 0 & 1 & 2
 \end{array}$$

Thus, 1,04,71,012 items will be produced in one year and 2 weeks.

(c) Supply of milk in one day from dairy
 $= 1250 \text{ litres}$

Supply of milk in a leap year from dairy
 $= 1250 \times 366 \text{ litres} [\because 1 \text{ leap year} = 366 \text{ days}]$
 $= 4,57,500$

$$\begin{array}{r}
 \text{₹} & 1 & 2 & 5 & 0 \\
 \times & 3 & 6 & 6 \\
 \hline
 & 7 & 5 & 0 & 0 \\
 7 & 5 & 0 & 0 & 0 \\
 + & 3 & 7 & 5 & 0 & 0 & 0 \\
 \hline
 \text{₹} & 4 & 5 & 7 & 5 & 0 & 0
 \end{array}$$

Thus, the dairy supplies 4,57,500 litres of milk in a leap year.

(d) Number of toys contain in a one box = 150
 Number of toys contain in 4500 boxes
 $= 4500 \times 150 = 6,75,000 \text{ toys}$

$$\begin{array}{r}
 \text{L} & \text{TTh} & \text{Th} & \text{H} & \text{T} & \text{O} \\
 & & & 4 & 5 & 0 & 0 \\
 \times & & & & 1 & 5 & 0 \\
 & & & 0 & 0 & 0 & 0 \\
 2 & 2 & 5 & 0 & 0 & 0 & 0 \\
 + & 4 & 5 & 0 & 0 & 0 & 0 \\
 \hline
 6 & 7 & 5 & 0 & 0 & 0 & 0
 \end{array}$$

Thus, total number of toys brought to the market on that day is 6,75,000.

(e) Milk sold in one day by the booth
 $= 1258 \text{ litres}$

Milk sold in the month of December
 $= 1258 \times 31 \text{ litres} = 38998 \text{ litres}$

$$\begin{array}{r}
 \text{TTh} & \text{Th} & \text{H} & \text{T} & \text{O} \\
 & 1 & 2 & 5 & 8 \\
 \times & & & 3 & 1 \\
 & 1 & 2 & 5 & 8 \\
 + & 3 & 7 & 7 & 4 & 0 \\
 \hline
 3 & 8 & 9 & 9 & 8
 \end{array}$$

Cost of one litre milk = ₹98

So, cost of 38998 litres milk = 38998×48

TL	L	TTh	Th	H	T	O
		3	8	9	9	8
\times					4	8
		3	1	1	9	4
+	1	5	5	9	9	0
	1	8	7	1	9	4

Thus, 38,998 litres of milk sold in month of December and the cost of 38998 litres of milk is ₹18,71,904.

(f) Largest 5-digit number = 99999
and smallest 3-digit number = 100
Product = $99999 \times 100 = 99,99,900$

(g) Reading of odometer of a car
= 11152 km
Reading of odometer in hundred metres
= $\frac{11152 \times 1000 \text{ m}}{100} \text{ m} \quad [\because 1 \text{ km} = 1000 \text{ m}]$
= 111520 m

Think and Answer (Page 43)

Life of an inverter battery = 8760 hours

Number of hours in one whole day $24 \overline{)8760} (365$
= 24 hrs

∴ Number of days will the battery run
= $8760 \div 24$ days

Thus, the battery will run 365 days.

$$\begin{array}{r} 72 \\ \hline 156 \\ -144 \\ \hline 120 \\ -120 \\ \hline 0 \end{array}$$

Practice Time 2D

1. (a) $275736 \div 9$

$$\begin{array}{r} 30637 \\ \hline 275736 \\ -27 \\ \hline 057 \\ -54 \\ \hline 33 \\ -27 \\ \hline 66 \\ -63 \\ \hline 3 \end{array} \quad \text{--- Quotient}$$

Step 1. $9 < 2$, we divide 2-digit number 27 by 9.
 $9 \times 3 = 27$ is the maximum possible product obtained.
Subtract 27 from 27 and bring down 5 < 9 , again bring down 7 by putting 0 in quotient.

Step 2. 57 is the new dividend. Here, $9 \times 6 = 54$ is the maximum possible product obtained < 57 .

Subtract 54 from 57 and bring down 3.

Step 3. 33 is the new dividend. Here $9 \times 3 = 27$ is the maximum possible product < 33 . Subtract 27 from 33 and bring down 6.

Step 4. Now, 66 is the new partial dividend. Here, $9 \times 7 = 63$ is the maximum possible product < 66 . Subtract 63 from 66.

Step 5. 3 is left which is less than 9 and nothing is left to bring down.

Thus, Quotient = 30637 and Remainder = 3

Checking:

Quotient \times Divisor + Remainder = Dividend
 $30637 \times 9 + 3 = 275736$

$$\Rightarrow 275736 = 275736$$

Thus, the division is correct.

(b) $876048 \div 7$

$$\begin{array}{r} 125149 \\ \hline 876048 \\ -7 \\ \hline 17 \\ -14 \\ \hline 036 \\ -35 \\ \hline 010 \\ -7 \\ \hline 034 \\ -28 \\ \hline 068 \\ -63 \\ \hline 05 \end{array} \quad \begin{array}{l} \text{Dividend} \\ \text{---} \\ \text{Divisor} \end{array} \quad \begin{array}{l} \text{Quotient} \\ \text{---} \\ \text{---} \end{array}$$

Thus, Quotient = 125149 and Remainder = 5.

Checking:

Quotient \times Divisor + Remainder = Dividend
 $125149 \times 7 + 5 = 876048$

$$876043 + 5 = 876048$$

$$876048 = 876048$$

Thus, the division is correct.

(c) $683396 \div 15$

$$\begin{array}{r} 45559 \\ \hline 683396 \\ -60 \\ \hline 83 \\ -75 \\ \hline 083 \\ -75 \\ \hline 089 \\ -75 \\ \hline 146 \\ -135 \\ \hline 011 \end{array} \quad \begin{array}{l} \text{Dividend} \\ \text{---} \\ \text{Divisor} \end{array} \quad \begin{array}{l} \text{Quotient} \\ \text{---} \\ \text{---} \end{array}$$

Thus, $Q = 45559$ and $R = 11$.

Checking:

Quotient \times Divisor + Remainder = Dividend

$$45559 \times 15 + 11 = 683396$$

$$6883385 + 11 = 683396$$

$$683396 = 683396$$

Thus, the division is correct.

(d) and (e) — (Same as above).

(f) $183648 \div 143$

$$\begin{array}{r} \text{Dividend} \\ \text{Divisor} \rightarrow 143 \overline{)183648} (1284 \leftarrow \text{Quotient} \\ \underline{-143} \\ \underline{0406} \\ \underline{-286} \\ \underline{1204} \\ \underline{-1144} \\ \underline{0608} \\ \underline{-572} \\ \underline{036} \leftarrow \text{Remainder} \end{array}$$

Thus, $Q = 1284$ and $R = 36$.

Checking

Quotient \times Divisor + Remainder = Dividend

$$1284 \times 143 + 36 = 183648$$

$$183612 + 36 = 183648$$

$$183648 = 183648$$

Thus, the division is correct.

(g) and (h) — (Same as above).

2. (a) Divisor = 136, Quotient = 75 and

Remainder = 31 (Given)

We know that,

Dividend = Quotient \times Divisor + Remainder

$$= 75 \times 136 + 31$$

$$= 10200 + 31$$

$$= 10231$$

Thus, Dividend = 10,231.

(b) Divisor = 403, Quotient = 801 and

Remainder = 325 (Given)

We know that,

Dividend = Quotient \times Divisor + Remainder

$$= 801 \times 403 + 325$$

$$= 322803 + 325$$

$$= 323128$$

Thus, Dividend = 3,23,128.

3. (a) $789 \div 789 = 1$

(b) $5342 \div 1 = 5342$

(c) $6574 \div 6574 = 1$

(d) $0 \div 218 = 0$

(e) $24 \times 168 = 4032$

4. (a) (iii) $54363 \div 10$

$$\begin{array}{r} 54363 \overline{)5436} \leftarrow \text{--- Q} \\ \underline{-50} \\ \underline{43} \\ \underline{-40} \\ \underline{036} \\ \underline{-30} \\ \underline{063} \\ \underline{-60} \\ \underline{3} \leftarrow \text{--- R} \end{array}$$

Thus, $Q = 5436$ and $R = 3$.

(b) (i) $43033 \div 100$

$$\begin{array}{r} 43033 \overline{)430} \leftarrow \text{--- Q} \\ \underline{-400} \\ \underline{0303} \\ \underline{-300} \\ \underline{033} \leftarrow \text{--- R} \end{array}$$

Thus $Q = 430$ and $R = 33$.

(c) (v) $921735 \div 1000 \Rightarrow Q = 921$ and $R = 735$

(d) (vi) $55569 \div 100 \Rightarrow Q = 555$ and $R = 69$

(e) (ii) $4876 \div 10 \Rightarrow Q = 487$ and $R = 6$

(f) (iv) $697770 \div 1000 \Rightarrow Q = 697$ and $R = 770$

5. (a) Cost of 130 radio sets = ₹299520

Cost of 1 radio set = ₹299520 \div 130 = ₹2304

$$\begin{array}{r} 299520 \overline{)2304} \leftarrow \text{--- Q} \\ \underline{-260} \\ \underline{0395} \\ \underline{-390} \\ \underline{00520} \\ \underline{-520} \\ \underline{0} \leftarrow \text{--- R} \end{array}$$

Thus, cost of 1 radio set is ₹2304.

(b) The product of two numbers = 332878

First number = 826

So, second number = $332878 \div 826 = 403$

$$\begin{array}{r} 332878 \overline{)403} \leftarrow \text{--- Q} \\ \underline{-3304} \\ \underline{002478} \\ \underline{-2478} \\ \underline{0} \leftarrow \text{--- R} \end{array}$$

Thus, other number = 403

(c) Total collection for flood-affected people = ₹98762

Number of people = 437

Amount of money each person got

$$= ₹98762 \div 437 = ₹226$$

$$\begin{array}{r}
 437) \overline{98762} (226 \leftarrow \text{---Q} \\
 -874 \\
 \hline
 1136 \\
 -874 \\
 \hline
 2622 \\
 -2622 \\
 \hline
 0 \leftarrow \text{---R}
 \end{array}$$

Thus, each person got ₹226.

(d) Number of mangoes sold last year = 349300 kg
 Number of mangoes in each box = 35 kg
 Number of boxes used throughout the year
 $= 349300 \div 35 = 9980$

$$\begin{array}{r}
 35) \overline{349300} (9980 \leftarrow \text{---Q} \\
 -315 \\
 \hline
 0343 \\
 -315 \\
 \hline
 0280 \\
 -280 \\
 \hline
 00 \\
 -00 \\
 \hline
 0 \leftarrow \text{---R}
 \end{array}$$

Thus, he used 9980 boxes throughout the year.

Practice Time 2E

1. (a) $31972 \xrightarrow[\text{nearest 10000}]{\text{rounded to}} 30000$

$10322 \xrightarrow[\text{nearest 10000}]{\text{rounded to}} 10000$

Estimated sum

$$\begin{array}{r}
 3 \ 0 \ 0 \ 0 \ 0 \\
 + 1 \ 0 \ 0 \ 0 \ 0 \\
 \hline
 4 \ 0 \ 0 \ 0 \ 0
 \end{array}$$

Actual sum

$$\begin{array}{r}
 3 \ 1 \ 9 \ 7 \ 2 \\
 + 1 \ 0 \ 3 \ 2 \ 2 \\
 \hline
 4 \ 2 \ 2 \ 9 \ 4
 \end{array}$$

The estimated sum is close to the actual sum.

(b) $2575 \xrightarrow[\text{nearest 1000}]{\text{rounded to}} 3000$

$124 \xrightarrow[\text{nearest 100}]{\text{rounded to}} 100$

Estimated Product

$$\begin{array}{r}
 3 \ 0 \ 0 \ 0 \\
 \times \ 1 \ 0 \ 0 \\
 \hline
 3 \ 0 \ 0 \ 0 \ 0 \ 0
 \end{array}$$

Estimated Product

$$\begin{array}{r}
 2 \ 5 \ 7 \ 5 \\
 \times \ 1 \ 2 \ 4 \\
 \hline
 1 \ 0 \ 3 \ 0 \ 0 \\
 5 \ 1 \ 5 \ 0 \ 0 \\
 + 2 \ 5 \ 7 \ 5 \ 0 \ 0 \\
 \hline
 3 \ 1 \ 9 \ 3 \ 0 \ 0
 \end{array}$$

The estimated product is close to the actual product.

(c) $721994 \xrightarrow[\text{nearest 100000}]{\text{rounded to}} 700000$

$66159 \xrightarrow[\text{nearest 10000}]{\text{rounded to}} 70000$

Estimated difference Actual difference

$$\begin{array}{r}
 7 \ 0 \ 0 \ 0 \ 0 \ 0 \\
 - 7 \ 0 \ 0 \ 0 \ 0 \ 0 \\
 \hline
 6 \ 3 \ 0 \ 0 \ 0 \ 0
 \end{array}$$

$$\begin{array}{r}
 7 \ 2 \ 1 \ 9 \ 9 \ 4 \\
 - 6 \ 6 \ 1 \ 5 \ 9 \\
 \hline
 6 \ 5 \ 5 \ 8 \ 3 \ 5
 \end{array}$$

The estimated difference is close to the actual difference.

(d) $2,56,311 \xrightarrow[\text{nearest lakh}]{\text{rounded to}} 300000$

$578 \xrightarrow[\text{nearest 100}]{\text{rounded to}} 600$

Estimated quotient

$300000 \div 600 = 500$

Actual quotient

$$\begin{array}{r}
 578) \overline{256311} (443 \\
 -2312 \\
 \hline
 02511 \\
 -2312 \\
 \hline
 01991 \\
 -1734 \\
 \hline
 0257
 \end{array}$$

Thus, estimated quotient = 500

Actual quotient = 443

2. (a) Cost of washing machine =

$28,675 \xrightarrow[\text{nearest thousand}]{\text{rounded to}} 29,000$

Cost of mobile phone =

$36,435 \xrightarrow[\text{nearest thousand}]{\text{rounded to}} 36,000$

∴ Total cost of both the items

$= 29,000 + 36,000 = 65,000$

(b) Cost of washing machine =

$28,675 \xrightarrow[\text{nearest thousand}]{\text{rounded to}} 29,000$

Cost of airpods

$3,970 \xrightarrow[\text{nearest thousand}]{\text{rounded to}} 4,000$

Difference of the cost of washing machine and airpods $= 29,000 - 4,000 = 25,000$

(c) Total amount spent by Varun

$= 6,29,575 + 28,675 + 36,435 + 3,970$

$$= 6,98,655 \underset{\substack{\text{rounded to} \\ \text{nearest thousand}}}{\underline{\quad}} 6,99,000$$

Thus, Varun spent ₹6,99,000

3. Estimated quotient

$$3,25,870 \rightarrow 300000$$

(Rounding off to the nearest lakh)

$$8543 \rightarrow 9000$$

(Rounding off to the nearest thousand)

$$\text{Estimated quotient} = 300000 \div 9000 = 33$$

Thus, estimated quotient = 33

4. Estimated sum:

$$= 483479 + 567891$$

$$= 480000 + 570000$$

$$= 10,50,000.$$

Actual sum

$$\begin{array}{r} & 4 & 8 & 3 & 4 & 7 & 9 \\ + & 5 & 6 & 7 & 8 & 9 & 1 \\ \hline & 1 & 0 & 5 & 1 & 3 & 7 & 0 \end{array}$$

Thus, actual sum = 10,51,370 and estimated sum = 10,50,000.

$$5. \ 1,439 \underset{\substack{\text{rounded to} \\ \text{nearest 1,000}}}{\underline{\quad}} 1,000$$

$$784 \underset{\substack{\text{rounded to} \\ \text{nearest 100}}}{\underline{\quad}} 800$$

Actual product

$$\begin{array}{r} & & & 1 & 4 & 3 & 9 \\ \times & & & 7 & 8 & 4 \\ \hline & & & 5 & 7 & 5 & 6 \\ & 1 & 1 & 5 & 1 & 2 & 0 \\ + & 1 & 0 & 0 & 7 & 3 & 0 & 0 \\ \hline & 1 & 1 & 2 & 8 & 1 & 7 & 6 \end{array}$$

Estimated product

$$1000 \times 800 = 800000$$

Thus, actual product = 11,28,176 and estimated product = 8,00,000.

6. Number of votes cast in constituency A =

$$23,52,167 \underset{\substack{\text{rounded to} \\ \text{nearest ten lakhs}}}{\underline{\quad}} 20,00,000$$

Number of votes cast in constituency B =

$$30,14,184 \underset{\substack{\text{rounded to} \\ \text{nearest ten lakhs}}}{\underline{\quad}} 30,00,000$$

Difference between the votes cast in these two constituencies

$$= 30,00,000 - 20,00,000 = 10,00,000$$

Practice Time 2F

$$1. 32 - 8 \times 2 = 32 - 16 \text{ (Multiply: } 8 \times 2) \\ = 16 \text{ (Subtraction: } 32 - 16)$$

$$2. 18 + 20 \div 4 = 18 + 5 \text{ (Division: } 20 \div 4) \\ = 23 \text{ (Addition: } 18 + 5)$$

$$3. 15 \times 10 \div 2 = 15 \times 5 \text{ (Division: } 10 \div 2) \\ = 75 \text{ (Multiply: } 15 \times 5)$$

$$4. 35 \times 48 + 2024 = 1680 + 2024 \text{ (Multiply: } 35 \times 48) \\ = 3704 \text{ (Addition: } 1680 + 2024)$$

$$5. 4025 \div 175 + 1362 \\ = 23 + 1362 \text{ (Division: } 4025 \div 175) \\ = 1385 \text{ (Addition: } 23 + 1362)$$

$$6. 16 - 16 \div 2 - 3 = 16 - 8 - 3 \text{ (Division: } 16 \div 2) \\ = 8 - 3 \text{ (Subtraction: } 16 - 8) \\ = 5 \text{ (Subtraction: } 8 - 3)$$

$$7. 8 \times 13 - 4 \times 15 \\ = 104 - 60 \text{ (Multiply: } 8 \times 13 \text{ and } 4 \times 15) \\ = 44 \text{ (Subtraction: } 104 - 60)$$

$$8. 37 - 6 \times 4 + 32 \div 4 \\ = 37 - 6 \times 4 + 8 \text{ (Division: } 32 \div 4) \\ = 37 - 24 + 8 \text{ (Multiply: } 6 \times 4) \\ = 37 + 8 - 24 \\ = 45 - 24 \text{ (Addition: } 37 + 8) \\ = 21 \text{ (Subtraction: } 45 - 24)$$

$$9. 30 - 28 + 36 \div 2 \\ = 30 - 28 + 18 \text{ (Division: } 36 \div 2) \\ = 30 + 18 - 28 \\ = 48 - 28 \text{ (Addition: } 30 + 18) \\ = 20 \text{ (Subtraction: } 48 - 28)$$

$$10. 96 \div 16 + 34 \times 10 - 13$$

$$= 6 + 34 \times 10 - 13 \text{ (Division: } 96 \div 16) \\ = 6 + 340 - 13 \text{ (Multiply: } 34 \times 10) \\ = 346 - 13 \text{ (Addition: } 6 + 340) \\ = 333 \text{ (Subtraction: } 346 - 13)$$

$$11. 3 \times 4 - 45 \div 9 + 12 \times 5$$

$$= 3 \times 4 - 5 + 12 \times 5 \text{ (Division: } 45 \div 9) \\ = 12 - 5 + 60 \text{ (Multiply: } 3 \times 4 \text{ and } 12 \times 5) \\ = 12 + 60 - 5 \\ = 72 - 5 \text{ (Addition: } 12 + 60) \\ = 67 \text{ (Subtraction: } 72 - 5)$$

$$\begin{aligned}
 12. \quad & 70 \div 14 \times 6 - 10 \div 5 + 1 \\
 & = 5 \times 6 - 2 + 1 \quad (\text{Division: } 70 \div 14 \text{ and } 10 \div 5) \\
 & = 30 - 2 + 1 \quad (\text{Multiply: } 5 \times 6) \\
 & = 30 + 1 - 2 \\
 & = 31 - 2 \quad (\text{Addition: } 30 + 1) \\
 & = 29 \quad (\text{Subtraction: } 31 - 2)
 \end{aligned}$$

Practice Time 2G

$$\begin{aligned}
 1. \quad & 63 \div [24 - \{15 - (4 \times 3)\}] \\
 & = 63 \div [24 - \{15 - 12\}] \\
 & \quad (\text{Multiply: } 4 \times 3, \text{ in the parentheses}) \\
 & = 63 \div [24 - 3] \\
 & \quad (\text{Subtraction: } 15 - 12, \text{ in the curly bracket}) \\
 & = 63 \div 21 \\
 & \quad (\text{Subtraction: } 24 - 3, \text{ in the square brackets}) \\
 & = 3 \quad (\text{Division: } 63 \div 21) \\
 2. \quad & [97 + \{30 - (5 \times 2)\}] \times 15 \\
 & = [97 + \{30 - 10\}] \times 15 \\
 & \quad (\text{Multiply: } 5 \times 2, \text{ in the parentheses}) \\
 & = [97 + 20] \times 15 \\
 & \quad (\text{Subtraction: } 30 - 10, \text{ in the curly brackets}) \\
 & = 117 \times 15 \\
 & \quad (\text{Addition: } 97 + 20, \text{ in the square brackets}) \\
 & = 1755 \quad (\text{Multiply: } 117 \times 5) \\
 3. \quad & 17 + [20 \times \{15 - (8 \div 4)\}] \\
 & = 17 + [20 \times \{15 - 2\}] \\
 & \quad (\text{Division: } 8 \div 4, \text{ in the parentheses}) \\
 & = 17 + [20 \times 13] \\
 & \quad (\text{Subtraction: } 15 - 2, \text{ in the curly bracket}) \\
 & = 17 + 260 \\
 & \quad (\text{Multiply: } 20 \times 13, \text{ in the square brackets}) \\
 & = 277 \quad (\text{Addition: } 17 + 260) \\
 4. \quad & 102 \times [12 \div \{65 + 7\}] \\
 & \quad (\text{Division: } 84 \div 12, \text{ in the parentheses}) \\
 & = 102 \times [72 \div 72] \\
 & \quad (\text{Addition: } 65 + 7, \text{ in the curly brackets}) \\
 & = 102 \times 1 \\
 & \quad (\text{Division: } 72 \div 72, \text{ in the square brackets}) \\
 & = 102 \quad (\text{Multiply: } 102 \times 1) \\
 5. \quad & 3982 \times \{45 - (90 \div 2)\} \\
 & = 3982 \times \{45 - 45\} \\
 & \quad (\text{Division: } 90 \div 2, \text{ in the parentheses})
 \end{aligned}$$

$$\begin{aligned}
 & = 3982 \times 0 \\
 & \quad (\text{Subtraction: } 45 - 45, \text{ in the curly brackets}) \\
 & = 0 \quad (\text{Multiply: } 3982 \times 0) \\
 6. \quad & 84 \div [40 - \{15 + (13 - 19)\}] \\
 & = 84 \div [40 - \{15 + 4\}] \\
 & \quad (\text{Subtraction: } 13 - 9, \text{ in the parentheses}) \\
 & = 84 \div [40 - 19] \\
 & \quad (\text{Addition: } 15 + 4, \text{ in the curly brackets}) \\
 & = 84 \div 21 \\
 & \quad (\text{Subtraction: } 40 - 19, \text{ in the square brackets}) \\
 & = 4 \quad (\text{Division: } 84 \div 21) \\
 7. \quad & [25 \times \{33 - (3 \times 10)\}] \div 3 \\
 & = [25 \times \{33 - 30\}] \div 3 \\
 & \quad (\text{Multiply: } 3 \times 10, \text{ in the parentheses}) \\
 & = [25 \times 3] \div 3 \\
 & \quad (\text{Subtraction: } 33 - 30, \text{ in the curly brackets}) \\
 & = 75 \div 3 \\
 & \quad (\text{Multiply: } 25 \times 3, \text{ in the square brackets}) \\
 & = 25 \quad (\text{Division, } 75 \div 3) \\
 8. \quad & 237 + [764 - \{165 + (132 \div 33)\}] \\
 & = 237 + [764 - \{165 + 4\}] \\
 & \quad (\text{Division: } 132 \div 33, \text{ in the parentheses}) \\
 & = 237 + (764 - 169) \\
 & \quad (\text{Addition: } 165 + 4, \text{ in the curly brackets}) \\
 & = 237 + 595 \\
 & \quad (\text{Subtraction: } 764 - 169, \text{ in the square brackets}) \\
 & = 832 \quad (\text{Addition, } 237 + 595) \\
 9. \quad & 80 + [20 \times \{20 - (10 \div 5)\}] \\
 & = 80 + [20 \times \{20 - 2\}] \\
 & \quad (\text{Division: } 10 \div 5, \text{ in the parentheses}) \\
 & = 80 + [20 \times 18] \\
 & \quad (\text{Subtraction: } 20 - 2, \text{ in the curly brackets}) \\
 & = 80 + 360 \\
 & \quad (\text{Multiply: } 20 \times 18, \text{ in the square brackets}) \\
 & = 440 \quad (\text{Addition: } 80 + 360) \\
 10. \quad & 17 \times [96 + \{30 - (11 + 5)\}] \\
 & = 17 \times [96 + \{30 - 16\}] \\
 & \quad (\text{Addition: } 11 + 5, \text{ in the parentheses}) \\
 & = 17 \times [96 + 14] \\
 & = 17 \times 110 \\
 & \quad (\text{Addition: } 96 + 14, \text{ in the square brackets}) \\
 & = 1870 \quad (\text{Multiply: } 17 \times 110)
 \end{aligned}$$

Think and Answer (Page 50)

(a) $7 + 6 \times 8 = 104$ (b) $5 + 3 \times 5 - 5 = 35$
 $(7 + 6) \times 8 = 104$ $(5 + 3) \times 5 - 5 = 35$
 $13 \times 8 = 104$ $8 \times 5 - 5 = 35$
 $104 = 104$ $40 - 5 = 35$
 Correct answer is
 $(7 + 6) \times 8 = 104$ $(5 + 3) \times 5 - 5 = 35$

Practice Time 2H

1. (a) Average = $\frac{\text{Sum of numbers}}{\text{Total numbers}}$
 $= \frac{16 + 24 + 35 + 25 + 20}{5} = \frac{120}{5} = 24$

(b) Average = $\frac{\text{Sum of amounts}}{\text{Total amounts}}$
 $= \frac{\text{₹}120 + \text{₹}56 + \text{₹}108 + \text{₹}32}{4} = \frac{\text{₹}316}{4} = \text{₹}79$

(c) Average = $\frac{80 \text{ cm} + 85 \text{ cm} + 90 \text{ cm}}{3}$
 $= \frac{255 \text{ cm}}{3} = 85 \text{ cm}$

(d) Average = $\frac{8h + 9h + 13h}{3} = \frac{30h}{3} = 10 \text{ hours}$

2. (a) First six even numbers = 2, 4, 6, 8, 10, 12
 Average = $\frac{2 + 4 + 6 + 8 + 10 + 12}{6} = \frac{42}{6} = 7$

(b) First eight counting numbers = 1, 2, 3, 4, 5, 6, 7, 8
 Average = $\frac{1 + 2 + 3 + 4 + 5 + 6 + 7 + 8}{8}$
 $= \frac{36}{8} = 4.5$

(c) First three two-digit numbers = 10, 11, 12
 Average = $\frac{10 + 11 + 12}{3} = \frac{33}{3} = 11$

(d) First six composite numbers = 4, 6, 8, 9, 10, 12
 Average = $\frac{4 + 6 + 8 + 9 + 10 + 12}{6} = \frac{49}{6} = 8.2$

3. The sum of scored in five matches.
 $60 + 44 + 8 + 95 + 110 = 317$

We have, Average scores = $\frac{\text{Sum of scores}}{\text{Number of matches}}$
 $= \frac{317}{5} = 63.4 \text{ runs}$

Thus, average score of 5 matches is 63.4 runs.

4. The sum of 5 numbers = 3840

Average = $\frac{\text{Sum of numbers}}{\text{Total numbers}} = \frac{3840}{5} = 768.$

5. The sum of income of 7 consecutive days

= ₹110 + ₹70 + ₹80 + ₹95 + ₹57 + ₹120 + ₹140
 $= \text{₹}672$

Average = $\frac{\text{Sum of total income}}{\text{Number of consecutive days}}$

$= \frac{\text{₹}672}{7} = \text{₹}96$

Thus, average income of 7 consecutive days is ₹96.

6. Number of wickets per match = 4

Number of wickets taken by the bowler in 5 matches = $4 \times 5 = 20$ wickets

Thus, number of wickets taken by him is 20.

7. The total marks obtained in 5 subjects = 460

We have, average marks = $\frac{\text{Total marks}}{\text{Number of subjects}}$

$= \frac{460}{5} = 92 \text{ marks}$

Thus, the average marks obtained in five subjects by Anamika is 92.

8. Let the number of students present on Friday = x

Average of five successive days = 700 (Given)

Average = $\frac{725 + 635 + 735 + 625 + x}{5}$
 $= \frac{700}{1} = \frac{2720 + x}{5}$

By cross multiplying,

$$3500 = 2720 + x$$

$$\therefore x = 3500 - 2720 = 780$$

Thus, 780 students present on Friday.

Maths Connect (Page 53)

The total area of the earth = Area of land + Area of water = 148326000 sq. km + 361740000 sq. km = 510066000 sq. km.

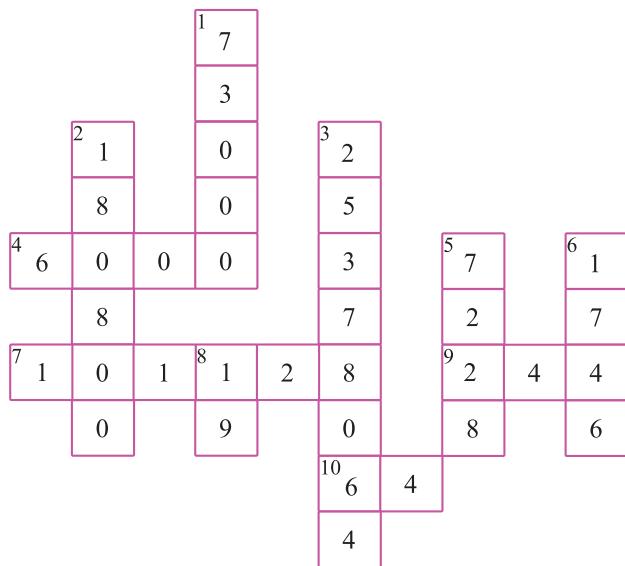
Brains Sizzlers (Page 54)

$$\begin{array}{r}
 \times \begin{array}{r} 1 & 1 & 1 & 1 \\ 1 & 1 & 1 \\ \hline 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 0 \\ \hline 1 & 1 & 1 & 1 & 0 & 0 \\ \hline 1 & 2 & 3 & 3 & 2 & 1 \end{array}
 \end{array}$$

$$\begin{array}{r}
 2. \quad 124 \overline{)3 \ 4 \ 6 \ 8 \ 9 \ 6} \quad (\quad 2 \ 7 \ 9 \ 7 \\
 - 2 \ 4 \ 8 \\
 \hline 9 \ 8 \ 8 \\
 - 8 \ 6 \ 8 \\
 \hline 1 \ 2 \ 0 \ 9 \\
 - 1 \ 1 \ 1 \ 6 \\
 \hline 9 \ 3 \ 6 \\
 - 8 \ 6 \ 8 \\
 \hline 6 \ 8
 \end{array}$$

Thus, $A = 1$

Maths Fun (Page 54)



Chapter Assessment

1. (a) (i) Target of toys to sell by the company
 $= 585900$
 Number of sold toys $= 4,99,729$
 Number of toys fell short of the target $=$

$$\begin{array}{r}
 \text{L} \quad \text{TTh} \quad \text{Th} \quad \text{H} \quad \text{T} \quad \text{O} \\
 \hline
 & (17) & & (9) & & \\
 (4) & (7) & (15) & (8) & (16) & (10) \\
 5 & 8 & 5 & 8 & 8 & 8 \\
 - & 4 & 9 & 9 & 7 & 2 & 9 \\
 \hline
 0 & 8 & 6 & 1 & 7 & 1
 \end{array}$$

Thus, 86171 toys fell short of the target.

(b)(iii)

$573 \frac{\text{rounded to}}{\text{nearest 100}} 600 \text{ and } 133 \frac{\text{rounded to}}{\text{nearest 100}} 100$

Estimated product $= 600 \times 100 = 60000$

$$\begin{array}{r}
 \times \begin{array}{r} 6 & 0 & 0 \\ 1 & 0 & 0 \\ \hline 0 & 0 & 0 \\ 0 & 0 & 0 \\ \hline 6 & 0 & 0 \\ 6 & 0 & 0 \end{array}
 \end{array}$$

Thus, estimated product of 573 and 133 is 60000.

(c) (i) Cost of a house $= ₹1,78,25,198$

The house is sold at ₹7,95,000 less than the actual cost.

Therefore he sells the house at
 $₹1,78,25,194 - ₹7,95,000$

$$\begin{array}{r}
 \text{C} \quad \text{TL} \quad \text{L} \quad \text{TTh} \quad \text{Th} \quad \text{H} \quad \text{T} \quad \text{O} \\
 \hline
 & & (7) & (12) & & & & \\
 1 & 7 & 8 & 2 & 5 & 1 & 9 & 4 \\
 - & & 7 & 9 & 5 & 0 & 0 & 0 \\
 \hline
 1 & 7 & 0 & 3 & 0 & 1 & 9 & 4
 \end{array}$$

Thus, he sells the house at ₹1,70,30,194.

(d)(iii) $11 \div 11 + 11 \times 11$

$$\begin{aligned}
 &= 1 + 11 \times 11 \text{ (Division: } 11 \div 11) \\
 &= 1 + 121 \text{ (Multiply: } 11 \times 11) \\
 &= 122 \text{ (Addition: } 1 + 121)
 \end{aligned}$$

2. Number of votes found valid $= 1,29,52,179$

Number of votes found invalid $= 12,68,142$

Number of voters who did not cast their votes
 $= 72,898$

Number of votes registered in all $=$

$$\begin{array}{r}
 \text{C} \quad \text{TL} \quad \text{L} \quad \text{TTh} \quad \text{Th} \quad \text{H} \quad \text{T} \quad \text{O} \\
 \hline
 (1) \quad (1) \quad (1) \quad (1) \quad (2) \quad (1) \\
 1 \quad 2 \quad 9 \quad 5 \quad 2 \quad 1 \quad 7 \quad 9 \\
 - & 1 & 2 & 6 & 8 & 1 & 4 & 2 \\
 \hline
 & & 7 & 2 & 8 & 9 & 8 \\
 \hline
 1 & 4 & 2 & 9 & 3 & 2 & 1 & 9
 \end{array}$$

Thus, 1,42,93,219 votes registered in all.

3. Amount of rupees collected for charity fund in one year $= ₹12,35,820$

Amount of rupees collected for charity fund in another year $= ₹28,25,320$

Total amount of rupees collected for charity fund in both years

$$= ₹12,35,820 + ₹28,25,320 = ₹40,61,140$$

TL	L	TTh	Th	H	T	O
(1)		(1)	(1)			
₹ 1	2	3	5	8	2	0
+	₹ 2	8	2	5	3	0
₹ 4	0	6	1	1	4	0

Amount of rupees use out of the total amount in two years = ₹26,72,500

Amount of rupees left with now
= ₹40,611,40 – ₹26,72,500

TL	L	TTh	Th	H	T	O
(1)		(1)	(1)			
₹ 4	0	6	1	1	4	0
– ₹ 2	6	7	2	5	0	0
₹ 1	3	8	8	6	4	0

Thus, ₹13,88,640 money one they left with now.

- No. of days in month of October = 31 days
No. of days in month of November = 30 days
No. of days in month of December = 31 days
Total no. of days in these three months
= (31 + 30 + 31) days = 92 days
Milk booth sells of milk in a day = 1258 litres
Milk booth sells of milk in three months
= (1258×92) litres = 115736 litres
Cost of one litre milk = 48
Cost of 115736 litres milk
= ₹(115736 × 48) = ₹55,55,328
Thus, the cost of total milk sold in these three months = ₹55,55,328.

- Total leaves of bread = 1,30,893

Number of bakeries = 23

Quantity of leaves of bread each bakery got
= $130893 \div 23 = 5691$

23	130893	(5691)
– 115		
158		
– 138		
209		
– 207		
23		
– 23		
0		

Thus, 5691 leaves of bread each bakery got.

- Distance covered in 175 days = 43400 km
Distance covered in one day = $43400 \div 175$

$$\begin{array}{r} 175 \\ \overline{)43400} \\ -350 \\ \hline 840 \\ -700 \\ \hline 1400 \\ -1400 \\ \hline 0 \end{array}$$

Thus, distance covered in each day is 248 km

- No. of pages read on first day = 36
No. of pages read on second day = 48
No. of pages read on third day = 90
Total no. of pages in three days
= $36 + 48 + 90 = 174$

$$\text{Average number of pages} = \frac{174}{3} = 58$$

Thus, average number of pages read by Saumya per day is 58 pages.

- The five likely values of the number of people in the stadium to round off number to 35,000 = 34999, 35400, 35499, 35444, 34766 (Answer may vary)

- Ranjana reads 128 pages in 2 days

$$\therefore \text{Ranjana reads in 1 day} = \frac{128}{2} = 64 \text{ pages}$$

Apurv reads 372 pages in 4 days

$$\therefore \text{Apurv reads in 1 day} = \frac{372}{4} = 93 \text{ pages}$$

and Nikhil reads 574 pages in 1 week

$$\therefore \text{Nikhil reads in 1 day} = \frac{574}{7} = 82 \text{ pages}$$

Thus, Apurv reads the fastest.

- Number of books Yash and his 4 friends read each for the year = 24
Each book has 295 average number of pages.
 \therefore Number of pages they all read in total of that year
= $295 \times 5 \times 24 = 295 \times 120 = 35400$
Thus, they read 35,400 pages in total that year.

- (a) $(17 - 7) \times 5$ (b) $(26 + 8) - 9$
(c) $(72 - 16) + 25$ (d) $(13 - 7) \div 36$
(e) $(16 + 8) \div (9 - 3)$

- Raj has 4 sets of 5 stamps i.e., 4×5 stamps

Number of stamps he gave to Sanjay = 6

\therefore Number of stamps left with Raj = $4 \times 5 - 6$

13. Total amount of money with Divya = ₹500

Cost of calculator = ₹210

Cost of 3 blue pens = ₹25 × 3 = ₹75

Cost of a maths notebook = ₹48

Total cost of these items

$$= ₹210 + ₹75 + ₹48 = ₹333$$

Amount of money left with her

$$= ₹500 - ₹333 = ₹167$$

$$\begin{aligned} 14. (a) 18 - [6 + \{40 - (3 \times 4) - (8 + 6)\} - 2] \\ &= 18 - [6 + \{40 - 12 - 14\} - 2] \\ &= 18 - [6 + \{28 - 14\} - 2] \\ &= 18 - [6 + 14 - 2] \\ &= 18 - [20 - 2] \\ &= 18 - 18 \\ &= 0 \end{aligned}$$

$$\begin{aligned} (b) \{100 + (16 \times 3 - 14)\} + 99 \div 9 \\ &= \{100 + (48 - 14)\} + 99 \div 9 \\ &= \{100 + 34\} + 99 \div 9 \\ &= 134 + 99 \div 9 \\ &= 134 + 11 \\ &= 145 \end{aligned}$$

$$15. (a) 125 \div 25 + 3 \times 10 = 5 + 30 = 35$$

$$\text{So, } 125 \div 25 + 3 \times 10 = 35$$

$$(b) 78 \div 3 + 16 - 4 = 26 + 12 = 38$$

$$\text{So, } 78 \div 3 + 16 - 4 = 38$$

$$(c) 20 + 5 \times 6 - 30 \div 6 = 20 + 30 - 5 = 50 - 5 = 45$$

$$\text{So, } 20 + 5 \times 6 - 30 \div 6 = 45$$

$$(d) 46 \div 2 - 8 \times 2 = 23 - 16 = 7$$

$$\text{So, } 46 \div 2 - 8 \times 2 = 7$$

Mental Maths (Page 56)

1. (d) Smallest 4-digit number = 1000

Smallest 5-digit number = 100000

Smallest 6-digit number = 1000000

Sum = 1000 + 100000 + 1000000

$$= 111000$$

2. (c) $786200 \div 100 = 7862$

$$\begin{array}{r} 100 \overline{)786200} (7862 \\ -700 \downarrow \\ \hline 862 \\ -800 \downarrow \\ \hline 620 \\ -600 \downarrow \\ \hline 200 \\ -200 \\ \hline 0 \end{array}$$

3. (a) $493685 \div 1000$

$$\begin{array}{r} 100 \overline{)493685} (493 \\ -4000 \downarrow \\ \hline 9368 \\ -9000 \downarrow \\ \hline 3685 \\ -3000 \downarrow \\ \hline 685 \leftarrow \text{--- R} \end{array}$$

Remainder = 685

4. (d) \div is performed first when simplifying a numerical expression.

5. (b) $8 \times 8 - 8 = 64 - 8 = 56$.

CHAPTER 3 : FACTORS AND MULTIPLES

Let's Recall

1. Factors of 67 = 1×67 and 67×1 .

Thus, factors of 67 are 1 and 67.

2. Multiples of 7 = 35, 42, 49, 77, 56.

3. All the numbers between 20 and 60 whose factors are 2, 3 and 5 is 30.

4. (a) True

Factors of 127 = 1×127 .

Clearly, 127 has two factors, 1 and the number itself. So, it is a prime number.

(b) False

In 533, $5 + 3 + 3 = 11$.

So, 11 is not divisible by 3.

Thus, 533 is not divisible by 3.

(c) A factor of a number is an exact divisor of that number.

So, divide 134 by 4.

Clearly, 4 is not the exact divisor of 134.

Hence, 4 is not a factor of 134.

(d) If 1210 is multiple of 10 and 11, then it should be completely divisible by 10 and 11.

Here, both remainder is 0, so, 1210 is completely divisible by 10 and 11.

$$\begin{array}{r} 10 \overline{)1210} (121 \\ -10 \downarrow \\ \hline 21 \\ -20 \downarrow \\ \hline 10 \\ -10 \\ \hline 0 \end{array} \quad \begin{array}{r} 11 \overline{)1210} (110 \\ -11 \downarrow \\ \hline 11 \\ -11 \downarrow \\ \hline 00 \\ -00 \\ \hline 0 \end{array}$$

Hence, 1210 is multiple of 10 and 11.

Practice Time 3A

1. (a) 1 is a factor of every number.
- (b) The greatest factor of a number is the number itself.
- (c) The number 1 has only one factor.
- (d) When a number is divided by its factor, the remainder is 0.
- (e) The smallest number which has exactly two factors 1 and the number itself is 2.
- (f) The factor of a non-zero number is either less than or equal to the number.
- (g) The factors of 6 are 1, 2, 3, 6.

2. (a) $1 \times 9 = 9$; 1 and 9 are the factors of 9.

$3 \times 3 = 9$; 3 and 3 are the factors of 9.

$9 \times 1 = 9$; 9 and 1 are the factors of 9.

Since, there are no pair of numbers left whose product is 9.

So, 1, 3 and 9 are all possible factors of 9.

(b) $1 \times 16 = 16$; 1 and 16 are the factors of 16.

$2 \times 8 = 16$; 2 and 8 are the factors of 16.

$4 \times 4 = 16$; 4 and 4 are the factors of 16.

$8 \times 2 = 16$; 8 and 2 are the factors of 16.

$16 \times 1 = 16$; 16 and 1 are the factors of 16.

Since, there are no pair of numbers left whose product is 16.

So, 1, 2, 4, 8 and 16 are all possible factors of 16.

(c) $1 \times 28 = 28$

$2 \times 14 = 28$

$4 \times 7 = 28$

$7 \times 4 = 28$

$14 \times 2 = 28$

$28 \times 1 = 28$

Thus, the factors of 28 are 1, 2, 4, 7, 14 and 28.

(d) $1 \times 32 = 32$

$2 \times 16 = 32$

$4 \times 8 = 32$

$8 \times 4 = 32$

$16 \times 2 = 32$

$32 \times 1 = 32$

Thus, the factors of 32 are 1, 2, 4, 8, 16 and 32.

(e) to (j)—(Same as above).

3. A factor of a number is an exact divisor of that number. So, divide 1004 by 9. Clearly, 9 is not the exact divisor of 1004.

Hence, 9 is not a factor of 1004.

$$\begin{array}{r} 9 \overline{)1004} (111 \\ - 9 \\ \hline 10 \\ - 9 \\ \hline 14 \\ - 9 \\ \hline 5 \end{array}$$

4. (a) Divide 148 by 8.

Since, the division of 148 by 8 leaves a remainder 4. So, 8 is not a factor of 148.

$$\begin{array}{r} 8 \overline{)148} (18 \leftarrow Q \\ - 8 \\ \hline 68 \\ - 64 \\ \hline 4 \leftarrow R \end{array}$$

(b) Divide 296 by 16.

Since, the division of 296 by 16 leaves a remainder 8. So, 16 is not a factor of 296.

$$\begin{array}{r} 16 \overline{)296} (18 \leftarrow Q \\ - 16 \\ \hline 136 \\ - 128 \\ \hline 08 \leftarrow R \end{array}$$

(c) Divide 342 by 24.

Since, the division of 342 by 24 leaves a remainder 6. So, 24 is not a factor of 342.

$$\begin{array}{r} 24 \overline{)342} (14 \leftarrow Q \\ - 24 \\ \hline 102 \\ - 96 \\ \hline 06 \leftarrow R \end{array}$$

(d) Divide 441 by 21.

Since, the division of 441 by 21 leaves no remainder. So, 21 is a factor of 441.

$$\begin{array}{r} 21 \overline{)441} (21 \leftarrow Q \\ - 42 \\ \hline 021 \\ - 21 \\ \hline 0 \leftarrow R \end{array}$$

Quick Check (Page 61)

(a) (ii) (b) (iii) (c) (iv) (d) (v) (e) (i)

Think and Answer (Page 62)

Multiples of 13 between 100 and 200 are: 104, 117, 130, 143, 156, 169, 182, 195. These are 8 in number.

Practice Time 3B

1. (a) 7 is the smallest multiple of 7.

(b) Multiples of an even number is a/an even number.

(c) Every number is a multiple of 1 and itself.

(d) 0 is the multiple of every non-zero number.

(e) There are 9 multiples of 10 between 1 and 100.

2. (a) We know that, $11 \times 1 = 11$, $11 \times 2 = 22$, $11 \times 3 = 33$, $11 \times 4 = 44$ and $11 \times 5 = 55$.

Thus, the first five multiples of 11 are 11, 22, 33, 44 and 55.

(b) We know that, $13 \times 1 = 13$, $13 \times 2 = 26$, $13 \times 3 = 39$, $13 \times 4 = 52$ and $13 \times 5 = 65$.

Thus, the first five multiples of 13 are 13, 26, 39, 52 and 65.

(c) We know that, $18 \times 1 = 18$, $18 \times 2 = 36$, $18 \times 3 = 54$, $18 \times 4 = 72$ and $18 \times 5 = 90$.

Thus, the first five multiples of 18 are 18, 36, 54, 72 and 90.

(d) and (e)—Same as above.

3. (a) We know that, $8 \times 48 = 384$.
Thus, the 8th multiple of 48 is 384.

(b) We know that, $10 \times 50 = 500$.
Thus, the 10th multiple of 50 is 500.

(c) Same as above.

(d) We know that, $2 \times 9 = 18$, $4 \times 9 = 36$, $6 \times 9 = 54$, $8 \times 9 = 72$ and $10 \times 9 = 90$.
Thus, the first five even multiples of 9 are 18, 36, 54, 72 and 90.

(e) We know that, $1 \times 11 = 11$, $3 \times 11 = 33$, $5 \times 11 = 55$, $7 \times 11 = 77$ and $9 \times 11 = 99$.
Thus, the first five odd multiples of 11 are 11, 33, 55, 77 and 99.

4. (a) The multiples 11 less than 200 are 11, 22, 33, 44, 55, 66, 77, 88, 99, 110, 121, 132, 143, 154, 165, 176, 187 and 198.

(b) The multiples 25 between 100 and 200 are 125, 150, 175 and 200.

(c) The multiples of 15 are 15, 30, 45, 60, 75 and 90.

5. (a) If 238 is a multiple of 8, then it should be completely divisible by 8.
Here, remainder is 6. So, 238 is not completely divisible by 8.
Hence, 238 is not a multiple of 8.

(b) If 196 is a multiple of 16, then it should be completely divisible by 16.
Here, remainder is 4. So, 196 is not completely divisible by 16.
Hence, 196 is not a multiple of 16.

(c) If 386 is a multiple of a, then it should be completely divisible by 9.
Here, remainder is 8. So, it is not completely divisible by 9. Hence, 386 is not divisible by 9.

(d) If 1440 is a multiple of 12, then it should be completely divisible by 12.
Here, remainder is 0, 1440 is completely divisible by 12.
Hence, 1440 is a multiple of 12.

$$\begin{array}{r} 8)238(29 \\ -16 \\ \hline 78 \\ -72 \\ \hline 06 \end{array}$$

$$\begin{array}{r} 16)196(12 \\ -16 \\ \hline 036 \\ -32 \\ \hline 04 \end{array}$$

$$\begin{array}{r} 9)386(42 \\ -36 \\ \hline 26 \\ -18 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 12)1440(120 \\ -12 \\ \hline 24 \\ -24 \\ \hline 00 \\ -00 \\ \hline 0 \end{array}$$

If the digit at ones place is 0, 2, 4, 6 or 8, it is divisible by 2.

The digit at ones place is 5. So, it is not divisible by 2.

Thus, 1605 is not divisible by 2.

Divisible by 3.

Given number is 1605.

If the sum of the digits of a number is divisible by 3, then the number is divisible by 3.

Here, $1 + 6 + 0 + 5 = 12$, it is divisible by 3.

Thus, 1605 is divisible by 3.

Divisible by 4.

Given number is 1605.

If the number formed by last two digits (tens and ones digit) of the number is divisible by 4, then the number is divisible by 4.

Here, 05 is not divisible by 4.

Thus, 1605 is not divisible by 4.

Divisible by 5.

Given number is 1605.

If the digit at ones place of the number is either 5 or 0, the number is divisible by 5.

Here, the ones digit is 5.

Thus, 1605 is divisible by 5.

Divisible by 6.

Given number is 1605.

A number is divisible by 6, if it is divisible by both 2 and 3.

Ones digit is 5, it is neither divisible by 2 nor by 3.

Thus, 1605 is not divisible by 6.

Divisible by 9.

Given number is 1605.

If the sum of digits of a number is divisible by 9, then the number divisible by 9.

Here, $1 + 6 + 0 + 5 = 12$, which is not divisible by 9.

Thus, 1605 is not divisible by 9.

Divisible by 10.

Given number is 1605.

If the digit at ones place is 0, the number is divisible by 10.

Here, the digit at ones place is 5, it is not divisible by 10.

Thus, 1605 is not divisible by 10.

Practice Time 3C

1. (b) Divisible by 2.

Given number = 1605.

(c) to (k) —(Same as above).

Number	Divisible by						
	2	3	4	5	6	9	10
(a) 1359	✗	✓	✗	✗	✗	✓	✗
(b) 1605	✗	✓	✗	✓	✗	✗	✗
(c) 3420	✓	✓	✓	✓	✓	✓	✓
(d) 6543	✗	✓	✗	✗	✗	✓	✗
(e) 5004	✓	✓	✓	✗	✓	✓	✗
(f) 7625	✗	✗	✗	✓	✗	✗	✗
(g) 4790	✓	✗	✗	✓	✗	✗	✓
(h) 5423	✗	✗	✗	✗	✗	✗	✗
(i) 9963	✗	✓	✗	✗	✗	✓	✗
(j) 6739	✗	✗	✗	✗	✗	✗	✗
(k) 8400	✓	✓	✓	✓	✓	✗	✓

2. We know that, if the difference of sum of digits at odd places and sum of digits at even places is 0 or divisible by 11, then the number is divisible by 11.

(a) Given number is 28316.

As, $[(2 + 3 + 6) - (8 + 1)] = (11 - 9) = 2$, it is not divisible by 11.

Thus, 28316 is not divisible by 11.

(b) Given number is 84535.

As, $[(8 + 5 + 5) - (4 + 3)] = (18 - 7) = 11$, which is divisible by 11.

Thus, 84535 is divisible by 11.

(c) Given number is 19026.

As, $[(1 + 0 + 6) - (9 + 2)] = (7 - 11)$, which is not divisible by 11.

Thus, 19026 is not divisible by 11.

Practice Time 3D

1. (a) False (b) False (c) True
 (d) True (e) False (f) False

2. (a) 97 is the only prime number between 90 and 100.

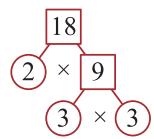
(b) 2 is the smallest and only even prime number.

(c) There are 25 prime numbers between 1 and 100.

(d) The prime factors of 32 are $2 \times 2 \times 2 \times 2 \times 2$.

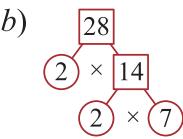
(e) 9 is the smallest odd composite number.

3. (a)



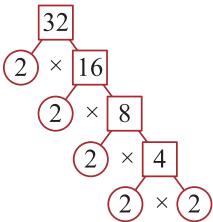
Therefore, $18 = 2 \times 3 \times 3$.

(b)



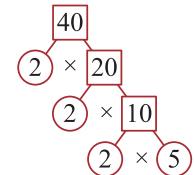
Therefore, $28 = 2 \times 2 \times 7$.

(c)



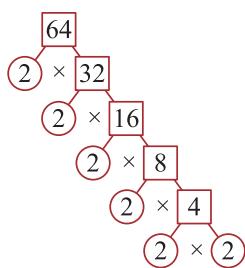
Therefore, $32 = 2 \times 2 \times 2 \times 2 \times 2$.

(d)



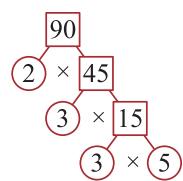
Therefore, $40 = 2 \times 2 \times 2 \times 5$.

(e)



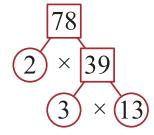
Therefore, $64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$.

(f)



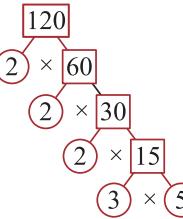
Therefore, $90 = 2 \times 3 \times 3 \times 5$.

(g)



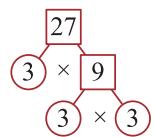
Therefore, $78 = 2 \times 3 \times 13$.

(h)



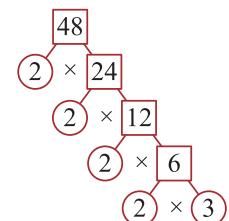
Therefore, $120 = 2 \times 2 \times 3 \times 5$.

4. (a)



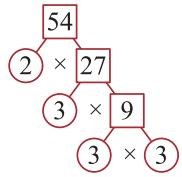
Therefore, $27 = 3 \times 3 \times 3$.

(b)



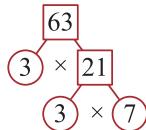
Therefore, $48 = 2 \times 2 \times 2 \times 2 \times 3$.

(c)



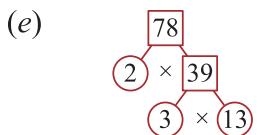
Therefore, $54 = 2 \times 3 \times 3 \times 3$.

(d)



Therefore, $63 = 3 \times 3 \times 7$.

Detailed Solutions



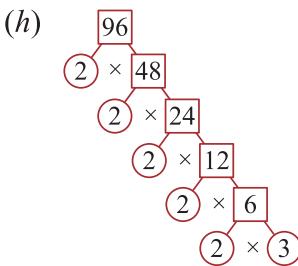
Therefore, $78 = 2 \times 3 \times 13$.



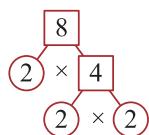
Therefore, $91 = 7 \times 13$.



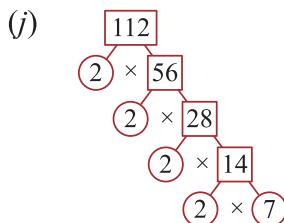
Therefore, $65 = 5 \times 13$.



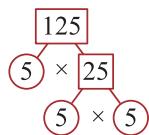
Therefore, $96 = 2 \times 2 \times 2 \times 3$.



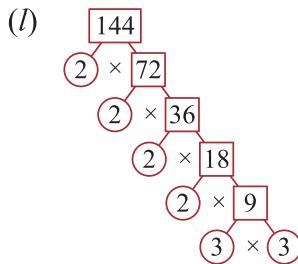
Therefore, $8 = 2 \times 2 \times 2$.



Therefore, $112 = 2 \times 2 \times 2 \times 2 \times 7$.



Therefore, $125 = 5 \times 5 \times 5$.



Therefore, $144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$.

Practice Time 3E

1. (a) **Step 1.** List the factors of the first number, that is, 18.

Factors of 18 are 1, 2, 3, 6, 9 and 18.

Step 2. List the factors of the second number, that is, 24.

Factors of 24 are 1, 2, 3, 4, 6, 8 and 12.

Step 3. List the common factors of both the numbers.

Common factors of 18 and 24 are 1, 2, 3 and 6.

(b) **Step 1.** List the factors of the first number, that is, 21.

Factors of 21 are 1, 3, 7 and 21.

Step 2. List the factors of the second number, that is, 36.

Factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18 and 36.

Step 3. List the common factors of both the numbers.

Common factors of 21 and 36 are 1 and 3.

(c) and (d) — (Same as above).

2. (a) **Step 1.** List the factors of the first number, that is, 15.

Factors of 15 are 1, 3, 5 and 15.

Step 2. List the factors of the second number, that is, 15.

Factors of 20 are 1, 2, 4, 5, 10 and 20.

Step 3. List the common factors of both the numbers.

Common factors of 15 and 20 are 1, 5.

Step 4. Choose the highest common factor, that is, 5.

Thus, the highest common factor (HCF) of 15 and 20 is 5.

(b) **Step 1.** List the factors of the first number, that is, 12.

Factors of 12 are 1, 2, 3, 4, 6 and 12.

Step 2. List the factors of the second number, that is, 18.

Factors of 18 are 1, 2, 3, 6, 9 and 18.

Step 3. List the common factors of both the numbers.

Common factors of 12 and 18 are 1, 2, 3 and 6.

Step 4. Choose the highest common factor, that is, 6.

Thus, the highest common factor (HCF) of 12 and 18 is 6.

(c) **Step 1.** List the factors of the first number, that is, 33.

Factors of 33 are 1, 3, 11 and 33.

Step 2. List the factors of the second number, that is, 55.

Factors of 55 are 1, 5 and 11.

Step 3. List the common factors of both the numbers.

Common factors of 33 and 55 are 1 and 11.

Step 4. Choose the highest common factor, that is, 11.

Thus, the highest common factor (HCF) of 33 and 55 is 11.

(d) **Step 1.** List the factors of the first number, that is, 35.

Factors of 35 are 1, 5, 7 and 35.

Step 2. List the factors of the second number, that is, 42.

Factors of 42 are 1, 2, 3, 6, 7, 14, 21 and 42.

Step 3. List the common factors of both the numbers.

Common factors of 35 and 42 are 1 and 7.

Step 4. Choose the highest common factor (HCF) of 35 and 42 is 7.

(e) and (f) — (Same as above).

(g) **Step 1.** List the factors of the first number, that is, 18.

Factors of 18 are 1, 2, 3, 6, 9 and 18.

Step 2. List the factors of the second number, that is, 42.

Factors of 24 are 1, 2, 3, 6, 8, 12 and 24.

Step 3. List the factors of third numbers, that is, 32.

Factors of 32 are 1, 2, 4, 8, 16 and 32.

Step 4. List the common factors of first to third numbers.

Common factors of 18, 24 and 32 are 1 and 2.

Step 5. Choose the highest common factor, that is, 2.

Thus, the highest common factor (HCF) of 18, 24 and 32 is 2.

(h) to (l) — (Same as above).

$$\begin{array}{c|c} 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$15 = 3 \times 5$$

$$\begin{array}{c|c} 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$24 = 2 \times 2 \times 2 \times 3$$

The common factors of 15 and 24 is 3.

∴ HCF of 15 and 24 = 3.

$$\begin{array}{c|c} 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$18 = 2 \times 3 \times 3$$

$$\begin{array}{c|c} 2 & 90 \\ \hline 3 & 45 \\ \hline 3 & 15 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$90 = 2 \times 3 \times 3 \times 5$$

The common factors of 18 and 90 are 2, 3 and 3.

∴ HCF of 18 and 90 = $2 \times 3 \times 3 = 18$.

$$\begin{array}{c|c} 2 & 32 \\ \hline 2 & 16 \\ \hline 2 & 8 \\ \hline 2 & 4 \\ \hline 2 & 2 \\ \hline & 1 \end{array}$$

$$32 = 2 \times 2 \times 2 \times 2 \times 2$$

$$40 = 2 \times 2 \times 2 \times 5$$

The common factors of 32 and 40 are 2, 2 and 2.

∴ HCF of 32 and 40 = $2 \times 2 \times 2 = 8$.

$$\begin{array}{c|c} 2 & 42 \\ \hline 3 & 21 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

$$42 = 2 \times 3 \times 7$$

$$56 = 2 \times 2 \times 2 \times 7$$

The common factors of 42 and 56 are 2 and 7.

∴ HCF of 42 and 56 = $2 \times 7 = 14$.

(e) and (f) — (Same as above).

$$\begin{array}{c|c} 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$12 = 2 \times 2$$

$$24 = 2 \times 2 \times$$

$$48 = 2 \times 2 \times 2 \times$$

$$\times 3$$

$$2 \times 3$$

$$\times 2 \times 3$$

$$\begin{array}{c|c} 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$24 = 2 \times 2 \times$$

$$2 \times 3$$

$$\times 2 \times 3$$

$$48 = 2 \times 2 \times 2 \times$$

$$\times 3$$

The common factors of 12, 24 and 48 are 2, 2 and 3.

∴ HCF of 12, 24 and 48 = $2 \times 2 \times 3 = 12$.

$$(h) \begin{array}{|c|c|} \hline 2 & 22 \\ \hline 11 & 11 \\ \hline 1 & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 3 & 33 \\ \hline 11 & 11 \\ \hline 1 & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 2 & 66 \\ \hline 3 & 33 \\ \hline 11 & 11 \\ \hline 1 & \\ \hline \end{array}$$

$$22 = 2 \times 11 \quad 33 = 3 \times 11 \quad 66 = 2 \times 3 \times 11$$

The common factors of 22, 33 and 66 is 11.

∴ HCF of 22, 33 and 66 = 11.

$$(i) \begin{array}{|c|c|} \hline 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline 1 & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 2 & 36 \\ \hline 2 & 18 \\ \hline 3 & 9 \\ \hline 3 & 3 \\ \hline 1 & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 2 & 56 \\ \hline 2 & 28 \\ \hline 2 & 14 \\ \hline 7 & 7 \\ \hline 1 & \\ \hline \end{array}$$

$$24 = 2 \times 2 \times 2 \times 3 \quad 36 = 2 \times 2 \times 3 \times 3 \quad 56 = 2 \times 2 \times 2 \times 7$$

The common factors of 24, 36 and 56 are 2 and 2.

∴ HCF of 24, 36 and 56 = $2 \times 2 = 4$.

$$(j) \begin{array}{|c|c|} \hline 2 & 22 \\ \hline 11 & 11 \\ \hline 1 & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 2 & 66 \\ \hline 3 & 33 \\ \hline 11 & 11 \\ \hline 1 & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 3 & 99 \\ \hline 3 & 33 \\ \hline 11 & 11 \\ \hline 1 & \\ \hline \end{array}$$

$$22 = 2 \times 11 \quad 66 = 2 \times 3 \times 11 \quad 99 = 3 \times 3 \times 11$$

The common factors of 22, 66 and 99 is 11.

∴ HCF of 22, 66 and 99 = 11.

(k) to (l) — (Same as above).

4. (a) HCF of 21 and 63.

$$\begin{array}{r} 21 \overline{)63}(3 \\ -63 \\ \hline 0 \end{array}$$

Thus, HCF of 21 and 63 is 21.

(b) HCF of 35 and 49.

$$\begin{array}{r} 35 \overline{)49}(1 \\ -35 \\ \hline 14 \overline{)35}(2 \\ -28 \\ \hline 7 \overline{)14}(2 \\ -14 \\ \hline 0 \end{array}$$

Thus, HCF of 35 and 49 is 7.

(c) HCF of 92 and 132.

$$\begin{array}{r} 92 \overline{)132}(1 \\ -92 \\ \hline 40 \overline{)92}(2 \\ -80 \\ \hline 12 \overline{)40}(3 \\ -36 \\ \hline 4 \overline{)12}(3 \\ -12 \\ \hline 0 \end{array}$$

Thus, HCF of 92 and 132 is 4.

(d) First find the HCF of 36 and 54.

$$\begin{array}{r} 36 \overline{)54}(1 \\ -36 \\ \hline 18 \overline{)36}(2 \\ -36 \\ \hline 0 \end{array}$$

∴ HCF of 36 and 54 = 18.

$$\begin{array}{r} 18 \overline{)72}(4 \\ -72 \\ \hline 0 \end{array}$$

Thus, HCF of 36, 54 and 72 is 18.

(e) First find the HCF of 132 and 140.

$$\begin{array}{r} 132 \overline{)140}(1 \\ -132 \\ \hline 8 \overline{)132}(16 \\ -8 \\ \hline 52 \\ -48 \\ \hline 4 \overline{)8}(2 \\ -8 \\ \hline 0 \end{array}$$

∴ HCF of 132 and 140 = 4.

Now, we find the HFC of 4 and 250.

$$\begin{array}{r} 4 \overline{)250}(62 \\ -24 \\ \hline 10 \\ -8 \\ \hline 2 \overline{)4}(2 \\ -4 \\ \hline 0 \end{array}$$

Thus, HCF of 132, 140 and 250 is 2.

(f) First find the HCF of 165 and 285.

$$\begin{array}{r} 165 \overline{)285}(1 \\ -165 \\ \hline 120 \overline{)165}(1 \\ -120 \\ \hline 45 \overline{)120}(2 \\ -90 \\ \hline 30 \overline{)45}(1 \\ -30 \\ \hline 15 \overline{)30}(2 \\ -30 \\ \hline 0 \end{array}$$

∴ HCF of 165 and 285 = 15.

Now, we find the HFC of 15 and 205.

$$\begin{array}{r} 15 \overline{)205}(13 \\ -15 \\ \hline 55 \\ -45 \\ \hline 10 \overline{)15}(1 \\ -10 \\ \hline 5 \overline{)10}(2 \\ -10 \\ \hline 0 \end{array}$$

Thus, HCF of 165, 285 and 205 is 5.

(g) First find the HCF of 164 and 180.

$$\begin{array}{r} 164 \overline{)180} (1 \\ -164 \\ \hline 16 \overline{)164} (10 \\ -160 \\ \hline 4 \overline{)16} (4 \\ -16 \\ \hline 0 \end{array}$$

\therefore HCF of 164 and 180 = 4.

Now, we find the HCF of 4 and 112.

$$\begin{array}{r} 4 \overline{)112} (28 \\ -8 \\ \hline 32 \\ -32 \\ \hline 0 \end{array}$$

Thus, HCF of 164, 180 and 112 is 4.

(h) First find the HCF of 285 and 350.

$$\begin{array}{r} 285 \overline{)350} (1 \\ -285 \\ \hline 65 \overline{)285} (4 \\ -260 \\ \hline 25 \overline{)65} (2 \\ -50 \\ \hline 15 \overline{)25} (1 \\ -15 \\ \hline 10 \overline{)15} (1 \\ -10 \\ \hline 5 \overline{)10} (2 \\ -10 \\ \hline 0 \end{array}$$

\therefore HCF of 285 and 300 = 5.

Now, we find the HCF of 5 and 1875.

$$\begin{array}{r} 5 \overline{)1875} (375 \\ -15 \\ \hline 37 \\ -35 \\ \hline 25 \\ -25 \\ \hline 0 \end{array}$$

Thus, HCF of 285, 300 and 1875 is 5.

5. The greatest number of baskets, if each basket has the same number of apples and mangoes will be HCF of 1320 and 1480.

So, we have to find HCF of 1320 and 1480.

$$\begin{array}{r} 2 \mid 1320 \\ 2 \mid 660 \\ 2 \mid 330 \\ 3 \mid 165 \\ 5 \mid 55 \\ 11 \mid 11 \\ \hline 1 \end{array} \quad \begin{array}{r} 2 \mid 1480 \\ 2 \mid 740 \\ 2 \mid 370 \\ 5 \mid 185 \\ 37 \mid 37 \\ \hline 1 \end{array}$$

Factors of 1320 = $2 \times 2 \times 2 \times 3 \times 5 \times 11$

Factors of 1480 = $2 \times 2 \times 2 \times 5 \times 37$

The common factors of 1320 and 1480 are 2, 2, 2 and 5.

So, HCF of 1320 and 1480 = $2 \times 2 \times 2 \times 5 = 40$

Thus, the greatest number of baskets required is 40.

6. The greatest possible length of a stick which can be used to measure the exact number of times will be the HCF of 448, 560 and 920. So, we have to find the HCF of 448, 560 and 920.

$$\begin{array}{r} 2 \mid 448 \\ 2 \mid 224 \\ 2 \mid 112 \\ 2 \mid 56 \\ 2 \mid 28 \\ 2 \mid 14 \\ 7 \mid 7 \\ \hline 1 \end{array} \quad \begin{array}{r} 2 \mid 560 \\ 2 \mid 280 \\ 2 \mid 140 \\ 2 \mid 70 \\ 5 \mid 35 \\ 5 \mid 7 \\ \hline 1 \end{array} \quad \begin{array}{r} 2 \mid 920 \\ 2 \mid 460 \\ 2 \mid 230 \\ 5 \mid 115 \\ 23 \mid 23 \\ \hline 1 \end{array}$$

Factors of 448 = $2 \times 2 \times 2 \times 2 \times 2 \times 7$

Factors of 560 = $2 \times 2 \times 2 \times 2 \times 5 \times 7$

Factors of 920 = $2 \times 2 \times 2 \times 5 \times 23$

The common factors of 448, 560 and 920 are 2, 2 and 2.

So, HCF of 448, 560 and 920 = $2 \times 2 \times 2 = 8$

Thus, the largest possible length of a stick is 8 cm.

7. The capacity to take out the maximum amount of oil from both the drums at the same time will be the HCF of 220 and 336. So, we have to find the HCF of 220 and 336.

$$\begin{array}{r} 2 \mid 220 \\ 2 \mid 110 \\ 5 \mid 55 \\ 11 \mid 11 \\ \hline 1 \end{array} \quad \begin{array}{r} 2 \mid 336 \\ 2 \mid 168 \\ 2 \mid 84 \\ 2 \mid 42 \\ 3 \mid 21 \\ 7 \mid 7 \\ \hline 1 \end{array}$$

Factors of 220 = $2 \times 2 \times 5 \times 11$

Factors of 336 = $2 \times 2 \times 2 \times 2 \times 3 \times 7$

The common factors of 220 and 336 are 2 and 2.

So, HCF of 220 and 336 = $2 \times 2 = 4$

Thus, the capacity should the container to take out the maximum amount of oil from both the drums is 4 litres.

Practice Time 3F

1. (a) **Step 1.** Write some multiples of number 12.
Multiples of 12 are 12, 24, 36, 48, **60**, 72, 84, 96, 108, **120**, 132, 144, 156, 168, **180**, ...
Step 2. Write some multiples of number 20.
Multiples of 20 are 20, 40, **60**, 80, 100, **120**, 140, 160, **180**, ...
Step 3. List the common multiples of both the numbers..
Common multiples of 12 and 20 are **60**, 120, 180, ...
(b) **Step 1.** Write some multiples of number 16.
Multiples of 16 are 16, 32, **48**, 64, 80, **96**, 112, 128, **144**, ...
Step 2. Write some multiples of number 24.
Multiples of 24 are 24, **48**, 72, **96**, 120, **144**, ...
Step 3. List the common multiples of both the numbers.
Common multiples of 16 and 24 are **48**, 96, 144.
(c) **Step 1.** Write some multiples of number 14.
Multiples of 14 are 14, 28, **42**, 56, 70, **84**, 98, 112, **126**, ...
Step 2. Write some multiples of number 21.
Multiples of 21 are 21, **42**, 63, **84**, 105, **126**, ...
Step 3. List the common multiples of both the numbers..
Common multiples of 14 and 21 are **42**, 84, 126.
(d) and (e) — (Same as above)
2. (a) **Step 1.** Write some multiples of number 21.
Multiples of 21 are 21, 42, 63, **84**, 105, 126, 147, **168**, 189, ...
Step 2. Write some multiples of number 28.
Multiples of 28 are 28, 56, **84**, 112, 140, **168**, 196, ...
Step 3. List the common multiples of both the numbers.
Common multiples of 21 and 28 are 84, 168, ...
Step 4. The smallest common multiple will be the required LCM.

Thus, the least common multiple (LCM) of 21 and 28 = 84.

(b) **Step 1.** Write some multiples of number 48.
Multiples of 48 are 48, 96, **144**, 192, 240, **288**, 336, 384, ...
Step 2. Write some multiples of number 72.
Multiples of 72 are 72, **144**, 216, **288**, 360, 432, ...
Step 3. List the common multiples of both the numbers.
Common multiples of 48 and 72 are **144**, 288, ...
Step 4. The smallest common multiple will be the required LCM.
Thus, the least common multiple (LCM) of 48 and 72 = 144.

(c) **Step 1.** Write some multiples of number 22.
Multiples of 22 are 22, 44, 66, 88, **110**, 132, 154, 176, 198, 220, 242, 264, 286, 308, **330**, ...
Step 2. Write some multiples of number 110.
Multiples of 110 are **110**, 220, **330**, ...
Step 3. List the common multiples of both the numbers.
Common multiples of 22 and 100 are 110, 330, ...
Step 4. The smallest common multiple will be the required LCM.
Thus, the least common multiple (LCM) of 22 and 110 = 110.

(d) to (f) — (Same as above).

(g) **Step 1.** Write some multiples of number 12.
Multiples of 22 are 12, 24, 36, 48, 60, 72, 84, 96, 108, 120, 132, 144, 156, 168, **180**, 192, 204, ..., **360**, ...
Step 2. Write some multiples of number 15.
Multiples of 15 are 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, **180**, 195, ..., **360**, ...
Step 3. Write some multiples of number 18.
Multiples of 18 are 18, 36, 54, 72, 90, 108, 126, 144, 162, **180**, 198, 216, ..., **360**, ...

Step 4. List the common multiple of these numbers.

Common multiples of 12, 15 and 18 are 180, 360, ...

Step 5. The smallest common multiple will be the required LCM.

Thus, the least common multiple (LCM) of 12, 15 and 18 = 180.

(h) Multiple of 20 are 20, 40, 60, 80, ..., 280, 300, ..., 400, ..., 600, ...

Multiple of 30 are 30, 60, 90, ..., 300, ..., 450, ..., 600, ...

Multiple of 50 are 50, 100, 150, ..., 300, ..., 500, 550, 600, ...

Common multiples of 20, 30 and 50 are 300, 600, ...

The smallest common multiple will be the required LCM.

Thus, the least common multiple (LCM) of 20, 30 and 50 = 300.

(i) Multiple of 20 are 20, 40, 60, ..., 160, 180, ..., 300, 320, ...

Multiple 32 are 32, 64, ..., 160, ..., 288, 320, ...

Multiple of 40 are 40, 80, ..., 160, 200, ..., 280, 320, ...

Common multiples of 20, 32 and 40 are 160, 320, ...

Thus, the least common multiple (LCM) of 20, 32 and 40 = 160.

(j) (l) — (Same as above).

3. (a) We write the prime factorisation of each number.

$$14 = 2 \times 7$$

2	14	17	17
7	7		
		1	

Thus, LCM of 14 and 17 is $2 \times 7 \times 17 = 238$.

(b) We write the prime factorisation of each number.

$$51 = 3 \times 17$$

3	51	2	54
17	17	3	27
	1	3	9
		3	3

$54 = 2 \times 3 \times 3 \times 3$

Thus, LCM of 51 and 54 is $2 \times 3 \times 3 \times 3 \times 17 = 918$.

(c) We write the prime factorisation of each number.

$$78 = 3 \times 3 \times 13$$

$$82 = 2 \times 41$$

Thus, LCM of 78 and 82 is $2 \times 3 \times 13 \times 41 = 3198$.

2	82	2	82
3	39	41	41
13	13		1
		1	

(d) We write the prime factorisation of each number.

$$25 = 5 \times 5$$

$$75 = 3 \times 5 \times 5$$

5	25	3	75
5	5	5	25
	1	5	5
		1	1

Thus, LCM of 25 and 75 is $5 \times 5 \times 3 = 75$.

(e) (f) — (Same as above).

(g) We write the prime factorisation of each number.

$$18 = 2 \times 3 \times 3$$

$$20 = 2 \times 2 \times 5$$

$$32 = 2 \times 2 \times 2$$

$$\times 2 \times 2$$

2	18	2	20	2	32
3	9	2	10	2	16
3	3	5	5	2	8
	1		1	2	4
				2	2

$$\times 2 \times 2$$

2	32
2	16
3	15
5	5
	1

Here, 2 appears maximum five times and 3 appears maximum 2 times and 5 appears maximum 1 time.

Thus, the LCM of 18, 20 and 32 is $2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 5 = 1440$.

(h) We write the prime factorisation of each number.

$$12 = 2 \times 2 \times 3$$

$$16 = 2 \times 2 \times 2$$

$$\times 5$$

$$30 = 2 \times 3 \times 5$$

2	12	2	16	2	30
2	6	2	8	3	15
3	3	2	4	5	5
	1	2	2		1
				1	

$$\times 2 \times 2$$

$$30 = 2 \times 3 \times 5$$

2	30
2	16
3	15
5	5
	1

Here, 2 appears maximum three times and 3 appears maximum one time and 5 appears maximum 1 time.

Thus, the LCM of 12, 16 and 30 = $2 \times 2 \times 2 \times 3 \times 5 = 240$.

(i) We write the prime factorisation of each number.

$$21 = 3 \times 7$$

$$24 = 2 \times 2 \times 2$$

$$\times 3$$

$$36 = 2 \times 2 \times 3$$

$$\times 3$$

3	21	2	24	2	36
7	7	2	12	3	18
	1	2	6	3	9
		3	3	3	3
			1		1

$$\times 3$$

Here, 2 appears maximum three time 3 appears maximum two time and 7 appears maximum 1 time.

Thus, the LCM of 21, 24 and 36

$$\begin{aligned} &= 2 \times 2 \times 2 \times 3 \times 3 \times 7 \\ &= 504. \end{aligned}$$

(j) to (l) — (Same as above).

4. (a) We have, 4, 24, 32.

2	4, 24, 32
2	2, 12, 16
2	1, 6, 8
2	1, 3, 4
2	1, 3, 2
3	1, 3, 1
	1, 1, 1

$$\text{LCM} = 2 \times 2 \times 2 \times 2 \times 2 \times 3 = 96.$$

(b) We have, 24, 42, 72.

2	24, 42, 72
2	12, 21, 36
2	6, 21, 18
3	3, 21, 9
3	1, 7, 3
7	1, 7, 1
	1, 1, 1

$$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 3 \times 7 = 504.$$

(c) We have, 20, 60, 90.

2	20, 60, 90
2	10, 30, 45
3	5, 15, 45
3	5, 5, 15
5	5, 5, 5
	1, 1, 1

$$\text{LCM} = 2 \times 2 \times 3 \times 3 \times 5 = 180.$$

(d) We have, 18, 36, 48.

2	18, 36, 48
2	9, 18, 24
2	9, 9, 12
2	9, 9, 6
3	9, 9, 3
3	3, 3, 1
	1, 1, 1

$$\text{LCM} = 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 144.$$

(e) We have, 9, 13, 26.

2	9, 13, 26
3	9, 13, 13
3	3, 13, 13
13	1, 13, 13
	1, 1, 1

$$\text{LCM} = 2 \times 3 \times 3 \times 13 = 234.$$

(f) We have, 18, 9, 27.

2	18, 9, 27
3	9, 9, 27
3	3, 3, 9
3	1, 1, 3
	1, 1, 1

$$\text{LCM} = 2 \times 3 \times 3 \times 3 = 54.$$

(g) We have, 32, 16, 50.

2	32, 16, 50
2	16, 8, 25
2	8, 4, 25
2	4, 2, 25
2	2, 1, 25
25	1, 1, 25
	1, 1, 1

$$\text{LCM} = 2 \times 2 \times 2 \times 2 \times 2 \times 25 = 800.$$

(h) We have, 14, 35, 49.

2	14, 35, 49
5	7, 35, 49
7	7, 7, 49
7	1, 1, 7
	1, 1, 1

$$\text{LCM} = 2 \times 2 \times 7 \times 7 = 490.$$

5. Given two bulbs flash at regular intervals of 42 seconds and 77 seconds respectively.

LCM of 42 and 77,

$$42 = 2 \times 3 \times 7$$

$$77 = 7 \times 11$$

$$\text{LCM} = 2 \times 3 \times 7 \times 11 = 462 \text{ seconds}$$

$$= \frac{462}{60} \text{ min} = 7 \text{ min } 42 \text{ seconds}$$

$$= 7 \text{ min (approx)}$$

They first time flash together at 10:45 p.m.

(a) Second time:

$$\begin{aligned}\text{First time they flash together} &+ 7 \text{ min} \\ &= 10:45 \text{ p.m.} + 7 \text{ min} \\ &\text{or } 10:52 \text{ p.m.}\end{aligned}$$

(b) Fifth time:

$$\begin{aligned}\text{Second time they flash together} &+ (3 \times 7) \text{ min} \\ &[\because \text{Second time} + 3 \text{ more times} = 5 \text{ times}] \\ &= 10:52 \text{ p.m.} + 21 \text{ min} \\ &\text{or } 11:13 \text{ p.m.}\end{aligned}$$

6. Number of hair bands = LCM of 4, 6 and 8.

$$\text{LCM} = 2 \times 2 \times 2 \times 3$$

$$\text{LCM} = 24$$

Thus, number of hair bands

Sia has is 24.

2	4, 6, 8
2	2, 3, 4
2	1, 3, 2
3	1, 3, 1
	1, 1, 1

7. Given two bells ring at intervals of 24 min and 36 min. LCM of 24 and 36:

$$24 = 2 \times 2 \times 2 \times 3$$

$$36 = 2 \times 2 \times 3 \times 3$$

$$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 3$$

$$= 72 \text{ min}$$

$$= (60 \text{ min} + 12 \text{ min})$$

So, at (8:15 a.m. + 60 min + 12 min)

$$= 8:15 \text{ am} + 1 \text{ h} + 12 \text{ min}$$

$$= 9:27 \text{ am}$$

Thus, at 9:27 a.m. they will ring together.

2	24	2	36
2	12	2	18
2	6	3	9
3	3	3	3
	1		1

Practice Time 3G

1. (a) Given that, HCF = 12,

$$\text{Product of two numbers} = 324.$$

We know that,

$$\text{HCF} \times \text{LCM} = \text{Product of two numbers.}$$

$$\text{Here, } 12 \times \text{LCM} = 324$$

$$\text{So, LCM} = \frac{324}{12} = 27.$$

(b) Given that, HCF = 4, LCM = 252

We know that,

$$\text{HCF} \times \text{LCM} = \text{Product of two numbers.}$$

$$\text{Here, } 4 \times 252 = \text{Product of two numbers.}$$

$$\text{So, Product of two numbers} = 1008.$$

(c) Given, LCM = 72,

$$\text{Product of two numbers} = 864.$$

We know that,

$$\text{HCF} \times \text{LCM} = \text{Product of two numbers.}$$

$$\text{Here, } \text{HCF} \times 72 = 864.$$

$$\text{So, HCF} = \frac{864}{72} = 12.$$

(d) Given, HCF = 50, LCM = 300.

We know that,

$$\text{HCF} \times \text{LCM} = \text{Product of two numbers.}$$

$$50 \times 300 = \text{Product of two numbers.}$$

$$\text{Product of two numbers} = 15000.$$

2. Given that, Product of numbers = 225, HCF = 9.

We know that,

$$\text{HCF} \times \text{LCM} = \text{Product of two numbers.}$$

$$\text{Here, } 9 \times \text{LCM} = 225.$$

$$\text{So, LCM} = \frac{225}{9} = 25.$$

$$\text{Thus, LCM} = 25.$$

3. Given that, HCF = 15,

$$\text{LCM} = 45 \text{ and one number} = 27.$$

We know that, $\text{HCF} \times \text{LCM} = 1\text{st number} \times 2\text{nd number.}$

$$\text{Here, } 15 \times 45 = 27 \times 2\text{nd number.}$$

$$\text{So, 2nd number} = \frac{15 \times 45}{27} = \frac{675}{27}.$$

$$\text{2nd number} = 25.$$

Thus, the other number is 25.

4. Given that, Product of two numbers = 450

$$\text{HCF} = 15.$$

We know that, $\text{HCF} \times \text{LCM} = \text{Product of two numbers.}$

$$\text{Here, } 15 \times \text{LCM} = 450$$

$$\text{So, LCM} = \frac{450}{15} = 30$$

$$\text{Thus, LCM} = 30$$

5. Given, LCM = 120,

$$\text{Product of two numbers} = 1800.$$

We know that, $\text{HCF} \times \text{LCM} = \text{Product of two numbers.}$

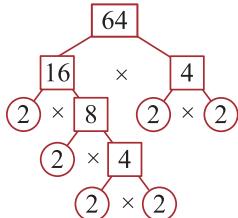
$$\text{Here, } \text{HCF} \times 120 = 1800.$$

$$\text{So, HCF} = \frac{1800}{120} = 15.$$

Mental Maths (Page 76)

1. (a) LCM of two co-prime numbers is their product.
2. (b) HCF of two co-prime numbers is 1.
3. (a) If a number is divisible by 2 and 3, then it will also be divisible by 6.

4. (b)



5. (b) There are 4 prime numbers between 1 and 50 having their ones digit as 3 are 3, 13, 23 and 43.

Chapter Assessment

1. (a) - (iv)

Since, LCM of 2, 4, 6, 8, 10 and 12 is 120. So, after each 120 seconds, they would toll together.

$$= \frac{30 \times 60}{120} \\ = 15 \text{ times.}$$

But, according to question, they commence tolling together.

2	2, 4, 6, 8, 10, 12
2	1, 2, 3, 4, 5, 6
2	1, 1, 3, 2, 5, 3
3	1, 1, 3, 1, 5, 3
5	1, 1, 1, 1, 5, 1
	1, 1, 1, 1, 1, 1

$$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 5 = 120.$$

So, they basically also toll at the beginning.

So, total tolls together = $15 + 1 = 16$.

(b) - (ii)

LCM of 5, 6, 4 and 3 = 60.

On dividing 2497 by 60, the remainder = 37.

∴ Number to be added = $60 - 37 = 23$.

2	5, 6, 4, 3
2	5, 3, 2, 3
3	5, 3, 1, 3
5	5, 1, 1, 1
	1, 1, 1, 1

$$\text{LCM} = 2 \times 2 \times 3 \times 5 = 60.$$

(c) - (iv)

Reema completes his round in 308 seconds.

Neema completes his round in 198 seconds.

Siya completes his round in 252 seconds.

To meet again at starting point together, we need to find the LCM of 308, 198 and 252.

2	308, 198, 252
2	154, 99, 126
7	77, 99, 63
9	11, 99, 9
11	11, 11, 1
	1, 1, 1,

$$\text{LCM} = 2 \times 2 \times 7 \times 9 \times 11 = 2772.$$

$$\therefore \text{Required LCM} = 2772 \text{ seconds} = \frac{2772}{60} \text{ min} \\ = 46 \text{ min } 12 \text{ second.}$$

$$\begin{array}{r} 60 \overline{)2772} (46 \leftarrow \text{min} \\ - 240 \\ \hline 372 \\ - 360 \\ \hline 12 \leftarrow \text{sec} \end{array}$$

Thus, they will meet again at the starting point after 46 min 12 second.

2. Number of cup cakes prepared in 4 different flavours = 72.

According to question, each flavour pastry are equal in number.

So, number of rows he can arrange to meet this requirement = $72 \div 4 = 18$.

$$\begin{array}{r} 4 \overline{)72} (18 \\ - 4 \\ \hline 32 \\ - 32 \\ \hline 0 \end{array}$$

Thus, he can arrange them in 18 rows to meet the requirement.

3. Number of plants of four different varieties = 36. Each row having the same type of plants.

∴ Number of plants will be planted in each row = $36 \div 4 = 9$.

Thus, 9 plants will be planted in each row.

Plants are important for the survival of living organisms as they absorb carbon dioxide and release oxygen.

4. Given number is 527253.

Change the position of two digits

$$527253 \rightarrow 572253$$

Divisibility rule – If the difference of sum of digits at odd places and sum of digits at even places is 0 or divisible by 11, then the number is also divisible by 11.

$$\begin{aligned}\text{Sum of odd places} &= 5 + 2 + 5 = 12 \\ \text{Sum of even places} &= 7 + 2 + 3 = 12.\end{aligned}$$

$$12 - 12 = 0,$$

Which is divisible by 11.

Thus, 572253 is divisible by 11.

5. The measures of the steps of three children are 40 cm, 50 cm and 60 cm respectively.

We need to find the LCM to know the distance from the start to where the three children will step together again.

$$\text{LCM of } 40, 50, 60 = 2 \times 2 \times 2 \times 3 \times 5 \times 5 = 600$$

A morning walk plays a major role in everyone's life. It leaves a positive impact on your mind and refreshes your brain.

6. Length of living room = 6 m 70 cm = 670 cm.

$$\text{Breadth of living room} = 3 \text{ m } 50 \text{ cm} = 350 \text{ cm}.$$

Dimension of the largest square tile that can be fixed on the floor *i.e.*, HCF of 670 and 350 = 10.

$$\begin{array}{r} 350)670(1 \\ -350 \\ \hline 320)350(1 \\ -320 \\ \hline 30)320(10 \\ -30 \\ \hline 20)30(1 \\ -20 \\ \hline 10)20(2 \\ -20 \\ \hline 0 \end{array}$$

Thus, the largest square tile that can be fixed on the floor is of 10 cm.

7. The measure of the steps taken

by the three women are 75 cm, 60 cm and 105 cm respectively.

To know the minimum distance women should cover the distance in complete steps, we need to find the, LCM of 75, 60 and 105.

$$\begin{aligned}\therefore \text{LCM} &= 3 \times 5 \times 5 \times 2 \times 2 \times 7 \\ &= 2100 \text{ cm or } 21 \text{ m.}\end{aligned}$$

8. Postal charges of three parcels are ₹30, ₹48 and ₹84. The greatest denomination of stamps she must buy to mail the three parcels *i.e.*, HCF of ₹30, ₹48 and ₹84.

First find the HCF of 30 and 48.

$$\begin{array}{r} 30)48(1 \\ -30 \\ \hline 18)30(1 \\ -18 \\ \hline 12)18(1 \\ -12 \\ \hline 6)12(2 \\ -12 \\ \hline 0 \end{array}$$

$$\text{HCF of } 30 \text{ and } 48 = 6$$

$$\text{Now, we find the HCF of } 6 \text{ and } 84.$$

$$\therefore \text{HCF of } 30, 48 \text{ and } 84 = 6$$

Thus, Venkatesh must buy the stamp of ₹6 to mail the three parcels.

9. Traffic lights at three different road crossing change after every 1 min, 1 min 20 sec and 2 min. To know the time at which they will change again, we need to find the LCM of 1 min (60 sec), 1 min 20 sec (80 sec), 2 min (120 sec).

$$\therefore \text{LCM} = 2 \times 2 \times 2 \times 2 \times 3 \times 5$$

$$= 240 \text{ sec.}$$

$$= \frac{240}{60} \text{ min} = 4 \text{ min.}$$

If they change simultaneously at 12 noon,
then they will change simultaneously again at

$$= 12 \text{ noon} + 4 \text{ min.} = 12:04 \text{ p.m.}$$

Thus, at 12:04 p.m. they will change simultaneously again.

10. Number of boys and girls are selected to participated in annual day function are 48 and 32 respectively.

The greatest number of teams that can participate in the function *i.e.*, HCF of 48 and 32.

$$\text{HCF of } 48 \text{ and } 32 = 16$$

$$\begin{array}{r} 32)48(1 \\ -32 \\ \hline 16)32(2 \\ -32 \\ \hline 0 \end{array}$$

$$\text{Number of boys in each team} = \frac{32}{16} = 2.$$

$$\text{Number of girls in each team} = \frac{48}{16} = 3$$

Thus, 16 teams participate in the function and each team has 3 girls and 2 boys.

$$\begin{array}{r} 6)84(14 \\ -6 \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$$

11. Given that, HCF = 44, LCM = 264,

$$\text{First number} = 2 \times 44 + 0 = 88.$$

[\because Dividend = Divisor]

We know that, HCF \times LCM = First number \times second number.

$$\text{Here, } 44 \times 264 = 88 \times \text{2nd number}$$

$$\text{So, 2nd number} = \frac{44 \times 264}{88} = 132.$$

Thus, second number is 132.

12. (a) HCF of 37 and 29

$$\begin{array}{r} 29 \overline{)37} (1 \\ -29 \\ \hline 8 \overline{)29} (3 \\ -24 \\ \hline 5 \overline{)8} (1 \\ -5 \\ \hline 3 \overline{)5} (1 \\ -3 \\ \hline 2 \overline{)3} (1 \\ -2 \\ \hline 1 \overline{)2} (1 \\ -2 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of 37 and 29} = 1.$$

LCM of 37 and 29.

$$\begin{array}{c} 29 \mid 37, \quad 29 \\ 37 \mid 37, \quad 1 \\ \hline 1, \quad 1 \end{array}$$

$$\therefore \text{LCM of 37 and 29} = 29 \times 37 = 1073.$$

$$\text{HCF} \times \text{LCM} = \text{Ist no.} \times \text{2nd no.}$$

$$1 \times 1073 = 37 \times 29$$

$$1073 = 1073.$$

Hence, verified

(b) HCF of 70 and 168

$$\begin{array}{r} 70 \overline{)168} (2 \\ -140 \\ \hline 28 \overline{)70} (2 \\ -56 \\ \hline 14 \overline{)28} (2 \\ -28 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of 70 and 168} = 14.$$

LCM of 70 and 168.

$$\begin{array}{c|cc} 2 & 70, & 168 \\ 2 & 35, & 84 \\ 2 & 35, & 42 \\ 3 & 35, & 21 \\ 5 & 35, & 7 \\ 7 & 7, & 7 \\ \hline & 1, & 1 \end{array}$$

$$= 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 840$$

\therefore LCM of 70 and 168 = 840.

We know that HCF \times LCM = 1st number \times 2nd number.

$$14 \times 840 = 70 \times 168$$

$$\Rightarrow 11760 = 11760$$

Hence, verified

Brain Sizzlers (Page 79)

1. Let ones digit = 1

Given, ones and hundreds digits are interchanged.

Hundreds digit = 1

Sum of the digits = 5

$$\therefore 1 + \text{tens digit} + 1 = 5$$

$$\therefore \text{Tens digit} = 5 - 2 = 3$$

Thus, the required number is 131.

2. There are 360 erasers and 456 sharpeners. The greatest number of articles possible in each pile = HCF of 360 and 456.

$$\begin{array}{r} 360 \overline{)456} (1 \\ -360 \\ \hline 96 \overline{)360} (3 \\ -288 \\ \hline 72 \overline{)96} (1 \\ -72 \\ \hline 24 \overline{)72} (3 \\ -72 \\ \hline 0 \end{array}$$

\therefore HCF of 360 and 456 is 24.

$$\text{The number of piles formed} = \frac{360}{24} + \frac{456}{24}$$

$$= 15 + 19 = 34 \text{ piles}$$

Thus, the greatest number of articles possible in each pile is 24 and 34 piles are formed.

CHAPTER 4 : FRACTIONS

Let's Recall

1. (a) Three - fourth = $\frac{3}{4}$.

(b) One - fourth = $\frac{1}{4}$.

(c) Half = $\frac{1}{2}$.

2. Quantity of flour used = $\frac{3}{4}$ cup

Quantity of sugar used = $\frac{1}{2}$ cup

$$\therefore \frac{3}{4} - \frac{1}{2} = \frac{3-2}{4} = \frac{1}{4} \text{ cup.}$$

Thus, $\frac{1}{4}$ cup more quantity of flour was used than sugar to make the cookies.

3. Given numbers: $\frac{3}{4}$ and $\frac{1}{4}$

Cross multiply, $\frac{3}{4} \times \frac{1}{4}$, $12 > 4$

$\therefore \frac{3}{4}$ is greater than $\frac{1}{4}$.

Think and Answer (Page 85)

$$\frac{3}{\square} = \frac{12}{20} = \frac{\square}{45}$$

Cross multiplying, $\frac{3}{\square} \times \frac{12}{20}$

$$\Rightarrow 3 \times 20 = \square \times 12$$

$$\Rightarrow 60 = \square \times 12$$

$$\Rightarrow \square = \frac{60}{12}$$

$$\Rightarrow \square = 5$$

$$\text{So, } \frac{3}{5} = \frac{12}{20} = \frac{\square}{45}$$

Now, $\frac{12}{20} = \frac{\square}{45}$, on cross multiplying, $\frac{12}{20} \times \frac{\square}{45}$

$$\Rightarrow 12 \times 45 = 20 \times \square$$

$$\Rightarrow \frac{12 \times 45}{20} = \square$$

$$\Rightarrow \square = 27.$$

$$\text{Therefore, } \frac{3}{5} = \frac{12}{20} = \frac{27}{45}.$$

Think and Answer (Page 85)

Yes. A unit fraction is always in its simplest form.

Practice Time 4A

1. \therefore Fractions having numerator 1 are called unit fractions. So, unit fractions are:

$$\frac{1}{8}, \frac{1}{5}, \frac{1}{10} \text{ and } \frac{1}{14}.$$

2. Fractions having the same denominators are called like fractions.

And, Fractions having different denominators are called unlike fractions.

(a) Like fractions: $\frac{2}{5}, \frac{7}{5}$.

Unlike fractions: $\frac{5}{4}, \frac{1}{8}, \frac{3}{7}$.

(b) Like fractions: $\frac{3}{4}, \frac{1}{4}$.

Unlike fractions: $\frac{4}{5}, \frac{6}{7}, \frac{5}{9}$.

(c) Like fractions: $\frac{4}{7}, \frac{2}{7}$.

Unlike fractions: $\frac{4}{9}, \frac{3}{5}, \frac{7}{8}$.

3. [(a), (c), (d)]

Fractions having numerator less than the denominator are called proper fractions.

So, proper fractions are $\frac{2}{3}, \frac{5}{8}, \frac{9}{11}$

4. [(b), (c), (d)]

Fractions having numerator greater than the denominator are called improper fractions.

So, improper fractions are $\frac{9}{5}, \frac{11}{7}, \frac{9}{1}$

5. We have,

Mixed fraction

$$= \frac{(\text{Denominator} \times \text{Whole number}) + \text{Numerator}}{\text{Denominator}}$$

= Improper fraction

$$(a) 2\frac{3}{8} = \frac{(2 \times 8) + 3}{8} = \frac{16 + 3}{8} = \frac{19}{8}$$

$$(b) 4\frac{1}{3} = \frac{(4 \times 3) + 1}{3} = \frac{12 + 1}{3} = \frac{13}{3}$$

$$(c) 3\frac{2}{11} = \frac{(3 \times 11) + 2}{11} = \frac{33 + 2}{11} = \frac{35}{11}$$

$$(d) 7\frac{3}{7} = \frac{(7 \times 7) + 3}{11} = \frac{49 + 3}{11} = \frac{52}{11}$$

$$(e) 13\frac{7}{8} = \frac{(13 \times 8) + 7}{8} = \frac{104 + 7}{8} = \frac{111}{8}$$

6. (a) Divide the numerator 17 by the denominator 4.

Here, quotient = 4 and
$$\begin{array}{r} 4 \overline{) 17} (4 \\ -16 \\ \hline 1 \end{array}$$

remainder = 1.

Therefore, the required mixed fraction = $4\frac{1}{4}$

(b) Divide the numerator 19 by the denominator 4.

Here, quotient = 4 and
$$\begin{array}{r} 4 \overline{) 19} (4 \\ -16 \\ \hline 3 \end{array}$$

remainder = 3.

Therefore, the required mixed fraction = $4\frac{3}{4}$.

(c) Divide the numerator 29 by the denominator 5.

Here, quotient = 5 and
$$\begin{array}{r} 5 \overline{) 29} (5 \\ -25 \\ \hline 4 \end{array}$$

remainder = 4.

Therefore, the required mixed fraction = $5\frac{4}{5}$.

(d) Divide the numerator 26 by the denominator 8.

Here, quotient = 3 and
$$\begin{array}{r} 8 \overline{) 26} (3 \\ -24 \\ \hline 2 \end{array}$$

remainder = 2.

Therefore, the required mixed fraction

$$= 3\frac{2}{4} = 3\frac{1}{4}.$$

(e) Divide the numerator 32 by the denominator 6.

Here, quotient = 5 and
$$\begin{array}{r} 6 \overline{) 32} (5 \\ -30 \\ \hline 2 \end{array}$$

remainder = 2.

Therefore, the required mixed fraction

$$= 5\frac{2}{6} = 5\frac{1}{3}.$$

7. (a) We have,

$$\frac{1}{5} = \frac{1 \times 2}{5 \times 2} = \frac{2}{10}; \frac{1}{5} = \frac{1 \times 3}{5 \times 3} = \frac{3}{15};$$

$$\frac{1}{5} = \frac{1 \times 4}{5 \times 4} = \frac{4}{20}; \frac{1}{5} = \frac{1 \times 5}{5 \times 5} = \frac{5}{25}.$$

Hence, $\frac{1}{5}, \frac{2}{10}, \frac{3}{15}, \frac{4}{20}$ and $\frac{5}{25}$ are first five

equivalent fractions of $\frac{1}{5}$.

(b) We have,

$$\frac{1}{4} = \frac{1 \times 3}{4 \times 3} = \frac{3}{12}; \frac{1}{4} = \frac{1 \times 4}{4 \times 4} = \frac{4}{16};$$

$$\frac{1}{4} = \frac{1 \times 5}{4 \times 5} = \frac{5}{20}.$$

Hence, $\frac{1}{4}, \frac{2}{8}, \frac{3}{12}, \frac{4}{16}$ and $\frac{5}{20}$ are first five equivalent fractions of $\frac{1}{4}$.

(c) We have,

$$\frac{2}{7} = \frac{2 \times 2}{7 \times 2} = \frac{4}{14}; \frac{2}{7} = \frac{2 \times 3}{7 \times 3} = \frac{6}{21};$$

$$\frac{2}{7} = \frac{2 \times 4}{7 \times 4} = \frac{8}{28}; \frac{2}{7} = \frac{2 \times 5}{7 \times 5} = \frac{10}{35}.$$

Hence, $\frac{2}{7}, \frac{4}{14}, \frac{6}{21}, \frac{8}{28}$ and $\frac{10}{35}$ are first five equivalent fractions of $\frac{2}{7}$.

(d) We have,

$$\frac{8}{11} = \frac{8 \times 2}{11 \times 2} = \frac{16}{22}; \frac{8}{11} = \frac{8 \times 3}{11 \times 3} = \frac{24}{33};$$

$$\frac{8}{11} = \frac{8 \times 4}{11 \times 4} = \frac{32}{44}; \frac{8}{11} = \frac{8 \times 5}{11 \times 5} = \frac{40}{55};$$

Hence, $\frac{8}{11}, \frac{16}{22}, \frac{24}{33}, \frac{32}{44}$ and $\frac{40}{55}$ are first five equivalent fractions of $\frac{8}{11}$.

(e) We have,

$$\frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10}; \frac{2}{5} = \frac{2 \times 3}{5 \times 3} = \frac{6}{15};$$

$$\frac{2}{5} = \frac{2 \times 4}{5 \times 4} = \frac{8}{20}; \frac{2}{5} = \frac{2 \times 5}{5 \times 5} = \frac{10}{25};$$

Hence, $\frac{2}{5}, \frac{4}{10}, \frac{6}{15}, \frac{8}{20}$ and $\frac{10}{25}$ are first five equivalent fractions of $\frac{2}{5}$.

8. (a) $\frac{16}{80} \div \frac{2}{2} = \frac{[8]}{40} \div \frac{2}{2} = \frac{4}{[20]}$

(b) $\frac{12}{32} \div \frac{4}{4} = \frac{3}{[8]}$

(c) $\frac{3}{11} \times \frac{5}{5} = \frac{[15]}{55}$

(d) $\frac{4}{9} \times \frac{7}{7} = \frac{[28]}{63}$

$$(e) \frac{12}{48} \div \frac{2}{2} = \frac{\boxed{6}}{24} \div \frac{3}{3} = \frac{\boxed{2}}{8} \times \frac{2}{2} = \frac{\boxed{4}}{16}$$

$$(f) \frac{15}{75} \div \frac{3}{3} = \frac{\boxed{5}}{25} \div \frac{5}{5} = \frac{1}{\boxed{5}} \times \frac{3}{3} = \frac{\boxed{3}}{15}$$

$$(g) \frac{36}{60} \div \frac{6}{6} = \frac{\boxed{6}}{10} \times \frac{2}{2} = \frac{\boxed{12}}{20} \div \frac{4}{4} = \frac{\boxed{3}}{5}$$

$$9. (a) \frac{5}{7} \times \frac{4}{4} = \frac{20}{28} \quad (b) \frac{5}{7} \times \frac{5}{5} = \frac{25}{35}$$

$$(c) \frac{5}{7} \times \frac{7}{7} = \frac{35}{49}$$

10. (a) First, we find the HCF of the numerator 8 and the denominator 24.

2	8	2	24
2	4	2	12
2	2	2	6
1		3	3
			1

Clearly, $8 = 2 \times 2 \times 2$ and $24 = 2 \times 2 \times 2 \times 3$.

Therefore, HCF of 8 and 24 = $2 \times 2 \times 2 = 8$.

$$\text{Now, } \frac{8}{24} = \frac{8 \div 8}{24 \div 8} = \frac{1}{3}.$$

Thus, $\frac{1}{3}$ is the lowest form of $\frac{8}{24}$.

(b) First, we find the HCF of the numerator 15 and the denominator 20.

3	15	2	20
5	5	2	10
1		5	5
			1

Clearly, $15 = 3 \times 5$ and $20 = 2 \times 2 \times 5$.

Therefore, HCF of 15 and 20 = 5.

$$\text{Now, } \frac{15}{20} = \frac{15 \div 5}{20 \div 5} = \frac{3}{4}.$$

Thus, $\frac{3}{4}$ is the lowest form of $\frac{15}{20}$.

(c) First, we find the HCF of the numerator 8 and the denominator 10.

2	8	2	10
2	4	5	5
2	2		1
1			

Clearly, $8 = 2 \times 2 \times 2$ and $10 = 2 \times 5$.

Therefore, HCF of 8 and 10 = 2.

$$\text{Now, } \frac{8}{10} = \frac{8 \div 2}{10 \div 2} = \frac{4}{5}.$$

Thus, $\frac{4}{5}$ is the lowest form of $\frac{8}{10}$.

(d) First, we find the HCF of the numerator 12 and the denominator 15.

2	12	3	15
2	6	5	5
3	3		1
1			

Clearly, $12 = 2 \times 2 \times 3$ and $15 = 3 \times 5$.

Therefore, HCF of 12 and 15 = 3.

$$\text{Now, } \frac{12}{15} = \frac{12 \div 3}{15 \div 3} = \frac{4}{5}.$$

Thus, $\frac{4}{5}$ is the lowest form of $\frac{12}{15}$.

(e) First, we find the HCF of the numerator 16 and the denominator 34.

2	16	2	34
2	8	17	17
2	4		1
2	2		
1			

Clearly, $16 = 2 \times 2 \times 2 \times 2$ and $34 = 2 \times 17$.

Therefore, HCF of 16 and 34 = 2.

$$\text{Now, } \frac{16}{34} = \frac{16 \div 2}{34 \div 2} = \frac{8}{17}.$$

Thus, $\frac{8}{17}$ is the lowest form of $\frac{16}{34}$.

(f) to (i) — (Same as above).

Think and Answer (Page 87)

Comparing the numerators of $\frac{2}{9}$ and $\frac{5}{9}$, we have $2 < 5$.

$$\text{So, } \frac{2}{9} < \frac{5}{9}$$

That is, Sia drank more amount of juice.

Practice Time 4B

1. (a) Given fractions are $\frac{4}{5}$ and $\frac{3}{7}$.

LCM of 5 and 7 = $5 \times 7 = 35$.

5	5, 7
7	1, 1

Therefore, $\frac{4}{5} = \frac{4 \times 7}{5 \times 7} = \frac{28}{35}$ and

$$\frac{3}{7} = \frac{3 \times 5}{7 \times 5} = \frac{15}{35}.$$

Since, $28 > 15$. So, $\frac{28}{35} > \frac{15}{35}$

Thus, $\frac{4}{5} \boxed{>} \frac{3}{7}$

(b) Given fractions are $\frac{3}{11}$ and $\frac{3}{9}$.

LCM of 11 and 9 = $3 \times 3 \times 11 = 99$.

Therefore, $\frac{3}{11} = \frac{3 \times 9}{11 \times 9} = \frac{27}{99}$ and

$$\frac{3}{9} = \frac{3 \times 11}{9 \times 11} = \frac{33}{99}.$$

Since, $27 < 33$. So, $\frac{27}{99} < \frac{33}{99}$.

Thus, $\frac{3}{11} \boxed{<} \frac{3}{9}$.

(c) Given fractions are $\frac{3}{5}$ and $\frac{6}{10}$.

LCM of 5 and 10 = $5 \times 2 = 10$.

Therefore, $\frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{6}{10}$ and

$$\frac{6}{10} = \frac{6 \times 1}{10 \times 1} = \frac{6}{10}.$$

Since, $6 = 6$. So, $\frac{6}{10} = \frac{6}{10}$.

Thus, $\frac{3}{5} \boxed{=} \frac{6}{10}$.

(d) Given mixed fractions are $2\frac{4}{7}$ and $3\frac{3}{5}$.

$2\frac{4}{7} = \frac{2 \times 7 + 4}{7} = \frac{18}{7}$ and $3\frac{3}{5} = \frac{3 \times 5 + 3}{5} = \frac{18}{5}$.

LCM of 7 and 5 = $7 \times 5 = 35$.

Therefore, $\frac{18}{7} = \frac{18 \times 5}{7 \times 5} = \frac{90}{35}$ and

$$\frac{18}{5} = \frac{18 \times 7}{5 \times 7} = \frac{126}{35}.$$

Since, $90 < 126$. So, $\frac{90}{35} < \frac{126}{35}$.

Thus, $2\frac{4}{7} \boxed{<} 3\frac{3}{5}$.

$$\begin{array}{c|cc} 3 & 9, & 11 \\ \hline 3 & 3, & 11 \\ \hline 11 & 1, & 11 \\ \hline & 1, & 1, \end{array}$$

(e) Given mixed fractions are $2\frac{4}{5}$ and $2\frac{4}{13}$.

$$2\frac{4}{5} = \frac{2 \times 5 + 4}{5} = \frac{10 + 4}{5} = \frac{14}{5},$$

$$2\frac{4}{13} = \frac{2 \times 13 + 4}{13} = \frac{30}{13}.$$

$$\begin{array}{c|cc} 5 & 5, & 13 \\ \hline 13 & 1, & 13 \\ \hline & 1, & 1, \end{array}$$

LCM of 5 and 13 = $5 \times 13 = 65$.

Therefore, $\frac{14}{5} = \frac{14 \times 13}{5 \times 13} = \frac{182}{65}$ and

$$\frac{30}{13} = \frac{30 \times 5}{13 \times 5} = \frac{150}{65}.$$

Since, $182 > 150$. So, $\frac{182}{65} > \frac{150}{65}$.

Thus, $2\frac{4}{5} \boxed{>} 2\frac{4}{13}$.

(f) Given mixed fractions are $5\frac{1}{6}$ and $5\frac{1}{4}$.

$$5\frac{1}{6} = \frac{5 \times 6 + 1}{6} = \frac{31}{6} \text{ and}$$

$$5\frac{1}{4} = \frac{5 \times 4 + 1}{4} = \frac{21}{4}.$$

$$\begin{array}{c|cc} 2 & 6, & 4 \\ \hline 2 & 3, & 2 \\ \hline 3 & 3, & 1 \\ \hline & 1, & 1, \end{array}$$

LCM of 6 and 4 = $2 \times 2 \times 3 = 12$.

Therefore, $\frac{31}{6} = \frac{31 \times 2}{6 \times 2} = \frac{62}{12}$ and

$$\frac{21}{4} = \frac{21 \times 3}{4 \times 3} = \frac{63}{12}.$$

Since, $62 < 63$. So, $\frac{62}{12} < \frac{63}{12}$.

Thus, $5\frac{1}{6} \boxed{<} 5\frac{1}{4}$

2. (a) Given fractions are $\frac{2}{4}$ and $\frac{3}{4}$.

Since, denominators are the same and $2 < 3$.

So, $\frac{2}{4} < \frac{3}{4}$. Thus, $\frac{3}{4}$ is greater.

(b) Given fractions are $\frac{3}{8}$ and $\frac{2}{8}$.

Since, denominators are the same and $3 > 2$.

So, $\frac{3}{8} > \frac{2}{8}$. Thus, $\frac{3}{8}$ is greater.

(c) and (d) — Same as above.

(e) Given fractions are $\frac{3}{8}$ and $\frac{3}{7}$.

Since, denominators are different.
So, first we make the denominators same.

LCM of 8 and 7 = $2 \times 2 \times 2 \times 7 = 56$.

Now, $\frac{3}{8} = \frac{3 \times 7}{8 \times 7} = \frac{21}{56}$ and

$$\frac{3}{7} = \frac{3 \times 8}{7 \times 8} = \frac{24}{56}.$$

Clearly, $21 < 24$. So, $\frac{21}{56} < \frac{24}{56}$.

$\therefore \frac{3}{8} < \frac{3}{7}$. Thus $\frac{3}{7}$ is the greater.

(f) Given fractions are $\frac{5}{9}$ and $\frac{4}{9}$.

Since, denominators are the same and $5 > 4$.

So, $\frac{5}{9} > \frac{4}{9}$. Thus, $\frac{5}{9}$ is greater.

(g) Given fractions are $\frac{2}{13}$ or $\frac{4}{11}$.

Since, denominators are different.

So, first we make the denominators same.

LCM of 13 and 11 = 13×11
= 143.

Now, $\frac{2}{13} = \frac{2 \times 11}{13 \times 11} = \frac{22}{143}$ and

$$\frac{4}{11} = \frac{4 \times 13}{11 \times 13} = \frac{52}{143}.$$

Clearly, $22 < 52$.

So, $\frac{22}{143} < \frac{52}{143}$ i.e., $\frac{2}{13} < \frac{4}{11}$.

Thus, $\frac{4}{11}$ is greater.

(h) Given fractions are $\frac{5}{10}$ and $\frac{4}{20}$.

Since, denominators are different.

So, first we make the denominators same.

LCM of 10 and 20 = $2 \times 2 \times 5 = 20$.

2	8, 7
2	1, 7
2	4, 7
7	2, 7
	1, 1

Now, $\frac{5}{10} = \frac{5 \times 2}{10 \times 2} = \frac{10}{20}$ and

$$\frac{4}{20} = \frac{4 \times 1}{20 \times 1} = \frac{4}{20}.$$

Clearly, $10 > 4$ i.e., $\frac{5}{20} > \frac{4}{20}$.

Thus, $\frac{5}{20}$ is greater.

3. (a) Given fractions are

$$\frac{9}{5}, \frac{4}{5}, \frac{14}{5}, 1\frac{2}{5} \left(= \frac{1 \times 5 + 2}{5} \right) = \frac{7}{5}.$$

Since, $4 < 7 < 9 < 14$.

Therefore, $\frac{4}{5} < \frac{7}{5} < \frac{9}{5} < \frac{14}{5}$.

Thus, $\frac{4}{5} < 1\frac{2}{5} < \frac{9}{5} < \frac{14}{5}$ are in ascending order.

(b) Given fractions are $\frac{44}{25}, 6\frac{6}{25}, 1\frac{20}{25}, \frac{65}{25}$.

$$= \frac{44}{25}, \frac{6 \times 25 + 6}{25}, \frac{1 \times 25 + 20}{25}, \frac{65}{25}.$$

$$= \frac{44}{25}, \frac{156}{25}, \frac{45}{25}, \frac{65}{25}.$$

Since, $44 < 45 < 65 < 156$.

Therefore, $\frac{44}{25} < \frac{45}{25} < \frac{65}{25} < \frac{156}{25}$.

Thus, $\frac{44}{25} < 1\frac{20}{25} < \frac{65}{25} < 6\frac{6}{25}$ are in ascending order.

(c) Given fractions are $\frac{3}{4}, \frac{5}{6}, \frac{2}{3}, \frac{1}{2}$.

Since, denominators are different.

So, first we make the denominators same.

LCM of the denominators 4, 6, 3 and 2 is 12.

$$\text{Then, } \frac{3}{4} = \frac{3 \times 3}{4 \times 3} = \frac{9}{12}.$$

$$\frac{5}{6} = \frac{5 \times 2}{6 \times 2} = \frac{10}{12}.$$

$$\frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12}.$$

$$\frac{1}{2} = \frac{1 \times 6}{2 \times 6} = \frac{6}{12}.$$

2	4, 6, 3, 2
2	2, 3, 3, 1
3	1, 3, 3, 1
	1, 1, 1, 1

Since, $6 < 8 < 9 < 10$.

Therefore, $\frac{6}{12} < \frac{8}{12} < \frac{9}{12} < \frac{10}{12}$

Thus, $\frac{1}{2} < \frac{2}{3} < \frac{3}{4} < \frac{5}{6}$ are in ascending order.

4. (a) Given fractions are $\frac{7}{9}, \frac{5}{6}, \frac{2}{3}, \frac{17}{27}$.

Since, denominators are different.

So, first we make the denominators same.

LCM of the denominators 9, 6, 3 and 27

$$= 2 \times 3 \times 3 \times 3 = 54.$$

$$\text{Then, } \frac{7}{9} = \frac{7 \times 6}{9 \times 6} = \frac{42}{54}.$$

2	9, 6, 3, 27
3	9, 3, 3, 27
3	3, 1, 1, 9
3	1, 1, 1, 3

$$\frac{5}{6} = \frac{5 \times 9}{6 \times 9} = \frac{45}{54}.$$

$$\frac{2}{3} = \frac{2 \times 18}{3 \times 18} = \frac{36}{54}.$$

$$\frac{17}{27} = \frac{17 \times 2}{27 \times 2} = \frac{34}{54}.$$

Therefore, $\frac{45}{54} > \frac{42}{54} > \frac{36}{54} > \frac{34}{54}$.

Thus, $\frac{5}{6} > \frac{7}{9} > \frac{2}{3} > \frac{17}{27}$ are in descending order.

(b) Given fractions are $\frac{7}{8}, \frac{5}{12}, \frac{15}{16}, \frac{17}{24}$.

Since, denominators are different.

So, first we make the denominators same.

LCM of the denominators 8, 12, 16 and 24

$$= 2 \times 2 \times 2 \times 2 \times 3 = 48.$$

$$\text{Then, } \frac{7}{8} = \frac{7 \times 6}{8 \times 6} = \frac{42}{48}.$$

2	8, 12, 16, 24
2	4, 6, 8, 12
2	2, 3, 4, 6
3	1, 3, 2, 3
3	1, 3, 1, 3

$$\frac{5}{12} = \frac{5 \times 4}{12 \times 4} = \frac{20}{48}.$$

$$\frac{15}{16} = \frac{15 \times 3}{16 \times 3} = \frac{45}{48}.$$

$$\frac{17}{24} = \frac{17 \times 2}{24 \times 2} = \frac{34}{48}.$$

Since, $45 > 42 > 34 > 20$.

Therefore, $\frac{45}{48} > \frac{42}{48} > \frac{34}{48} > \frac{20}{48}$.

Thus, $\frac{15}{16} > \frac{7}{8} > \frac{17}{24} > \frac{5}{12}$ are in descending order.

(c) Given fractions are $\frac{2}{5}, \frac{3}{10}, \frac{7}{15}, \frac{1}{2}$.

Since, denominators are different.

So, first we make the denominators same.

LCM of the denominators 5, 10, 15 and 2.

$$= 2 \times 3 \times 5 = 30.$$

$$\text{Then, } \frac{2}{5} = \frac{2 \times 6}{5 \times 6} = \frac{12}{30}.$$

2	5, 10, 15, 2
3	5, 5, 15, 1
5	5, 5, 5, 1

$$\frac{3}{10} = \frac{3 \times 3}{10 \times 3} = \frac{9}{30}.$$

$$\frac{7}{15} = \frac{7 \times 2}{15 \times 2} = \frac{14}{30}.$$

$$\frac{1}{2} = \frac{1 \times 15}{2 \times 15} = \frac{15}{30}$$

Therefore, $\frac{15}{30} > \frac{14}{30} > \frac{12}{30} > \frac{9}{30}$.

Thus, $\frac{1}{2} > \frac{7}{15} > \frac{2}{5} > \frac{3}{10}$ are in descending order.

Practice Time 4C

$$1. (a) \frac{3}{7} + \frac{4}{7} = \frac{3+4}{7} = \frac{7}{7} = 1.$$

$$(b) \frac{7}{12} + \frac{11}{12} = \frac{7+11}{12} = \frac{18}{12}.$$

$$\frac{18}{12} = \frac{18 \div 6}{12 \div 6} = \frac{3}{2} = 1\frac{1}{2}.$$

$$(c) \frac{3}{10} + \frac{7}{20} + \frac{1}{5}.$$

Here, LCM of 10, 20 and 5 = $2 \times 2 \times 5 = 20$.

$$\text{Therefore, } \frac{3}{10} + \frac{7}{20} + \frac{1}{5}.$$

$$= \frac{3 \times 2}{10 \times 2} + \frac{7 \times 1}{20 \times 1} + \frac{1 \times 4}{5 \times 4}.$$

$$= \frac{6}{20} + \frac{7}{20} + \frac{4}{20} = \frac{6+7+4}{20} = \frac{17}{20}.$$

$$(d) 2\frac{3}{7} + 1\frac{5}{14} = \frac{2 \times 7 + 3}{7} + \frac{1 \times 14 + 5}{14}$$

$$= \frac{17}{7} + \frac{19}{14}.$$

Here, LCM of 7 and 14 = $7 \times 2 = 14$.

$$\begin{aligned}\text{Therefore, } \frac{17}{7} + \frac{19}{14} &= \frac{17 \times 2}{7 \times 2} + \frac{19 \times 1}{14 \times 1} \\ &= \frac{34}{14} + \frac{19}{14} = \frac{34 + 19}{14} \\ &= \frac{53}{14} = 3\frac{11}{14}. \quad \begin{array}{r} 14)53(3 \\ -42 \\ \hline 11 \end{array}\end{aligned}$$

$$\begin{aligned}(e) \quad 2 + 1\frac{1}{6} + \frac{1}{8} &= 2 + \frac{1 \times 6 + 1}{6} + \frac{1}{8} \\ &= \frac{2}{1} + \frac{7}{6} + \frac{1}{8}\end{aligned}$$

Here, LCM of 6 and 8
 $= 2 \times 2 \times 2 \times 3 = 24$

$$\begin{aligned}\text{Therefore, } \frac{2}{1} + \frac{7}{6} + \frac{1}{8} &= \frac{2 \times 24}{1 \times 24} + \frac{7 \times 4}{6 \times 4} + \frac{1 \times 3}{8 \times 3} \\ &= \frac{48}{24} + \frac{28}{24} + \frac{3}{24} = \frac{48 + 28 + 3}{24} \\ &= \frac{79}{24} = 3\frac{7}{24}. \quad \begin{array}{r} 24)79(3 \\ -72 \\ \hline 7 \end{array}\end{aligned}$$

$$\begin{aligned}(f) \quad 2\frac{5}{6} + 1\frac{2}{3} + \frac{1}{4} &= \frac{2 \times 6 + 5}{6} + \frac{1 \times 3 + 2}{3} + \frac{1}{4} \\ &= \frac{17}{6} + \frac{5}{3} + \frac{1}{4}.\end{aligned}$$

Here, LCM of 6, 3 and 4 = $2 \times 2 \times 3 = 12$.

$$\begin{aligned}\text{Therefore, } \frac{17}{6} + \frac{5}{3} + \frac{1}{4} &= \frac{17 \times 2}{6 \times 2} + \frac{5 \times 4}{3 \times 4} + \frac{1 \times 3}{4 \times 3} \quad \begin{array}{r} 2 \mid 6, 3, 4 \\ \hline 2 \mid 3, 3, 2 \\ \hline 3 \mid 3, 1 \\ \hline 1, 1 \end{array} \\ &= \frac{34}{12} + \frac{20}{12} + \frac{3}{12} = \frac{34 + 20 + 3}{12} = \frac{57}{12} \\ &= \frac{57 \div 3}{12 \div 3} = \frac{19}{4} = 4\frac{3}{4}. \quad \begin{array}{r} 4)19(4 \\ -16 \\ \hline 3 \end{array}\end{aligned}$$

$$\begin{aligned}(g) \quad 2\frac{1}{5} + 3 + 1\frac{4}{9} &= \frac{2 \times 5 + 1}{5} + 3 + \frac{1 \times 9 \times 4}{9} \\ &= \frac{11}{5} + \frac{3}{1} + \frac{13}{9}.\end{aligned}$$

Here, LCM of 5 and 9
 $= 3 \times 3 \times 5 = 45$

Therefore, $\frac{11}{5} + \frac{3}{1} + \frac{13}{9}$

$$\begin{aligned}&= \frac{11 \times 9}{5 \times 9} + \frac{3 \times 45}{1 \times 45} + \frac{13 \times 5}{9 \times 5} \\ &= \frac{99}{45} + \frac{135}{45} + \frac{65}{45} = \frac{99 + 135 + 65}{45} \\ &= \frac{299}{45} = 6\frac{29}{45}. \quad \begin{array}{r} 45)299(6 \\ -270 \\ \hline 29 \end{array}\end{aligned}$$

$$\begin{aligned}(h) \quad 3\frac{7}{8} + 5\frac{5}{12} + 2\frac{3}{4} &= \frac{3 \times 8 \times 7}{8} + \frac{5 \times 12 \times 5}{12} + \frac{2 \times 4 + 3}{4} \\ &= \frac{31}{8} + \frac{65}{12} + \frac{11}{4}.\end{aligned}$$

Here, LCM of 8, 12 and 4 = $2 \times 2 \times 2 \times 3 = 24$.

$$\begin{aligned}\text{Therefore, } \frac{31}{8} + \frac{65}{12} + \frac{11}{4} &= \frac{31 \times 3}{8 \times 3} + \frac{65 \times 2}{12 \times 2} \quad \begin{array}{r} 2 \mid 8, 12, 4 \\ \hline 2 \mid 4, 6, 2 \\ \hline 2 \mid 2, 3, 1 \\ \hline 3 \mid 1, 3, 1 \\ \hline 1, 1, 1 \end{array} \\ &\quad + \frac{11 \times 6}{4 \times 6} \\ &= \frac{93}{24} + \frac{130}{24} + \frac{66}{24} \\ &= \frac{93 + 130 + 66}{24} \quad \begin{array}{r} 24)289(12 \\ -24 \\ \hline 49 \\ -48 \\ \hline 1 \end{array} \\ &= \frac{289}{24} = 12\frac{1}{24}.\end{aligned}$$

$$\begin{aligned}(i) \quad 4\frac{7}{10} + 6\frac{3}{5} + 3\frac{1}{2} &= \frac{4 \times 10 + 7}{10} + \frac{6 \times 5 + 3}{5} + \frac{3 \times 2 + 1}{2} \\ &= \frac{47}{10} + \frac{33}{5} + \frac{7}{2}.\end{aligned}$$

Here, LCM of 10, 5 and 2

$$= 2 \times 5 = 10.$$

$$\begin{aligned}\text{Therefore, } \frac{47}{10} + \frac{33}{5} + \frac{7}{2} &= \frac{47 \times 1}{10 \times 1} + \frac{33 \times 2}{5 \times 2} + \frac{7 \times 5}{2 \times 5} \\ &= \frac{47}{10} + \frac{66}{10} + \frac{35}{10}\end{aligned}$$

$$\begin{aligned}
 &= \frac{47 + 66 + 35}{10} \\
 &= \frac{148}{10} = \frac{74}{5} = 14\frac{4}{5}.
 \end{aligned}$$

$$\begin{aligned}
 (j) \quad &5\frac{5}{6} + 1\frac{3}{8} + 4\frac{7}{12} \\
 &= \frac{5 \times 6 + 5}{6} + \frac{1 \times 8 + 3}{8} + \frac{4 \times 12 + 7}{12} \\
 &= \frac{35}{6} + \frac{11}{8} + \frac{55}{12}.
 \end{aligned}$$

$$\begin{aligned}
 \text{Here, LCM of } 6, 8, 12 \\
 &= 2 \times 2 \times 2 \times 3 = 24.
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore, } &\frac{35}{6} + \frac{11}{8} + \frac{55}{12} \\
 &= \frac{35 \times 4}{6 \times 4} + \frac{11 \times 3}{8 \times 3} + \frac{55 \times 2}{12 \times 2} \\
 &= \frac{140}{24} + \frac{33}{24} + \frac{110}{24} \\
 &= \frac{140 + 33 + 110}{24} \\
 &= \frac{283}{24} = 11\frac{19}{24}.
 \end{aligned}$$

$$\begin{aligned}
 (k) \quad &12\frac{2}{5} + 13\frac{1}{5} + 2 \\
 &= \frac{12 \times 5 + 2}{5} + \frac{13 \times 5 + 1}{5} + \frac{2}{1} \\
 &= \frac{62}{5} + \frac{66}{5} + \frac{2}{1}.
 \end{aligned}$$

$$\text{Here, LCM of } 1, 5 \text{ and } 5 = 5.$$

$$\begin{aligned}
 \text{Therefore, } &\frac{62}{5} + \frac{66}{5} + \frac{2}{1} = \frac{62}{5} + \frac{66}{5} + \frac{2 \times 5}{1 \times 5} \\
 &= \frac{62}{5} + \frac{66}{5} + \frac{10}{5} \\
 &= \frac{62 + 66 + 10}{5} \\
 &= \frac{138}{5} = 27\frac{3}{5}.
 \end{aligned}$$

$$\begin{aligned}
 (l) \quad &1\frac{11}{14} + 3\frac{8}{21} + 1\frac{1}{7} \\
 &= \frac{1 \times 14 + 11}{14} + \frac{3 \times 21 + 8}{21} + \frac{1 \times 7 + 1}{7}
 \end{aligned}$$

$$\begin{array}{r}
 5)74(14 \\
 -5 \\
 \hline
 24 \\
 -20 \\
 \hline
 4
 \end{array}$$

$$= \frac{25}{14} + \frac{71}{21} + \frac{8}{7}.$$

$$\begin{aligned}
 \text{Here, LCM of } 14, 21 \text{ and } 7 \\
 &= 3 \times 2 \times 7 = 42.
 \end{aligned}$$

$$\text{Therefore, } \frac{25}{14} + \frac{71}{21} + \frac{8}{7}.$$

$$\begin{aligned}
 &= \frac{25 \times 3}{14 \times 3} + \frac{71 \times 2}{21 \times 2} + \frac{8 \times 6}{7 \times 6} \\
 &= \frac{75}{42} + \frac{142}{42} + \frac{48}{42} \\
 &= \frac{262}{42} = 6\frac{13}{42}.
 \end{aligned}$$

$$\begin{array}{r}
 3 | 14, 21, 7 \\
 2 | 14, 7, 7 \\
 7 | 7, 7, 7 \\
 \hline
 1, 1, 1
 \end{array}$$

$$\begin{array}{r}
 42)265(6 \\
 -265 \\
 \hline
 13
 \end{array}$$

$$2. (a) \quad \frac{17}{44} - \frac{2}{11}$$

$$\begin{aligned}
 \text{Here, LCM of } 44 \text{ and } 11 \\
 &= 2 \times 2 \times 11 = 44.
 \end{aligned}$$

$$\begin{aligned}
 \text{Therefore, } &\frac{17}{44} - \frac{2}{11} = \frac{17}{44} - \frac{2 \times 4}{11 \times 4} = \frac{17}{44} - \frac{8}{44} \\
 &= \frac{17 - 8}{44} = \frac{9}{44}.
 \end{aligned}$$

$$(b) \quad \frac{17}{32} - \frac{25}{48}$$

$$\text{Here, LCM of } 32 \text{ and } 48$$

$$\begin{aligned}
 &= 2 \times 2 \times 2 \times 2 \times 2 \times 3 = 96. \quad \begin{array}{r}
 2 | 32, 48 \\
 2 | 16, 24 \\
 2 | 8, 12 \\
 2 | 4, 6 \\
 2 | 2, 3 \\
 3 | 1, 3 \\
 \hline
 1, 1
 \end{array} \\
 \text{Therefore, } &\frac{17}{32} - \frac{25}{48} \\
 &= \frac{17 \times 3}{32 \times 3} - \frac{25 \times 2}{48 \times 2} \\
 &= \frac{51}{96} - \frac{50}{96} = \frac{51 - 50}{96} = \frac{1}{96}.
 \end{aligned}$$

$$(c) \quad \frac{3}{4} - \frac{5}{12}$$

$$\text{Here, LCM of } 4 \text{ and } 12 = 2 \times 2 \times 3 = 12.$$

$$\begin{aligned}
 \text{Therefore, } &\frac{3}{4} - \frac{5}{12} = \frac{3 \times 3}{4 \times 3} - \frac{5 \times 1}{12 \times 1} \quad \begin{array}{r}
 2 | 4, 12 \\
 2 | 2, 6 \\
 3 | 1, 3 \\
 \hline
 1, 1
 \end{array} \\
 &= \frac{9}{12} - \frac{5}{12} \\
 &= \frac{9 - 5}{12} = \frac{4}{12} = \frac{1}{3}.
 \end{aligned}$$

$$(d) 3\frac{7}{22} - 2\frac{3}{11} = \frac{3 \times 22 + 7}{22} - \frac{2 \times 11 + 3}{11}$$

$$= \frac{73}{22} - \frac{25}{11}.$$

Here, LCM of 22 and 11 = $2 \times 11 = 22$

$$\begin{array}{r} \text{Therefore, } \frac{73}{22} - \frac{25}{11} = \frac{73}{22} - \frac{25 \times 2}{11 \times 2} = \frac{73}{22} - \frac{50}{22} \\ = \frac{73 - 50}{22} = \frac{23}{22} \quad \begin{array}{l} 22)23 \\ \underline{-22} \\ 1 \end{array} (1) \\ = 1\frac{1}{22}. \end{array}$$

$$(e) 18\frac{4}{5} - 7\frac{9}{10} = \frac{18 \times 5 + 4}{5} - \frac{7 \times 10 + 9}{10}$$

$$= \frac{94}{5} - \frac{79}{10}.$$

Here, LCM of 5 and 10 = $2 \times 5 = 10$

$$\begin{array}{r} \text{Therefore, } \frac{94}{5} - \frac{79}{10} = \frac{94 \times 2}{5 \times 2} - \frac{79 \times 1}{10 \times 1} \\ = \frac{188}{10} - \frac{79}{10} \quad \begin{array}{l} 22)109 \\ \underline{-10} \\ 09 \end{array} (10) \\ = \frac{188 - 79}{10} = 10\frac{9}{10}. \end{array}$$

$$(f) 8\frac{3}{8} - 3\frac{1}{5} = \frac{8 \times 8 + 3}{8} - \frac{3 \times 5 + 1}{5}$$

$$= \frac{67}{8} - \frac{16}{5}.$$

Here, LCM of 8 and 5 = $8 \times 5 = 40$.

$$\begin{array}{r} \text{Therefore, } \frac{67}{8} - \frac{16}{5} = \frac{67 \times 5}{8 \times 5} - \frac{16 \times 8}{5 \times 8} \\ = \frac{335}{40} - \frac{128}{40} = \frac{335 - 128}{40} \\ = \frac{207}{40} = 5\frac{7}{40}. \quad \begin{array}{l} 40)207 \\ \underline{-20} \\ 7 \end{array} (5) \end{array}$$

(g) and (h) — Same as above.

$$3. (a) 4\frac{3}{5} - \frac{2}{3} + \frac{3}{10} = \frac{4 \times 5 + 3}{5} - \frac{2}{3} + \frac{3}{10}$$

$$= \frac{23}{5} - \frac{2}{3} + \frac{3}{10}.$$

Here, LCM of 5, 3 and 10 = $2 \times 3 \times 5 = 30$.

$$\begin{array}{r} \text{Therefore, } \frac{23}{5} - \frac{2}{3} + \frac{3}{10} \\ = \frac{23 \times 6}{5 \times 6} - \frac{2 \times 10}{3 \times 10} + \frac{3 \times 3}{10 \times 3} \\ = \frac{138}{30} - \frac{20}{30} + \frac{9}{30} = \frac{138 - 20 + 9}{30} \\ = \frac{138 + 9 - 20}{30} = \frac{147 - 20}{30} \quad \begin{array}{l} 30)127 \\ \underline{-120} \\ 7 \end{array} (4) \\ = \frac{127}{30} = 4\frac{7}{30}. \end{array}$$

$$(b) 6\frac{3}{4} + \frac{3}{5} - 1\frac{5}{6} = \frac{6 \times 4 + 3}{4} + \frac{3}{5} - \frac{1 \times 6 + 5}{6}$$

$$= \frac{27}{4} + \frac{3}{5} - \frac{11}{6}.$$

Here, LCM of 4, 5, 6 = $2 \times 2 \times 3 \times 5 = 60$.

$$\begin{array}{r} \text{Therefore, } \frac{27}{4} + \frac{3}{5} - \frac{11}{6} \\ = \frac{27 \times 15}{4 \times 15} + \frac{3 \times 12}{5 \times 12} - \frac{11 \times 10}{6 \times 10} \\ = \frac{405}{60} + \frac{36}{60} - \frac{110}{60} = \frac{405 + 36 - 110}{60} \\ = \frac{441 - 110}{60} = \frac{331}{60} = 5\frac{31}{60}. \quad \begin{array}{l} 60)331 \\ \underline{-300} \\ 31 \end{array} (5) \end{array}$$

$$(c) 5\frac{7}{8} + 2\frac{2}{3} - \frac{11}{2} = \frac{5 \times 8 + 7}{8} + \frac{2 \times 3 + 2}{3} - \frac{11}{12}$$

$$= \frac{47}{8} + \frac{8}{3} - \frac{11}{12}.$$

Here, LCM of 8, 3 and 12 = $2 \times 2 \times 3 = 24$.

$$\begin{array}{r} \text{Therefore, } \frac{47}{8} + \frac{8}{3} - \frac{11}{12} \\ = \frac{47 \times 3}{8 \times 3} + \frac{8 \times 8}{3 \times 8} - \frac{11 \times 2}{12 \times 2} \\ = \frac{141}{24} + \frac{64}{24} - \frac{22}{24} = \frac{141 + 64 - 22}{24} \\ = \frac{183}{24} = \frac{183 \div 3}{24 \div 3} = \frac{61}{8} = 7\frac{5}{8}. \quad \begin{array}{l} 8)61 \\ \underline{-56} \\ 5 \end{array} (7) \end{array}$$

$$(d) 4\frac{7}{21} - 1\frac{5}{6} - \frac{3}{4} = \frac{4 \times 21 + 7}{21} - \frac{1 \times 6 + 5}{6} - \frac{3}{4}$$

$$= \frac{91}{21} - \frac{11}{6} - \frac{3}{4}.$$

Here, LCM of 21, 6 and 4

$$= 2 \times 2 \times 3 \times 7 = 84.$$

2	21, 6, 4
2	21, 3, 2
3	21, 3, 1
7	7, 1, 1
1	1, 1, 1

$$\text{Therefore, } \frac{91 \times 4}{21 \times 4} - \frac{11 \times 14}{6 \times 14} - \frac{3 \times 21}{4 \times 21}$$

$$= \frac{364}{84} - \frac{154}{84} - \frac{63}{84} = \frac{364 - 154 - 63}{84}$$

$$= \frac{364 - (154 + 63)}{84} = \frac{364 - 217}{84}$$

$$= \frac{147}{84} = 1\frac{63}{84}.$$

$$\begin{array}{r} 84 \overline{)147(1} \\ -84 \\ \hline 63 \end{array}$$

$$(e) 7\frac{5}{6} - 1\frac{3}{4} - 1\frac{1}{2}$$

$$= \frac{7 \times 6 + 5}{6} - \frac{1 \times 4 + 3}{4} - \frac{1 \times 2 + 1}{2}$$

$$= \frac{47}{6} - \frac{7}{4} - \frac{3}{2}$$

3	6, 4, 2
2	3, 2, 1
3	3, 1, 1
1	1, 1, 1

Here, LCM of 6, 4 and 2

$$= 2 \times 2 \times 3 = 12.$$

$$\text{Therefore, } \frac{47 \times 2}{6 \times 2} - \frac{7 \times 3}{4 \times 3} - \frac{3 \times 6}{2 \times 6}$$

$$= \frac{94}{12} - \frac{21}{12} - \frac{18}{12} = \frac{94 - 21 - 18}{12}$$

$$= \frac{94 - (21 + 18)}{12} = \frac{94 - 39}{12}$$

$$= \frac{55}{12} = 4\frac{7}{12}.$$

$$\begin{array}{r} 22 \overline{)55(4} \\ -48 \\ \hline 7 \end{array}$$

$$(f) 8\frac{1}{3} - 2\frac{3}{5} + 2\frac{1}{2} - \frac{1}{2}$$

$$= \frac{8 \times 3 + 1}{3} - \frac{2 \times 5 + 3}{5} - \frac{2 \times 2 + 1}{2} - \frac{1}{2}$$

$$= \frac{25}{3} - \frac{13}{5} + \frac{5}{2} - \frac{1}{2}$$

2	3, 5, 2, 2
3	3, 5, 1, 1
5	1, 5, 1, 1
1	1, 1, 1, 1

Here, LCM of 3, 5, 2 and 2

$$= 2 \times 3 \times 5 = 30.$$

$$\text{Therefore, } \frac{25 \times 10}{3 \times 10} - \frac{13 \times 6}{5 \times 6} + \frac{5 \times 15}{2 \times 15} - \frac{1 \times 15}{2 \times 15}$$

$$= \frac{250}{30} - \frac{78}{30} + \frac{75}{30} - \frac{15}{30}$$

$$= \frac{250 - 78 + 75 - 15}{30}$$

$$= \frac{250 + 75 - (78 + 15)}{30} = \frac{325 - 93}{30}$$

$$= \frac{232}{30} = \frac{232 \div 2}{30 \div 2} = \frac{116}{15} = 7\frac{11}{15}$$

$$4. \text{ Weight of an empty basket} = 1\frac{4}{5} \text{ kg}$$

$$= \frac{1 \times 5 + 4}{5} = \frac{9}{5} \text{ kg.}$$

$$\text{Weight of apples} = 2\frac{1}{3} \text{ kg} = \frac{7}{3} \text{ kg.}$$

$$\text{Total weight of basket with apples} = \frac{9}{5} + \frac{7}{3}$$

Here, LCM of 5 and 3 = 3 × 5 = 15.

$$\text{Therefore, } \frac{9}{5} + \frac{7}{3} = \frac{9 \times 3}{5 \times 3} + \frac{7 \times 5}{3 \times 5}$$

3	5, 3
5	5, 1
1	1, 1

$$= \frac{27}{15} + \frac{35}{15} = \frac{27 + 35}{15}$$

$$= \frac{62}{15} = 4\frac{2}{15} \text{ kg.}$$

$$\text{Thus, the total weight of the basket with } \frac{9}{5} + \frac{7}{3} \text{ kg.}$$

$$\text{apples together is } 4\frac{2}{15} \text{ kg.}$$

$$5. \text{ Rohan's father purchased cloth for his trouser} = 1\frac{1}{2} \text{ m.}$$

$$\text{Cloth purchased by him for his younger brother's trouser} = 1\frac{2}{3} \text{ m.}$$

Total length of cloth Rohan's father purchased

2	2, 3
3	1, 3
1	1, 1

$$= 1\frac{1}{2} \text{ m} + 1\frac{2}{3} \text{ m} = \frac{3}{2} \text{ m} + \frac{5}{3} \text{ m}$$

$$\therefore \text{LCM of 2 and 3} = 2 \times 3 = 6$$

$$\therefore \frac{3 \times 3}{2 \times 3} + \frac{5 \times 2}{3 \times 2} = \frac{9}{6} + \frac{20}{6}$$

$$= \frac{9+10}{6} \text{ m} = \frac{19}{6} \text{ m} = 3 \frac{1}{6} \text{ m.}$$

Thus, Rohan's father purchases $3 \frac{1}{6}$ m of cloth.

6. Thickness of one board = $3 \frac{5}{16}$ cm.

Thickness of another board = $4 \frac{3}{8}$ cm.

Combined thickness of the board

$$= 3 \frac{5}{16} \text{ cm} + 4 \frac{3}{8} \text{ cm} = \frac{53}{16} + \frac{35}{8} \text{ cm.}$$

LCM of 16 and 8 is 16

$$= \frac{53+70}{16} \text{ cm} = \frac{123}{16} \text{ cm} = 7 \frac{11}{16} \text{ cm.}$$

7. Quantity of milk in a vessel = $\frac{4}{8}$ L

Quantity of milk Viban drank from the vessel

$$= \frac{1}{12} \text{ L.}$$

Milk left in the vessel = $\frac{4}{8} \text{ L} - \frac{1}{12} \text{ L.}$

LCM of 8 and 12 = $2 \times 2 \times 2 \times 3 = 24.$

$$= \frac{12-2}{24} \text{ L} = \frac{10}{24} \text{ L} = \frac{5}{12} \text{ L.}$$

Thus, $\frac{5}{12}$ litres of milk was left in the vessel.

8. Arun jumped: $2 \frac{7}{8}$ m.

Varun jumped: $2 \frac{7}{8} \text{ m} - \frac{2}{3} \text{ m} = \frac{23}{8} \text{ m} - \frac{2}{3} \text{ m.}$

LCM of 8 and 3 = $2 \times 2 \times 2 \times 3 = 24$

$$\frac{23}{8} - \frac{2}{3} = \frac{69-16}{24} = \frac{53}{24} = 2 \frac{5}{24} \text{ m.}$$

Thus, Varun's jump was $2 \frac{5}{24}$ m long.

9. Quantity of sugar used by Riya for puddings

$$= 1 \frac{1}{2} \text{ kg.}$$

Quantity of sugar used for ice-cream = $\frac{3}{4}$ kg.

Quantity used of sugar for cup cake = $\frac{1}{8}$ kg.

Total weight of sugar used

$$= 1 \frac{1}{2} \text{ kg} + \frac{3}{4} \text{ kg} + \frac{1}{8} \text{ kg.}$$

$$= \frac{3}{2} \text{ kg} + \frac{3}{4} \text{ kg} + \frac{1}{8} \text{ kg.}$$

2	2, 4, 8
2	1, 2, 4
2	1, 1, 2
1	1, 1, 1

LCM of 2, 4 and 8 = $2 \times 2 \times 2 = 8$

$$= \frac{12+6+1}{8} \text{ kg} = \frac{19}{8} \text{ kg} = 2 \frac{3}{8} \text{ kg.}$$

Thus, $2 \frac{3}{8}$ kg sugar was used by Riya in total.

Practice Time 4D

1. (a) $\frac{3}{8}$ by 5 = $\frac{3}{8} \times 5 = \frac{3 \times 5}{8} = \frac{15}{8} = 1 \frac{7}{8}.$

(b) $\frac{4}{7}$ by 5 = $\frac{4}{7} \times 5 = \frac{4 \times 5}{7} = \frac{20}{7} = 2 \frac{6}{7}.$

(c) $\frac{20}{25}$ by 5 = $\frac{20}{25} \times 5 = \frac{20 \times 5}{25} = \frac{100}{25} = \frac{100 \div 25}{25 \div 25} = \frac{4}{1} = 1$

(d) $\frac{7}{20}$ by 12 = $\frac{7}{20} \times 12 = \frac{7 \times 12}{20} = \frac{84}{20} = \frac{84 \div 4}{20 \div 4} = \frac{21}{5} = 4 \frac{1}{5}.$

2. (a) $\frac{2}{6}$ of $\frac{3}{5} = \frac{2^1}{6^1} \times \frac{3^1}{5} = \frac{1 \times 1}{1 \times 5} = \frac{1}{5}.$

(b) $\frac{6}{9}$ of $\frac{3}{8} = \frac{6^3}{9^3} \times \frac{3^1}{8^4} = \frac{3^1 \times 1}{3^1 \times 4} = \frac{1 \times 1}{1 \times 4} = \frac{1}{4}.$

(c) $\frac{10^5}{15^3} \times \frac{1^1}{6^3} = \frac{1 \times 1}{3 \times 3} = \frac{1}{9}.$

(d) $\frac{7^1}{9^3} \times \frac{3^1}{28^4} = \frac{1 \times 1}{3 \times 4} = \frac{1}{12}.$

(e) $\frac{3^1}{4^2} \times \frac{5}{6^2} \times \frac{2^1}{3} = \frac{1 \times 5 \times 1}{2 \times 2 \times 3} = \frac{5}{12}.$

$$(f) \frac{3}{5} \times \frac{2}{6} \times \frac{2}{9} = \frac{1 \times 2 \times 1}{5 \times 1 \times 9} = \frac{2}{45}.$$

$$(g) \frac{3}{5} \times \frac{1}{4} \times \frac{3}{8} = \frac{3 \times 1 \times 3}{5 \times 2 \times 8} = \frac{9}{80}.$$

$$(h) \frac{2}{4} \times \frac{1}{5} \times \frac{7}{9} = \frac{1 \times 1 \times 7}{2 \times 5 \times 9} = \frac{7}{90}.$$

$$3. (a) \frac{5}{8} \text{ of } 48 \text{ km} = \frac{5}{8} \times 48 \text{ km} = \frac{5 \times 6}{1} \text{ km} = 30 \text{ km.}$$

$$(b) \frac{4}{9} \text{ of } 81 \text{ kg} = \frac{4}{9} \times 81 \text{ kg} = \frac{4 \times 9}{1} \text{ kg} = 36 \text{ kg.}$$

$$(c) \frac{5}{7} \text{ of } \frac{7}{30} = \frac{5}{7} \times \frac{1}{30} = \frac{1 \times 1}{1 \times 6} = \frac{1}{6}.$$

$$(d) \frac{7}{20} \text{ of } 4 \text{ hours} = \frac{7}{20} \times 4 \text{ hours} = \frac{7}{5} \text{ hours} = 1\frac{2}{5} \text{ hours.}$$

$$4. \text{ Quantity of milk Rajat purchases daily} = 2\frac{1}{2} \text{ L}$$

Therefore, quantity of milk he will purchase in a week

$$= 7 \times 2\frac{1}{2} \text{ L} = 7 \times \frac{5}{2} \text{ L} = \frac{7 \times 5}{2} \text{ L} = 35 \text{ L.}$$

Thus, Rajat will purchase $17\frac{1}{2}$ L of milk in a week.

$$5. \text{ Work finished by Seema in 1 hour} = \frac{1}{3} \text{ part.}$$

Therefore, work finished by her in $2\frac{1}{5}$ hours

$$= \frac{1}{3} \times 2\frac{1}{5} \text{ part} = \frac{1}{3} \times \frac{11}{5} \text{ part} = \frac{11}{15} \text{ part.}$$

Thus, $\frac{11}{15}$ part of the work she will finish in $2\frac{1}{5}$ hours.

$$6. \text{ Part of pizza Nidhi ate} = \frac{1}{8}.$$

$$\text{Part of pizza Kajal ate} = \frac{1}{8}.$$

$$\text{Part of pizza Sonal ate} = \frac{1}{8}.$$

$$\text{Part of pizza Payal ate} = \frac{1}{8}.$$

Part of pizza they eat all together

$$= \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \frac{1+1+1+1}{8} = \frac{4}{8} = \frac{1}{2}.$$

Thus, they eat $\frac{1}{2}$ of pizza all together.

7. Weight of an object on Earth = $6 \times$ weight of the object on Moon.

Given:

$$\text{Weight of an object on Moon} = 5\frac{3}{5} \text{ kg.}$$

$$\begin{aligned} \text{It's weight on Earth} &= 6 \times 5\frac{3}{5} \text{ kg} = 6 \times \frac{28}{5} \\ &= \frac{168}{5} = 33\frac{3}{5}. \end{aligned}$$

$\frac{168}{5}$
 $\frac{15}{18}$
 $\frac{3}{3}$

Thus, the object's weight

is $33\frac{3}{5}$ kg on Earth.

Practice Time 4E

$$1. (a) \text{ We can write } 11 \text{ as } \frac{11}{1}.$$

$$\text{So, multiplicative inverse of } \frac{11}{1} = \frac{1}{11}.$$

$$(b) \text{ Multiplicative inverse of } \frac{3}{7} = \frac{7}{3}.$$

$$(c) \text{ Multiplicative inverse of } \frac{3}{5} = \frac{5}{3}.$$

$$(d) \text{ Multiplicative inverse of } \frac{4}{9} = \frac{9}{4}.$$

$$(e) \text{ Multiplicative inverse of } \frac{14}{19} = \frac{19}{14}.$$

$$(f) \text{ Multiplicative inverse of } \frac{18}{40} \left(= \frac{9}{20} \right) = \frac{20}{9}.$$

$$(g) \text{ Multiplicative inverse of } \frac{2}{9} = \frac{9}{2}.$$

$$(h) \text{ Multiplicative inverse of } \frac{24}{30} \left(= \frac{4}{5} \right) = \frac{5}{4}.$$

$$(i) \text{ Multiplicative inverse of } \frac{44}{33} \left(= \frac{4}{3} \right) = \frac{3}{4}.$$

$$(j) \text{ Multiplicative inverse of } \frac{20}{5} \left(\frac{4}{1} \right) = \frac{1}{4}.$$

$$2. (a) \frac{3}{6} \div 6 = \frac{3}{6} \times \text{Reciprocal of } 6.$$

$$= \frac{\cancel{3}^1}{6} \times \frac{1}{\cancel{6}_2} = \frac{1 \times 1}{6 \times 2} = \frac{1}{12}.$$

$$(b) \frac{6}{10} \div 12 = \frac{6}{10} \times \text{Reciprocal of } 12.$$

$$= \frac{\cancel{6}^1}{10} \times \frac{1}{\cancel{12}_2} = \frac{1 \times 1}{10 \times 2} = \frac{1}{20}.$$

$$(c) \frac{16}{20} \div 8 = \frac{16}{20} \times \text{Reciprocal of } 8.$$

$$= \frac{\cancel{16}^1}{\cancel{20}^4} \times \frac{1}{\cancel{8}_1} = \frac{1 \times 1}{10 \times 1} = \frac{1}{10}.$$

$$(d) \frac{8}{9} \div 10 = \frac{8}{9} \times \text{Reciprocal of } 10$$

$$= \frac{\cancel{8}^1}{9} \times \frac{1}{\cancel{10}_5} = \frac{4 \times 1}{9 \times 5} = \frac{4}{45}.$$

$$(e) 3 \div \frac{5}{7} = 3 \times \text{Reciprocal of } \frac{5}{7}$$

$$= 3 \times \frac{7}{5} = \frac{3 \times 7}{5} = \frac{21}{5} = 4\frac{1}{5}.$$

$$(f) 7 \div \frac{9}{11} = 7 \times \text{Reciprocal of } \frac{9}{11}$$

$$= 7 \times \frac{11}{9} = \frac{77}{9} = 8\frac{5}{9}.$$

$$(g) 8 \div \frac{4}{9} = 8 \times \text{Reciprocal of } \frac{4}{9}$$

$$= \cancel{8}^2 \times \frac{9}{\cancel{4}_1} = \frac{2 \times 9}{1} = 18.$$

$$(h) 15 \div \frac{3}{5} = 15 \times \text{Reciprocal of } \frac{3}{5}$$

$$= \cancel{15}^5 \times \frac{5}{\cancel{3}_1} = \frac{5 \times 5}{1} = 25.$$

$$3. (a) \frac{3}{7} \div \frac{1}{7} = \frac{3}{7} \times \text{Reciprocal of } \frac{1}{7}$$

$$= \frac{3}{\cancel{7}_1} \times \cancel{7}^1 = 3 \times 1 = 3.$$

$$(b) \frac{4}{9} \div \frac{1}{9} = \frac{4}{9} \times \text{Reciprocal of } \frac{1}{9}$$

$$= \frac{4}{\cancel{9}_1} \times \cancel{9}^1 = 4 \times 1 = 4.$$

$$(c) \frac{2}{5} \div \frac{3}{5} = \frac{2}{5} \times \text{Reciprocal of } \frac{3}{5}$$

$$= \frac{2}{\cancel{5}_1} \times \frac{\cancel{5}^1}{3} = \frac{2 \times 1}{1 \times 3} = \frac{2}{3}.$$

$$(d) \frac{3}{10} \div \frac{6}{10} = \frac{3}{10} \times \text{Reciprocal of } \frac{6}{10}$$

$$= \frac{\cancel{3}^1}{\cancel{10}_1} \times \frac{\cancel{10}^1}{\cancel{6}_2} = \frac{1 \times 1}{1 \times 2} = \frac{1}{2}.$$

$$(e) \frac{3}{8} \div \frac{2}{15} = \frac{3}{8} \times \text{Reciprocal of } \frac{2}{15}$$

$$= \frac{3}{8} \times \frac{15}{2} = \frac{3 \times 15}{8 \times 2}$$

$$= \frac{45}{16} = 2\frac{13}{16}.$$

16) 45(2)
- 32
— 13

$$(f) 3\frac{1}{3} \div 2\frac{1}{10} = \frac{3 \times 3 + 1}{3} \div \frac{2 \times 10 + 1}{10}$$

$$= \frac{10}{3} \div \frac{21}{10} = \frac{10}{3} \times \text{Reciprocal of } \frac{21}{10}$$

$$= \frac{10}{3} \times \frac{10}{21} = \frac{100}{63} = 1\frac{37}{63}.$$

$$(g) 5\frac{1}{3} \div 5\frac{1}{5} = \frac{5 \times 3 + 1}{3} \div \frac{5 \times 5 + 1}{5}$$

$$= \frac{16}{3} \div \frac{26}{5} = \frac{\cancel{16}^8}{3} \times \frac{5}{\cancel{26}_1}$$

$$= \frac{40}{39} = 1\frac{1}{39}.$$

39) 40(1)
- 39
— 1

$$(h) 1\frac{4}{10} \div 2\frac{5}{8} = \frac{1 \times 10 + 4}{10} \div \frac{2 \times 8 + 5}{8}$$

$$= \frac{14}{10} \div \frac{21}{8}$$

$$= \frac{14}{10} \times \text{Reciprocal of } \frac{21}{8}$$

$$= \frac{\cancel{14}^2}{\cancel{10}_5} \times \frac{\cancel{8}^4}{\cancel{21}_3} = \frac{2 \times 4}{5 \times 3} = \frac{8}{15}.$$

4. To find the length of each piece of rope, we need to divide $8\frac{1}{3}$ m by 15.

The multiplicative inverse of 15 is $\frac{1}{15}$.

$$\begin{aligned}\text{So, } 8\frac{1}{3} \div 15 &= \frac{25}{3} \times \frac{1}{15} \text{ m} \\ &= \frac{5 \times 1}{3 \times 3} \text{ m} = \frac{5}{9} \text{ m.}\end{aligned}$$

5. Length of long ribbon Aanaya had = $3\frac{1}{2}$ m.

Number of friends equally divided = 3.

Length of long ribbon each one get

$$\begin{aligned}&= 3\frac{1}{2} \text{ m} \div 3 = \frac{7}{2} \text{ m} \div 3 \\ &= \frac{7}{2} \text{ m} \times \text{Multiplicative inverse of 3} \\ &= \frac{7}{2} \text{ m} \times \frac{1}{3} = \frac{7}{6} \text{ m} = 1\frac{1}{6} \text{ m.}\end{aligned}$$

Thus, each one will get $1\frac{1}{6}$ m ribbon.

6. The cost of $5\frac{2}{3}$ kg of apples is ₹680.

So, cost of 1 kg apples

$$\begin{aligned}&= ₹680 \div 5\frac{2}{3} \text{ kg} = ₹680 \div \frac{17}{3} \\ &= ₹680 \times \text{Multiplicative inverse of } \frac{17}{3} \\ &= ₹680 \times \frac{3}{17} = ₹40 \times 3 = ₹120.\end{aligned}$$

Thus, the cost 1 kg of apples is ₹120.

7. To find the number of boxes of chocolates, we need to divide $1\frac{3}{5}$ kg by $\frac{1}{5}$ kg

$$\begin{aligned}&= 1\frac{3}{5} \text{ kg} \div \frac{1}{5} = \frac{8}{5} \text{ kg} \times \text{Reciprocal of } \frac{1}{5} \text{ kg} \\ &= \frac{8}{5} \times 5 = 8.\end{aligned}$$

Thus, 8 chocolate boxes can be made.

Mental Maths (Page 98)

1. The product of a proper fraction and an improper fraction is lesser than the improper fraction.

2. The two fractions whose product is 1 are called the reciprocal of each other.

3. The product of two fractions = 12.
i.e., 1st fraction \times 2nd fraction = 12

$$\begin{aligned}\text{1st fraction} &= \frac{3}{4} \\ \therefore \frac{3}{4} \times \text{2nd fraction} &= 12 \\ \Rightarrow \text{2nd fraction} &= 12 \div \frac{3}{4} \\ &= 12 \times \text{Reciprocal of } \frac{3}{4} \\ &= 12 \times \frac{4}{3} = 4 \times 4 = 16\end{aligned}$$

4. The product of two proper fractions is less than each of the fractions.

Brain Sizzlers (Page 99)

1. Since $\frac{1}{4}$ th of the herd of deer have gone to the forest and $\frac{1}{3}$ rd for grazing, the remaining part of the herd

$$= 1 - \left(\frac{1}{4} + \frac{1}{3} \right) = 1 - \frac{3+4}{12} = \frac{12-7}{12} = \frac{5}{12}.$$

We are given that the number of remaining deer is 25.

Therefor,

$$\begin{aligned}\frac{5}{12} \text{ part of the herd} &= 25 \text{ deer} \\ \Rightarrow \text{Whole herd} &= 25 \div \frac{5}{12} = 25 \times \frac{12}{5} \\ &= 5 \times 12 = 60 \text{ deer}\end{aligned}$$

Thus, there were 60 deer in the herd.

2. Fraction = $4\frac{1}{2} \times 6 + \frac{6}{7} = \frac{4 \times 2 + 1}{2} \times 6 + \frac{6}{7}$

$$\begin{aligned}&= \frac{9}{2} \times 6 + \frac{6}{7} = \frac{27}{1} + \frac{6}{7} \\ &= \frac{27 \times 7 + 6}{7} = \frac{189 + 6}{7} = \frac{195}{7} = 27\frac{6}{7}.\end{aligned}$$

10. Weight of drum full with rice = $40\frac{1}{6}$ kg.

Weight of empty drum = $13\frac{3}{4}$ kg.

Weight of rice in the drum

$$= 40\frac{1}{6} - 13\frac{3}{4} \text{ kg.}$$

$$= \frac{241}{6} - \frac{55}{4} \text{ kg.}$$

$$= \frac{482 - 165}{12} \text{ kg.}$$

$$= \frac{317}{12} \text{ kg.} = 26\frac{5}{12} \text{ kg.}$$

2	6, 4
2	3, 2
3	3, 1
	1, 1

$$\therefore \text{LCM of 6 and 4} = 2 \times 2 \times 3 = 12$$

$$\begin{array}{r} 12)317(26 \\ -24 \\ \hline 77 \\ -72 \\ \hline 05 \end{array}$$

Thus, weight of rice in the drum = $26\frac{5}{12}$ kg.

11. Distance travelled in one day

$$= 47\frac{1}{2} \text{ km} = \frac{95}{2} \text{ km.}$$

Distance covered by bus = $29\frac{1}{2}$ km = $\frac{59}{2}$ km.

Distance covered by horse - cart

$$= 8\frac{5}{6} \text{ km} = \frac{53}{6} \text{ km.}$$

Distance covered on foot = $\frac{95}{2}$ km - $\left(\frac{59}{2} + \frac{53}{6}\right)$ km

$$= \frac{95}{2} \text{ km} - \left(\frac{177 + 53}{6}\right) = \frac{95}{2} \text{ km} - \frac{230}{6} \text{ km}$$

$$= \frac{95 \times 3 - 230}{6} \text{ km}$$

[∴ LCM of 2 and 6 = 6]

$$= \frac{285 - 230}{6} \text{ km} = \frac{55}{6} \text{ km}$$

$$= 9\frac{1}{6} \text{ km.}$$

$$\begin{array}{r} 6)55(9 \\ -54 \\ \hline 1 \end{array}$$

Thus, he traveled $9\frac{1}{6}$ km on foot.

12. To find the total quantity of water purchased by

Ram, we need to multiply 12 by $3\frac{7}{9}$ L.

$$= 12 \times 3\frac{7}{9} \text{ L} = 12 \times \frac{34}{9} \text{ L}$$

$$= \frac{136}{3} \text{ L} = 45\frac{1}{3} \text{ L.}$$

Thus, $45\frac{1}{3}$ litres of water purchased by Ram.

13. Total distance from home to her school

$$= 15\frac{3}{5} \text{ km} = \frac{78}{5} \text{ km.}$$

She travelled $\frac{2}{5}$ part of total distance. i.e.,

$$\frac{2}{5} \times \frac{78}{5} \text{ km} = \frac{156}{25} \text{ km}$$

$$\text{Distance left to travel} = \frac{78}{5} - \frac{156}{25} \text{ km}$$

$$= \frac{78 \times 5 - 156}{25} \text{ km} \quad [\because \text{LCM of 5 and 25} = 25]$$

$$= \frac{390 - 156}{25} \text{ km} = \frac{234}{25} \text{ km}$$

$$= 9\frac{9}{25} \text{ km.}$$

$$\begin{array}{r} 25)234(9 \\ -225 \\ \hline 9 \end{array}$$

Maths Fun (Page 101)

$\frac{8}{3}$	\times	$\frac{1}{5}$	$=$	$\frac{8}{15}$
\times		\times		\times
$\frac{7}{4}$	\times	$1\frac{7}{21}$	$=$	$\frac{7}{3}$
$=$		$=$		$=$
$\frac{14}{3}$	\times	$\frac{4}{15}$	$=$	$\frac{56}{45}$

CHAPTER 5: DECIMALS

Let's Recall

1. (a) 3.15 m = Three point one five metres.

(b) 3.52 m = Three point five two metres.

(c) 3.66 m = Three point six six metres.

2. Given number = 3.52

Place value of digit 5 = five-tenths

Place value of digit 2 = Two-hundredths

Think and Answer (Page 107)

1. $54.89 = 50 + 4 + \frac{8}{10} + \frac{9}{100}$

2. $125.382 = 100 + \frac{20}{100} + 5 + \frac{3}{10} + \frac{8}{100} + \frac{2}{1000}$

Practice Time 5A

1. (a) $\frac{5}{10} = 0.5$ (b) $\frac{68}{100} = 0.68$

(c) $\frac{143}{100} = 1.43$

	Decimals	Decimals in words
(a)	0.38	Zero point three eight
(b)	1.032	One point zero three two
(c)	1.532	One point five three two
(d)	0.006	Zero point zero zero six
(e)	2.037	Two point zero three seven
(f)	5.68	Five point six eight

3. (a) Here, 1 zero is in the denominator. So, put the decimal point after one digit from the right in the numerator.

$$\frac{8}{10} = 0.8$$

(b) Here, 1 zero is in the denominator. So, put the decimal point after one digit from the right in the numerator.

$$\frac{29}{10} = 2.9$$

(c) Here, 2 zeros are there in the denominator. So put the decimal point after two digits from the right in the numerator.

$$\frac{372}{100} = 3.72$$

(d) $\frac{3}{100} = 0.03$ (e) $\frac{58}{100} = 0.58$

(f) $\frac{118}{100} = 1.18$ (g) $\frac{2236}{100} = 22.36$

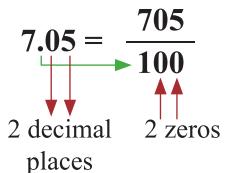
(h) Here, 3 zeros are there in the denominator. So, put the decimal point after three digits from the right in the numerator.

$$\frac{1390}{1000} = 1.390$$

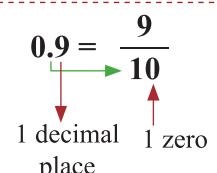
(i) $2\frac{18}{1000} = \frac{2 \times 1000 + 18}{1000} = \frac{2018}{1000} = 2.018$

(j) $1\frac{368}{1000} = \frac{1 \times 1000 + 368}{1000} = \frac{1368}{1000} = 1.368$

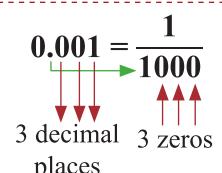
4. (a) $7.05 = \frac{705}{100}$



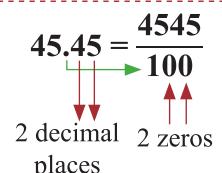
(b) $0.9 = \frac{9}{10}$



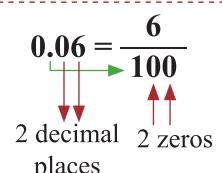
(c) $0.001 = \frac{1}{1000}$



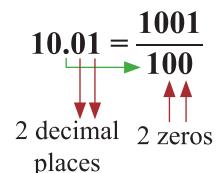
(d) $45.45 = \frac{4545}{100}$



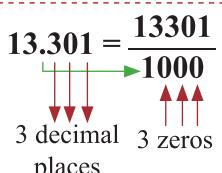
(e) $0.06 = \frac{6}{100}$



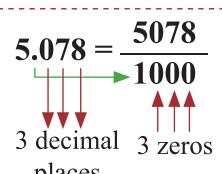
(f) $10.01 = \frac{1001}{100}$



(g) $13.301 = \frac{13301}{1000}$



(h) $5.078 = \frac{5078}{1000}$



$$(i) 0.125 = \frac{125}{1000}$$

$$0.125 = \frac{125}{1000}$$

3 decimal places 3 zeros

$$(j) 0.09 = \frac{9}{100}$$

$$0.09 = \frac{9}{100}$$

2 decimal places 2 zeros

5.

Decimal Place Value Chart

Number	Hundreds (100)	Tens (10)	Ones (1)	Decimal point	Tenths $\left(\frac{1}{10}\right)$	Hundredths $\left(\frac{1}{100}\right)$	Thousandths $\left(\frac{1}{1000}\right)$
(a) 37.05		3	7	•	0	5	
(b) 15.263		1	5	•	2	6	3
(c) 226.266	2	2	6	•	2	6	6
(d) 724.264	7	2	4	•	2	6	4

6. (a) Seven point three four seven = 7.347
 (b) Zero point zero seven zero = 0.070
 (c) Twenty-nine point nine zero nine = 29.909
 (d) Forty-four point nine nine five = 44.995
 (e) Eight hundred one point one zero nine = 801.109
 (f) Ninety-nine point nine nine = 99.99

7. (a) $8.32 = 8$ ones + 3 tenths + 2 hundredths

$$= 8 + \frac{3}{10} + \frac{2}{100} = 8 + 0.3 + 0.02$$

(b) $16.247 = 1$ ten + 6 ones + 2 tenths + 4 hundredths + 7 thousandths

$$= 10 + 6 + \frac{2}{10} + \frac{4}{100} + \frac{7}{1000}$$

$$= 10 + 6 + 0.2 + 0.04 + 0.007$$

(c) $81.459 = 8$ tens + 1 one + 4 tenths + 5 hundredths + 9 thousandths

$$= 80 + 1 + \frac{4}{10} + \frac{5}{100} + \frac{9}{1000}$$

$$= 80 + 1 + 0.4 + 0.05 + 0.009$$

(d) $326.47 = 3$ hundreds + 2 tens + 6 ones + 4 tenths + 7 hundredths

$$= 300 + 20 + 6 + \frac{4}{10} + \frac{7}{100}$$

$$= 300 + 20 + 6 + 0.4 + 0.07$$

(e) $728.032 = 7$ hundreds + 2 tens + 8 ones + 0 tenths + 3 hundredths + 2 thousandths

$$= 700 + 20 + 8 + \frac{0}{10} + \frac{3}{100} + \frac{2}{1000}$$

$$= 700 + 20 + 8 + 0.03 + 0.002$$

8. (a) $30 + 2 + \frac{1}{10} + \frac{2}{100} + \frac{3}{1000}$

$$= 30 + 2 + 0.1 + 0.02 + 0.003 = 32.123$$

(b) $5000 + 80 + \frac{16}{100}$

$$= 5000 + 80 + 0.16 = 5080.16$$

(c) $700 + 4 + \frac{2}{100} + \frac{8}{1000}$

$$= 700 + 4 + 0.02 + 0.008 = 704.028$$

(d) $5000 + 80 + 5 + \frac{3}{10} + \frac{4}{100} + \frac{8}{1000}$

$$= 5000 + 80 + 5 + 0.3 + 0.04 + 0.008$$

$$= 5085.348$$

(e) $4000 + 800 + \frac{7}{100} + \frac{8}{1000}$

$$= 4000 + 800 + 0.07 + 0.008 = 4800.078$$

(f) 9 hundreds + 8 ones + 9 tenths + 3 hundredths

$$= 900 + 8 + \frac{9}{10} + \frac{3}{100}$$

$$= 900 + 8 + 0.9 + 0.03 = 908.93$$

(g) 6 thousands + 8 tens + 3 ones + 9 thousandths

$$= 6000 + 80 + 3 + \frac{9}{1000}$$

$$= 6000 + 80 + 3 + 0.009 = 6083.009$$

Practice Time 5B

1. (a) 0.49, 0.09, 3.06, 15.68 have 2 decimal places.
 So, it is a group of like decimals.

(b) 38.09, 3.806, 4.06, 30.6 don't have the same decimal places. So, it is not a group of like decimals.

(c) 0.656, 2.001, 15.905, 215.812 have 3 decimal places. So, it is a group of like decimals.

(d) 5.8, 0.81, 235.056, 45.625 don't have the same decimal places. So, it is not a group of like decimals.

Hence, (a) and (c) are group of like decimals.

2. (a) 5.45, 3.51, 16.96, 3.62 have 2 decimal places. So, it is not a group of unlike decimals.

(b) 0.32, 0.456, 17.4, 617.561 are unlike decimals as they have different number of decimal places. So, it is a group of unlike decimals.

(c) 116.31, 86.3, 70.09, 78.05 are unlike decimals as they have different number of decimal places. So, it is a group of unlike decimals.

(d) 0.56, 0.605, 12.1, 270.01 are unlike decimals as they have different number of decimal places. So, it is group of unlike decimals. Hence, (b), (c) and (d) are group of unlike decimals.

3. (a) 7.1, 31.4, 10.1 are like decimals as they have 1 decimal place. Similarly, 0.97 and 8.89 are like decimal as they have 2 decimal places

(b) 21.470, 3.001, 0.098 are like decimals as they have 3 decimal places. Similarly, 24.0 and 0.1 are like decimals.

4. (a) $0.3 = 0.30 = 0.300$

(b) $2.5 = 2.50 = 2.500$

(c) $41.7 = 41.70 = 41.700$

(d) $6.40 = 6.4 = 6.400$

(e) $9.700 = 9.7 = 9.70$

(f) $5.300 = 5.3 = 5.30$

5. (a) 1.264 has 3 decimal places which is largest. So, every decimal number must have 3 decimal places. So, add zeros at the right side of the decimal part of each decimal.

Unlike decimals:	2.3	6.87	2.63	43.6	1.264
	↓	↓	↓	↓	↓
Like decimals:	2.300	6.870	2.630	43.600	1.264

(b) Clearly, 100.143 has 3 decimal places which is the largest.

So, every decimal number must have 3 decimal places. So, add zeros at the right side of the decimal part of each decimal.

Unlike decimals:	5.1	5.01	5.001	40.4	48.26	100.143
	↓	↓	↓	↓	↓	↓
Like decimals:	5.100	5.010	5.001	40.400	48.260	100.143

Practice Time 5C

1. (a) 55.5 and 46.30 are unlike decimals.

So, converting the unlike decimals into like decimals, we get 55.50 and 46.30.

Comparing the whole number part, we observe that $55 > 46$

So, $55.50 > 46.30$

Thus, $55.5 > 46.30$

T	O	•	t	h
5	5	•	5	
4	6	•	3	0

O	•	t	h	th
2	•	7	1	0
2	•	8	0	2

Same $\hookrightarrow 7 < 8$

(b) $2.710 \triangleleft 2.802$

O	•	t	h
7	•	6	0
7	•	0	9

Same $\downarrow 6 > 0$

(c) $7.6 \triangleright 7.09$

O	•	t	h	th
4	•	6	3	0
4	•	6	3	

Same

(d) $4.630 \triangleq 4.63$

T	O	•	t	h	th
1	1	•	4	0	6
1	1	•	2	7	8

Same $\hookrightarrow 4 > 2$

(e) $11.406 \triangleright 11.278$

2. (a) 0.035, 0.123, 0.608, 1.708 are like decimals.

Now, comparing the whole number part, we observe that 1 is the greatest number.

Thus, 1.708 is the greatest decimal number.

(b) 4.121, 50.8, 0.077, 43.0004 are unlike decimals. So, converting the unlike decimals into like decimals, we get

4.121, 50.800, 0.077 and 43.004

Now, comparing the whole number part, we observe that 50 is the greatest number.

Therefore, 50.800 is the greatest decimal number.

Thus, 50.8 is the greatest decimal number.

(c) and (d) same as above.

3. (a) 0.62, 25.131, 368.147, 199.09 are unlike decimals. So, converting the unlike decimals into like decimals, we get

0.620, 25.131, 368.147 and 199.090.

Now, comparing the whole number part, we observe that 0 is the smallest number.

So, 0.620 is the smallest decimal number.

Thus, 0.62 is the smallest decimal number.

(b) 40.12, 2.364, 60.45, 2.803 are unlike decimals.

So, converting the unlike decimals into like decimals, we get

40.120, 2.364, 60.450 and 2.803

Now, comparing the whole number part, we observe that, 2 is the smallest number.

Now, again comparing decimal parts, we observe $.364 < .803$

Thus, 2.364 is the smallest decimal number.

(c) and (d) same as above.

4. (a) 0.09 and 0.1 are unlike decimals. So, converting unlike decimals into like decimals, we have 0.09 and 0.10. Whole number parts of both decimals are same.

So, we compare decimal parts. On comparing tenth place, we get

$0 < 1$ i.e., $0.10 > 0.09$

Thus, 0.1 is greater.

(b) 17.981 and 17.957 are like decimals. Whole number parts of both decimals are same. Tenth digits are also same. On comparing hundredths digit, we get $8 > 5$

So, $17.981 > 17.957$

Thus, 17.981 is greater.

(c) and (d) same as above.

5. (a) Converting unlike decimals into like decimals, we have,

3.600, 36.600, 366.600, 3.006

The ascending order of the decimals are

$3.006 < 3.600 < 36.600 < 366.600$

or $3.006 < 3.6 < 36.6 < 366.6$

(b) Converting unlike decimals into like decimals, we have 0.800, 0.880, 80.000, 0.888, 88.000

The ascending order of the decimals are

$0.800 < 0.880 < 0.888 < 80.000 < 88.000$

or $0.8 < 0.88 < 0.888 < 80 < 88$

(c) and (d) same as above.

6. (a) Converting unlike decimals into like decimals, we have,

2.003, 20.030, 200.300, 0.203

The descending order of the decimals are

$200.300 > 20.030 > 2.003 > 0.203$

or $200.3 > 20.03 > 2.003 > 0.203$

(b) Converting unlike decimals into like decimals, we have,

10.010, 10.032, 10.020, 10.045

The descending order of the decimals are

$10.045 > 10.032 > 10.020 > 10.010$

or $10.045 > 10.032 > 10.02 > 10.01$

(c) and (d) same as above.

Think and Answer (Page 114)

The get the required number, we subtract 2.964 from 12.67.

Arrange the numbers in columns and subtract as shown here.

$$\begin{array}{r}
 \textcircled{1} \\
 \textcircled{0} \textcircled{X} \textcircled{1} \textcircled{6} \textcircled{6} \textcircled{1} \textcircled{0} \\
 \times 2 \cdot 9 \quad 6 \quad 9 \\
 \hline
 2 \cdot 9 \quad 6 \quad 4 \\
 \hline
 9 \cdot 7 \quad 0 \quad 6
 \end{array}$$

Thus, 9.706 added to 2.964 make it equal to 12.67.

Practice Time 5D

1. (a) Here, 23.21 and 13.57 are like decimals.

$$\begin{array}{r}
 2 \ 3 \cdot 2 \ 1 \\
 + 1 \ 3 \cdot 5 \ 7 \\
 \hline
 3 \ 6 \cdot 7 \ 8
 \end{array}$$

We write the addends one below the other so that the decimal point are in the same column and then add them.

Thus, $23.21 + 13.57 = 36.78$.

(b) Here, 57.21 and 1.8 are unlike decimals.

So, converting unlike decimals into like decimals, we get 57.21 and 1.80.

$$\begin{array}{r}
 \textcircled{1} \\
 5 \ 7 \cdot 2 \ 1 \\
 + 1 \cdot 8 \ 0 \\
 \hline
 5 \ 9 \cdot 0 \ 1
 \end{array}$$

We write the addends one below the other so that the decimal point are in the same column and then add them.

Thus, $57.21 + 1.8 = 59.01$.

(c) Converting unlike decimals into like decimals, we get 15.200 and 0.049.

$$\begin{array}{r}
 1 \ 5 \cdot 2 \ 0 \ 0 \\
 + 0 \cdot 0 \ 4 \ 9 \\
 \hline
 1 \ 5 \cdot 2 \ 4 \ 9
 \end{array}$$

Thus, $15.2 + 0.049 = 15.249$

(d) Converting unlike decimals into like decimals, we get 1.00, 7.61 and 10.00

$$\begin{array}{r}
 1 \cdot 0 \ 0 \\
 7 \cdot 6 \ 1 \\
 + 1 \ 0 \cdot 0 \ 0 \\
 \hline
 1 \ 8 \cdot 6 \ 1
 \end{array}$$

Thus, $1.0 + 7.61 + 10 = 18.61$.

(e) Converting unlike decimals into like decimals, we get 256.900, 2.596 and 72.360.

Now, we add 256.900, 2.596 and 72.360 as shown here.

$$\begin{array}{r} 256.900 \\ + 2.596 \\ \hline 259.596 \end{array}$$

Thus, $256.9 + 72.36 + 2.596 = 331.856$.

(f) Converting unlike decimals into like decimals, we get 28.750, 19.320 and 6.562.

Now, we add 28.750, 19.320 and 6.562.

$$\begin{array}{r} 28.750 \\ + 19.320 \\ \hline 48.070 \end{array}$$

Thus, $28.75 + 19.32 + 6.562 = 54.632$.

2. Arrange the decimal numbers in columns add them.

(a) $\begin{array}{r} 25.90 \\ + 16.07 \\ \hline 41.97 \end{array}$

(b) $\begin{array}{r} 27.09 \\ + 14.87 \\ \hline 41.96 \end{array}$

(c) $\begin{array}{r} 26.50 \text{ kg} \\ + 72.85 \text{ kg} \\ \hline 99.35 \text{ kg} \end{array}$

(d) $\begin{array}{r} ₹ 82.76 \\ + ₹ 0.82 \\ \hline ₹ 83.58 \end{array}$

(e) $\begin{array}{r} 7.076 \text{ L} \\ + 1.500 \text{ L} \\ \hline 8.576 \text{ L} \end{array}$

(f) $\begin{array}{r} 25.250 \text{ cm} \\ + 0.605 \text{ cm} \\ \hline 25.855 \text{ cm} \end{array}$

3. (a) 5.6 and 7.3 are like decimals.

Now, we subtract 5.6 from 7.3 as shown here.

$$\begin{array}{r} 7.3 \\ - 5.6 \\ \hline 1.7 \end{array}$$

Thus, $7.3 - 5.6 = 1.7$

(b) Converting unlike decimals into like decimals, we get 3.100 and 3.456.

Now, we subtract 3.100 from 3.456 as shown here.

$$\begin{array}{r} 3.456 \\ - 3.100 \\ \hline 0.356 \end{array}$$

Thus, $3.456 - 3.1 = 0.356$.

(c) 1.979 and 20.876 are like decimals.

Now, we subtract 1.979 from 20.876 as shown here.

$$\begin{array}{r} 20.876 \\ - 1.979 \\ \hline 18.897 \end{array}$$

Thus, $20.876 - 1.979 = 18.897$.

(d) Converting unlike decimals into like decimals, we get 2.9567 and 15.2000.

Now, we subtract 2.9567 from 15.2000 as shown here.

$$\begin{array}{r} 15.2000 \\ - 2.9567 \\ \hline 12.2433 \end{array}$$

(e) 235.992 and 345.607 are like decimals.

Now, we subtract 235.992

from 345.607 as shown here.

$$\begin{array}{r} 345.607 \\ - 235.992 \\ \hline 109.615 \end{array}$$

Thus, $345.607 - 235.992 = 109.615$.

(f) to (i) same as above.

4. (a) First arrange the decimal numbers in columns and then subtract as shown here.

$$\begin{array}{r} 12.99 \\ - 3.75 \\ \hline 9.24 \end{array}$$

(b) First arrange the decimal numbers in columns and then subtract as shown here.

$$\begin{array}{r} 5.38 \\ - 5.19 \\ \hline 0.19 \end{array}$$

(c) Converting unlike decimals into like decimals, we get 20.654 and 16.590.

$$\begin{array}{r} 20.654 \\ - 16.590 \\ \hline 04.064 \end{array}$$

Arrange the decimal numbers in columns and then subtract as shown here.

Thus, $20.654 - 16.59 = 4.064$

(d) First arrange the decimal numbers in columns and then subtract as shown here.

$$\begin{array}{r} 19.325 \text{ km} \\ - 0.273 \text{ km} \\ \hline 19.052 \text{ km} \end{array}$$

Thus, $19.325 \text{ km} - 0.273 \text{ km} = 19.052 \text{ km}$

(e) Converting unlike decimals into like decimals, we get 6.267 mL and 5.450 mL.

$$\begin{array}{r} 6.267 \text{ mL} \\ - 5.450 \text{ mL} \\ \hline 0.817 \text{ mL} \end{array}$$

Arrange the decimal numbers in columns and then subtract as shown here.

Thus, $6.267 \text{ mL} - 5.450 \text{ mL} = 0.817 \text{ mL}$

(f) Converting unlike decimals into like decimals, we get 536.275 and 364.200.

$$\begin{array}{r} 536.275 \\ - 364.200 \\ \hline 172.075 \end{array}$$

Arrange the decimal numbers in columns and then subtract as shown here.

Thus, $536.275 \text{ kg} - 364.20 \text{ kg} = 172.075 \text{ kg}$

(g) and (h) same as above.

5. First find the sum of 8.36 and 8.07 as shown here. So, $8.36 + 8.07 = 16.43$.

Now, subtract 16.43 from 16.85 as shown here.

Thus, the required result = 0.42.

6. First, find the sum of 68.01 and 6.9 as shown here.

$$\text{So, } 68.01 + 6.90 = 74.91$$

Now, the difference of 68.01 and 6.90 is shown here.

$$\text{So, } 68.01 - 6.90 = 61.11$$

Now, subtract 61.11 from 74.91

Thus, the required difference is 13.80.

$$\begin{array}{r} 68.01 \\ + 6.90 \\ \hline 74.91 \end{array}$$

$$\begin{array}{r} 68.01 \\ - 6.90 \\ \hline 61.11 \end{array}$$

7. First, the difference of 65.650 and 5.556 is shown here.

$$\text{So, } 65.650 - 5.556 = 60.094$$

Now, the sum of 65.650 and 5.556 is shown here.

$$\text{So, } 65.650 + 5.556 = 71.206$$

Now, the sum of 60.094

and 71.206 is shown here.

Thus, the required sum is

$$\begin{array}{r} 65.650 \\ - 5.556 \\ \hline 60.094 \end{array}$$

$$\begin{array}{r} 65.650 \\ + 5.556 \\ \hline 71.206 \end{array}$$

$$\begin{array}{r} 60.094 \\ + 71.206 \\ \hline 131.300 \end{array}$$

10. Weight of the rice in the first bag = 80.000 kg

$$\text{Weight of the rice in the second bag} = + 13.76 \text{ kg}$$

$$\text{Total weight of the rice in the two bags} = 93.76 \text{ kg}$$

Thus, 93.76 kg is the total weight of the rice in the two bags.

11. Weight of the first boy = 36.97 kg

$$\text{Weight of the second boy} = + 41.03 \text{ kg}$$

$$\text{Total weight of two boys} = 78.00 \text{ kg}$$

$$\text{Total weight of three boys} = 98.05 \text{ kg}$$

$$\text{And weight of two boys} = 78.00 \text{ kg}$$

$$\text{Weight of the third boy} = 20.05 \text{ kg}$$

Thus, the weight of the third boy is 20.05 kg.

Practice Time 5E

1. (a) When we multiply a decimal number by 10, the decimal point in the product moves towards the right by one place.

$$\therefore 0.8 \times 10 = 8.0 = 8$$

$$(b) 7.6 \times 10 = 76.0 = 76$$

$$(c) 13.8 \times 10 = 138.0 = 138$$

$$(d) 15.75 \times 10 = 157.5$$

$$\begin{array}{r} 68.01 \\ + 6.90 \\ \hline 74.91 \end{array}$$

$$\begin{array}{r} 68.01 \\ - 6.90 \\ \hline 61.11 \end{array}$$

8. Cost of a toothpaste = ₹ 31.75
 Cost of a soap = ₹ 41.25
 Cost of a shoe polish = ₹ 52.00
 Total cost of these items = ₹ 125.00

$$\begin{array}{r} 20.00 \\ - 12.50 \\ \hline 7.50 \end{array}$$

He gave to shopkeeper = ₹ 20.00
 Total cost of the items = ₹ 125.00
 ₹ 075.00

Thus, he got ₹ 75 in return.

9. To find the total length of cloth left, we will find the difference between decimal numbers 78.66 m and 15.76 m as shown here.

Thus, the total length of cloth left is 62.90 m.

$$(e) 4.567 \times 100 = 456.7$$

When we multiply a decimal number by 100, the decimal point in the product moves towards the right by two places.

$$(f) 0.457 \times 100 = 45.7$$

$$(g) 6.543 \times 1000 = 6543.0 = 6543$$

When we multiply a decimal number by 1000, the decimal point in the product moves towards the right by three places.

$$(h) 6.56 \times 1000 = 6560.0 = 6560$$

$$(i) 27.006 \times 1000 = 27006.0 = 27006$$

$$\begin{array}{r} 648 \\ \times 6 \\ \hline 3888 \end{array}$$

$$\begin{array}{r} 64.8 \\ \times 6 \\ \hline 388.8 \end{array}$$

One decimal place

$$\begin{array}{r} 5608 \\ \times 5 \\ \hline 28040 \end{array}$$

Two decimal places

$$\begin{array}{r} 56.08 \\ \times 5 \\ \hline 280.4 \end{array}$$

$$\begin{array}{r} 64.8 \\ \times 6 \\ \hline 388.8 \end{array}$$

$$\begin{array}{r} 56.08 \\ \times 5 \\ \hline 280.4 \end{array}$$

$$(c) \begin{array}{r} 9999 \\ \times 9 \\ \hline 89991 \end{array} \quad \begin{array}{r} 99.99 \\ \times 9 \\ \hline 899.91 \end{array}$$

Two decimal place

$$(d) \begin{array}{r} 687 \\ \times 15 \\ \hline 3435 \leftarrow \text{Multiplication by 5} \\ +6870 \leftarrow \text{Multiplication by 10} \\ \hline 10305 \end{array} \quad \begin{array}{r} 0.687 \\ \times 15 \\ \hline 10 \cdot 305 \end{array}$$

Three decimal place

Thus, $0.687 \times 15 = 10.305$

$$(e) \begin{array}{r} 354.6 \\ \times 29 \\ \hline 31914 \leftarrow \text{Multiplication by 9} \\ +70920 \leftarrow \text{Multiplication by 20} \\ \hline 102834 \end{array} \quad \begin{array}{r} 354.6 \\ \times 29 \\ \hline 10283.4 \end{array}$$

One decimal place

Thus, $354.6 \times 29 = 10283.4$

$$(f) \begin{array}{r} 625.52 \\ \times 70 \\ \hline 00000 \leftarrow \text{Multiplication by 0} \\ +4378640 \leftarrow \text{Multiplication by 70} \\ \hline 4378640 \end{array} \quad \begin{array}{r} 625.52 \\ \times 70 \\ \hline 43786.40 \end{array}$$

Two decimal place

Thus, $625.52 \times 70 = 43786.4$

(g) Same as above.

$$(h) \begin{array}{r} 4043 \\ \times 125 \\ \hline 20215 \leftarrow \text{Multiplication by 5} \\ 80860 \leftarrow \text{Multiplication by 20} \\ +404300 \leftarrow \text{Multiplication by 100} \\ \hline 505375 \end{array} \quad \begin{array}{r} 40.43 \\ \times 125 \\ \hline 5053.75 \end{array}$$

Two decimal place

Thus, $40.43 \times 125 = 5053.75$

(i) to (l) Same as above.

3. (a) Multiply 1.8×0.3

Step 1. Multiply the two given decimal numbers as we multiply two whole numbers.

Step 2. Count the number of decimal places in the given numbers. In 1.8, number of decimal place = 1.

In 0.3, number of decimal place = 1.
So, total number of decimal places = $1 + 1 = 2$.

Step 3. Count from the right so that the number of decimal places in the product is equal to the sum of decimal places in the given decimal numbers and put the decimal point.

$$\begin{array}{r} 1.8 \\ \times 0.3 \\ \hline 0.54 \end{array}$$

↓
1 decimal place
↓
1 decimal place
↓
2 decimal places

Thus, $1.8 \times 0.3 = 0.54$.

(b) Multiply: 5.3×1.2

$$\begin{array}{r} 5.3 \\ \times 1.2 \\ \hline 6.36 \end{array}$$

↓
1 decimal place
↓
1 decimal place
↓
2 decimal places

Thus, $5.3 \times 1.2 = 6.36$

(c) Multiply: 28.6×1.6

$$\begin{array}{r} 28.6 \\ \times 1.6 \\ \hline 45.76 \end{array}$$

$$\begin{array}{r} 28.6 \\ \times 1.6 \\ \hline 45.76 \end{array}$$

↓
1 decimal place
↓
1 decimal place
↓
2 decimal places

Thus, $28.6 \times 1.6 = 45.76$

(d) Multiply: 200.5×2.1

$$\begin{array}{r} 200.5 \\ \times 2.1 \\ \hline 421.05 \end{array}$$

$$\begin{array}{r} 200.5 \\ \times 2.1 \\ \hline 421.05 \end{array}$$

↓
1 decimal place
↓
1 decimal place
↓
2 decimal places

(e) Multiply: 420.06×0.02

$$\begin{array}{r} 420.06 \\ \times 2 \\ \hline 84012 \end{array}$$

$$\begin{array}{r} 420.06 \\ \times 0.02 \\ \hline 8.4012 \end{array}$$

↓
2 decimal places
↓
2 decimal places
↓
4 decimal places

Thus, $420.06 \times 0.02 = 8.4012$

(f) to (h) Same as above.

$$\begin{array}{r} 3550 \\ \times 4 \\ \hline 14200 \end{array}$$

Thus, cost of 4 notebooks = ₹142

(i) Cost of 1 notebook = ₹35.50

$$\begin{array}{r} 3550 \\ \times 4 \\ \hline 14200 \end{array}$$

So, cost of 4 notebooks = ₹35.50 $\times 4 = ₹142.00$

Thus, cost of 4 notebooks = ₹142

(ii) Cost of each pack of crayons

$$\begin{array}{r} 8150 \\ \times 2 \\ \hline 16300 \end{array}$$

So, cost of 2 packs of crayons = ₹81.50 $\times 2 = ₹163.00$

Thus, cost of 2 packs of crayons is ₹163.

(iii) Total cost of both the items = ₹142 + ₹163 = ₹305

The note given to the shopkeeper = ₹ 5 0 0 • 0 0

And cost of both the items = ₹ 3 0 5 • 0 0

A mount she get in return = ₹ 1 9 5 • 0 0

Thus, she gets ₹195 in return from the shopkeeper.

5. Cost of 1 metre ribbon = ₹12.50

Cost of 8.5 metres ribbon

$$= ₹12.50 \times 8.5$$

$$₹12.50 \times 8.5 = ₹106.250$$

$$= ₹106.25$$

Thus, cost of 8.5 metres of ribbon is ₹106.25

Think and Answer (Page 119)

$$\text{Number} \div 28 = 75 \div 0.21$$

$$\text{or } \frac{\text{Number}}{28} = \frac{75}{0.21} = \frac{7500}{21}$$

So, the required number

$$= \frac{28 \times 7500}{21}$$

$$= 4 \times 2500$$

$$= 10000$$

Practice Time 5F

1. (a) $5.64 \div 10 = 0.564$

When we divide a decimal number by 10, the decimal point shifts to the left by one place.

(b) $53.6 \div 10 = 5.36$

(c) $635.4 \div 10 = 63.54$

(d) $0.56 \div 10 = 0.056$

(e) $12.3 \div 100 = 0.123$

When we divide a decimal number by 100, the decimal point shifts to the left by two places.

(f) $354.5 \div 100 = 3.545$

(g) $0.5 \div 100 = 0.005$

(h) $235.4 \div 100 = 2.354$

(i) $364.0 \div 1000 = 0.364$

When we divide a decimal number by 1000, the decimal point shifts to the left by three places.

(j) $87.0 \div 1000 = 0.087$

(k) $3.5 \div 1000 = 0.0035$

(l) $0.5 \div 1000 = 0.0005$

2. (a) $3.72 \div 4$

$$\begin{array}{r} 0.93 \\ 4) 3\ 72 \\ \underline{-3\ 6} \\ \underline{12} \\ \underline{-12} \\ 00 \end{array}$$

(b) $0.985 \div 5$

$$\begin{array}{r} 0.197 \\ 5) 0.985 \\ \underline{-5} \\ \underline{48} \\ \underline{-45} \\ 35 \\ \underline{-35} \\ 00 \end{array}$$

Thus, $3.72 \div 4 = 0.93$

Thus, $0.985 \div 5 = 0.197$

(c) There are 1 decimal place in 4.9 and 1 decimal place in 0.7. Shift the decimal point 1 place towards the right (\rightarrow). Then divide as whole numbers.

$$4.9 \div 0.7 = \frac{49}{7} = 7.$$

(d) $10.8 \div 0.9$

There are 1 decimal place in 10.8 and 1 decimal place in 0.9. Shift the decimal point 1 place towards the right (\rightarrow). Then divide as whole numbers.

$$\begin{array}{r} 12 \\ 9) 108 \\ \underline{-9} \\ \underline{18} \\ \underline{-18} \\ 00 \end{array}$$

(e) $3.638 \div 17$

$$\begin{array}{r} 0.214 \\ 17) 3.638 \\ \underline{-3\ 4} \\ \underline{23} \\ \underline{-17} \\ 68 \\ \underline{-68} \\ 00 \end{array}$$

(f) $3511.20 \div 35$

$$\begin{array}{r} 100.32 \\ 35) 3511.20 \\ \underline{-35} \\ \underline{112} \\ \underline{-105} \\ 70 \\ \underline{-70} \\ 00 \end{array}$$

Thus, $3.638 \div 17$

= 0.214

Thus, $3511.20 \div 35$

= 100.32

(g) $426.448 \div 1.6$

There are 3 decimal places in 426.448 and 1 decimal place in 1.6. So, we have to add 2 zero at the right side in number 1.6 to make the same number of digit after decimal point. And shift the decimal 3 places towards the right (\rightarrow). Then divide as whole numbers.

$$426.448 \div 1.6 = \frac{426448}{1600}$$

$$\begin{array}{r} 266.53 \\ 1600 \overline{)426448} \\ -3200 \\ \hline 10644 \\ -9600 \\ \hline 10448 \\ -9600 \\ \hline 8480 \\ -8000 \\ \hline 4800 \\ -4800 \\ \hline 0 \end{array}$$

Thus, $426.448 \div 1.6 = 266.53$

(h) $37.6 \div 20$

$$\begin{array}{r} 1.88 \\ 20 \overline{)376} \\ -20 \\ \hline 176 \\ -160 \\ \hline 160 \\ -160 \\ \hline 0 \end{array}$$

Thus, $37.6 \div 20 = 1.88$

3. Weight of potatoes in 6 sacks = 224.600 kg

Weight of potatoes in 1 sacks

$$= \frac{224.600}{6} \text{ kg}$$

$$\begin{array}{r} 37.433 \\ 6 \overline{)224.600} \\ -18 \\ \hline 44 \\ -42 \\ \hline 26 \\ -24 \\ \hline 20 \\ -18 \\ \hline 2 \end{array}$$

$= 37.433 \text{ kg}$

Thus, each sack weigh 37.433 kg.

4. Total length of rope = 33.68 m

It is divided into 5 equal parts.

\therefore Length of each part = $33.68 \div 5$

$$\begin{array}{r} 6.736 \\ 5 \overline{)33.68} \\ -30 \\ \hline 36 \\ -35 \\ \hline 18 \\ -15 \\ \hline 30 \\ -30 \\ \hline 0 \end{array}$$

Thus, length of each part of the rope is 6.736 m.

5. Quantity of laddoos distributed by a teacher

$$= 3.25 \text{ kg}$$

Number of children to whom laddoos are to be distributed = 12

\therefore Weight of laddoos each child get = $3.25 \div 12$

$$\begin{array}{r} 0.2708 \\ 12 \overline{)3.25} \\ -24 \\ \hline 85 \\ -84 \\ \hline 100 \\ -96 \\ \hline 4 \end{array}$$

Thus, 0.2708 kg laddoos each child got.

Brain Sizzlers (Page 120)

Let the last digit be at thousandth place i.e., 4.

Number at tenths place = 2 less than the other place digit = $4 - 2 = 2$.

Number at hundredth place = 3 + number at tenths place = $3 + 2 = 5$

O	•	t	h	th
•	4 - 2	3 + 2	4	
0	•	2	5	4

Thus, the required decimal number is 0.254.

Mental Maths (Page 122)

1. (a) 825 paise = $\frac{825}{100}$ rupees = 8.25

$[\because 1 \text{ paise} = 100]$

2. (a) $28 \div 1000 = 0.028$

3. (c) The place value of 8 in 5.083 = $\frac{8}{100}$
 $= 8 \text{ hundredths}$

4. (c) $46.25 \times 100 = 4625.0 = 4625$

5. (a) $546 \div 10 = 54.6$

So, $5.46 \times 10 = 54.6$

Maths Fun (Page 122)

$$\frac{34}{100} = \frac{0.34}{Y}$$

$$\frac{2}{10} = \frac{0.2}{C}$$

$$\frac{61}{100} = \frac{0.61}{E}$$

$$\frac{5}{10} = \frac{0.5}{H}$$

$$\frac{8}{10} = \frac{0.8}{D}$$

$$\frac{5}{100} = \frac{0.05}{K}$$

$$\frac{1}{10} = \frac{0.1}{F}$$

$$\frac{17}{100} = \frac{0.17}{A}$$

$$\frac{4}{10} = \frac{0.4}{O}$$

$$\frac{1}{100} = \frac{0.01}{M}$$

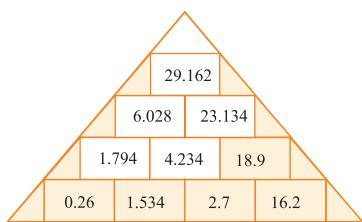
$$\frac{99}{100} = \frac{0.99}{G}$$

$$\frac{74}{100} = \frac{0.74}{N}$$

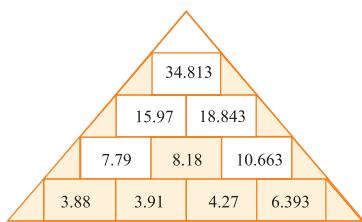
$$\begin{array}{ccccccc} A & C & O & M & E & D & Y \\ 0.17 & 0.2 & 0.4 & 0.01 & 0.61 & 0.8 & 0.34 \\ H & E & N & & & & \\ 0.5 & 0.61 & 0.74 & & & & \end{array}$$

Puzzle (Page 122)

(a)



(b)



Chapter Assessment

1. (a) (iii) In 17.0852, the digit 5 is in the thousandths place.

(b) (i) Equivalent decimals of 24.5 = 24.50

(c) (ii) $\frac{0.1}{100} = 0.001$

So, the scale will be 1.1, 1.101, 1.102, ..., 1.2

Thus, 1.123 can be measured using the scale.

(d) (iv) To find the required decimal number, we will solve in the reverse order. The decimal number is 10.5.

Step 1. Subtract 0.15 from 10.5

$$= 10.5 - 0.15 = 10.35$$

Step 2. Divide 10.35 by 3

$$10.35 \div 3 = 3.45$$

$$\begin{array}{r} 3.45 \\ 3) 10.35 \\ \underline{-9} \\ \underline{13} \\ \underline{-12} \\ \underline{15} \\ \underline{-15} \\ 0 \end{array}$$

Step 3. Add 3.45 and 2.9

$$\begin{array}{r} 3 \cdot 4 \cdot 5 \\ + 2 \cdot 9 \cdot 0 \\ \hline 6 \cdot 3 \cdot 5 \end{array}$$

Thus, the required decimal number is 6.35.

2. Quantity of milk Ammu needs daily = 23 litres
 Quantity of milk Ammu got in the morning

$$= 15.250 \text{ litres}$$

Quantity of milk Ammu got in the evening

$$= 3.045 \text{ litres}$$

Total milk she got one day =
$$\begin{array}{r} 15 \cdot 250 \text{ L} \\ + 3 \cdot 045 \text{ L} \\ \hline 18 \cdot 295 \text{ L} \end{array}$$

Total requirements of milk per day = 23.000 L
 Total milk got in one day =
$$\begin{array}{r} -18 \cdot 295 \text{ L} \\ \hline 4 \cdot 705 \text{ L} \end{array}$$

Thus, she needs 4.705 L more milk to fulfill requirement of milk in the canteen.

3. Weight of grapes used in making fruit Jam

$$= 2.75 \text{ kg}$$

Weight of apples = 1.45 kg

Weight of sugar = 3 kg

Total weight of these items

$$= 2.75 \text{ kg} + 1.45 \text{ kg} + 3 \text{ kg} = 7.2 \text{ kg}$$

Weight of jam in a bottle = 0.6 kg

Number of bottles required to share all the jam

$$= 7.2 \text{ kg} \div 0.6 \text{ kg} = \frac{72}{6} = 12$$

[∴ The decimal places is same]

Thus, 12 bottles are required to store all the jam.

4. Capacity of bottle A = 35.4__5 mL

Capacity of bottle B = 35.5 mL = 35.500 mL

[∴ To make decimal places same]

Digit in A is missing at hundredth digit place.

If we place the greatest digit 9 at the hundredth place, then the capacity of bottle A = 35.495 mL

Since, the capacity of bottle B is greater than the capacity of liquid chemical in bottle A. So, we can easily transfer the entire liquid chemical of bottle A into bottle B.

5. Sum of 2nd diagonal = $1.0 + 1.1 + 1.2 = 3.3$
 \therefore Missing decimal number in 3rd row
 $= 3.3 - (1.0 + 1.4) = 3.3 - 2.4 = 0.9$
 \therefore Missing decimal number in 3rd column
 $= 3.3 - (1.2 + 1.4) = 0.7$
 \therefore Missing decimal number in 2nd row
 $= 3.3 - (1.1 + 0.7) = 1.5$
 \therefore Missing decimal number in 1st row
 $= 3.3 - (1.5 + 1.0) \text{ and } 3.3 - (1.1 + 0.9)$
 $= 3.3 - 2.5 \text{ and } 3.3 - 2 = 0.8 \text{ and } 1.3$

Hence, the complete magic square is

0.8	1.3	1.2
1.5	1.1	0.7
1.0	0.9	1.4

6. At the time of birth, weight of baby elephant
 $= 278.88 \text{ kg}$

In the first year, weight of baby elephant
 $= 278.88 \text{ kg} + 68.45 \text{ kg} = 347.33 \text{ kg}$

In the second year, weight of baby elephant
 $= 347.33 \text{ kg} - 23.05 \text{ kg} = 324.28 \text{ kg}$

Thus, the baby elephant weigh 324.28 kg by the end of the second year.

7. As, Sameer scored 345 marks out of 500,

$$\therefore \text{In decimal } \frac{345}{500} = 0.69$$

Gaurav scored 600 marks out of 1000,

$$\therefore \text{In decimal } \frac{600}{1000} = 0.6 = 0.60$$

Since $0.69 > 0.60$

Thus, Sameer performed better.

8. Total distance covered by Shrishti in the morning
 $= 4.350 \text{ km}$

Total distance covered during the day
 $= 10.04 \text{ km}$

\therefore Distance covered after the morning
 $= 10.04 \text{ km} - 4.35 \text{ km} = 5.69 \text{ km}$

Since $5.69 - 4.35 = 1.34$, she covered 1.34 km more distance during the day than that was covered in the morning walk.

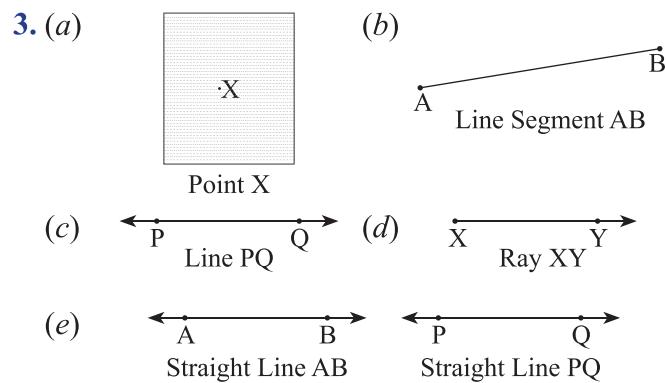
CHAPTER 6: GEOMETRY

Let's Recall

- Edge of a pencil, edge of a mobile phone, edge of blackboard, edge of a book.
- Pizza slices, traffic signs, sandwich slices, nachos.
- Blackboard, top of a table, ruler, playing card.
- Bangles, coins, whole pizza, dart board.

Practice Time 6A

- (a) (i) A line has no end points.
 (b) (iii) A ray has one end point only.
 (c) (ii) A line segment has two end points.
- (a) A point has no length, breadth and thickness.
 (b) A ray can be extended in one direction.
 (c) A line can be extended in both directions.
 (d) A line segment has two end points.
 (e) Interesting lines interest each other at a point.
 (f) Parallel lines never meets.



- (a) Line AB or \overline{AB} (b) Line QP or \overline{QP}
 (c) Line segment ST or \overline{ST}
 (d) Line EF or \overline{EF}
 (e) Interesting lines AB and CD
 (f) Parallel lines l and m or $l \parallel m$
 (g) Interesting lines p and q
 (h) Parallel lines s and t or $s \parallel t$

5. (a) Points: A, P, B, Q

(b) Line: AB

(c) Line segment: None

(d) Rays: \overrightarrow{PA} , \overrightarrow{PB} and \overrightarrow{PQ}

Line segments	Types of line segments
(a) \overline{AE} and \overline{BF}	Parallel
(b) \overline{AD} and \overline{BC}	Parallel

(c)	\overline{CG} and \overline{GF}	Perpendicular
(d)	\overline{DH} and \overline{CD}	Perpendicular
(e)	\overline{AB} and \overline{BC}	Perpendicular
(f)	\overline{BF} and \overline{FB}	Coinciding

7. \overrightarrow{XY} , \overrightarrow{XZ} and \overrightarrow{YZ}

Practice Time 6B

- (b) and (d)
- (a) $\angle PQR$ or $\angle RQP$ (b) $\angle XYZ$ or $\angle ZYX$
(c) $\angle LMN$ or $\angle NML$ (d) $\angle EFG$ or $\angle GFE$
- | Arms | Vertex | Name of the angle |
|---|--------|------------------------------|
| \overrightarrow{OP} , \overrightarrow{OT} | O | $\angle POT$ or $\angle TOP$ |
| \overrightarrow{US} , \overrightarrow{UN} | U | $\angle SUN$ or $\angle NUS$ |
| \overrightarrow{OT} , \overrightarrow{OP} | O | $\angle TOP$ or $\angle POT$ |
- (a) $\angle AOB$, $\angle BOC$ and $\angle AOC$
(b) $\angle RPS$, $\angle RPT$, $\angle RPQ$, $\angle SPT$, $\angle SPQ$ and $\angle TPQ$
- (a) Points A, E, B, F, G and C lies on the angle.
(b) Points H and I lie in the interior of the angle.
(c) Points K and J lie in the exterior of the angle.

Practice Time 6C

- (a) 25° (b) 60°
(c) 140° (d) 165°
(e) 220° (f) 90°
- (a) 65° (b) 110°
(c) 90° (d) 105°

Quick Check (Page 136)

- Clock 'A' shows an angle less than 90° . So, it is an acute angle.
- Clock 'B' shows an angle equal to 90° . So, it is a right angle.
- Clock 'C' shows an angle more than 90° . So, it is an obtuse angle.
- Clock 'D' shows an angle equal to 180° . So, it is a straight angle.
- Clock 'E' shows an angle more than 180° . So, it is a reflex angle.

Practice Time 6D

- (a) Acute angle (b) Right angle
(c) Obtuse angle (d) Straight angle
- (a) 30° – Acute angle (b) 95° – Obtuse angle
(c) 108° – Obtuse angle (d) 180° – Straight angle
(e) 90° – Right angle (f) 360° – Complete angle
(g) 80° – Acute angle (h) 125° – Obtuse angle
(i) 25° – Acute angle (j) 265° – Reflex angle
- (a) Complete angle (b) Right angle
(c) Straight angle (d) Reflex angle
(e) Acute angle (f) Reflex angle
(g) Right angle (h) Acute angle
- (a) $\angle DEF$: Acute angle
(b) $\angle ABC$: Straight angle
(c) $\angle XYZ$: Right angle
(d) $\angle MNO$: Reflex angle

Think and Answer (Page 139)

- A triangle can have 3 acute angles.
- A triangle can have only one right angle.
- A triangle can only have only one obtuse angle.

Practice Time 6E

- (a) (iii) A triangle has 6 parts.
(b) (ii) A right-angled triangle can have 1 right angle.
(c) (iv) The maximum number of acute angles a triangle can have is 3.
(d) (ii) Number of obtuse angles a triangle can have is 1.
(e) (ii) An equilateral triangle is also an acute-angled triangle.
- (a) Vertices: A, B and C
(b) Angles: $\angle ABC$ or $\angle CBA$ or $\angle B$; $\angle BAC$ or $\angle CAB$ or $\angle A$; $\angle ACB$ or $\angle BCA$ or $\angle C$
(c) Sides: AB, BC and CA
- (a) $PQ = 2$ cm, $QR = 6$ cm, $PR = 3$ cm i.e., scalene triangle
(b) $DE = EF = DF = 4$ cm i.e., Equilateral triangle
(c) $TU = UV = 4$ cm i.e., Isosceles triangle
(d) $\angle XYZ = 60^\circ$, $\angle YZX = 25^\circ$, $\angle ZXY = 95^\circ$ i.e., obtuse-angled triangle
(e) $\angle PQR = 90^\circ$, $\angle QRP = 45^\circ$, $\angle RPQ = 45^\circ$ i.e., Right angled triangle.
(f) $\angle ABC = 125^\circ$, $\angle BCA = 30^\circ$, $\angle CAB = 25^\circ$ i.e., obtuse-angled triangle

4. To verify the angle sum property for a group of three angles, we need to sum all the angles and check if the result equals 180° .

(a) The given angles are 30° , 90° and 60° .

$$\therefore 30^\circ + 90^\circ + 60^\circ = 180^\circ$$

The angles satisfy the angle sum property.

(b) Given angles are 65° , 35° and 90°

$$\therefore 65^\circ + 35^\circ + 90^\circ = 190^\circ \neq 180^\circ$$

The angles do not satisfy the angle sum property.

(c) Given angles are: 80° , 75° and 35°

$$\therefore 80^\circ + 75^\circ + 35^\circ = 190^\circ \neq 180^\circ$$

The angles do not satisfy the angle sum property.

(d), (e) and (f) Same as above parts.

5. (a) Sides of a triangle are: 4 cm, 3 cm and 7 cm

The property states that the sum of measures of any two sides of a triangle is always greater than the measure of the third side.

$$4 \text{ cm} + 3 \text{ cm} = 7 \text{ cm} \not> 7 \text{ cm}$$

Hence, these do not satisfy the inequality property of the sides of a triangle.

(b) Sides of a triangle are 4.5 cm, 2 cm and 4.5 cm

The property states that the sum of measures of any two sides of a triangle is always greater than the measure of the third side.

$$4.5 \text{ cm} + 2 \text{ cm} = 6.5 \text{ cm} > 4.5 \text{ cm}$$

$$4.5 \text{ cm} + 4.5 \text{ cm} = 9 \text{ cm} > 4.5 \text{ cm}$$

Hence, these satisfy property of sum of the sides of a triangle.

(c) Sides of a triangle are 5 cm, 6 cm and 8 cm

The property states that the sum of measures of any two sides of a triangle is always greater than the measure of the third side.

$$5 \text{ cm} + 6 \text{ cm} = 11 \text{ cm} > 8 \text{ cm}$$

$$8 \text{ cm} + 6 \text{ cm} = 14 \text{ cm} > 5 \text{ cm}$$

$$8 \text{ cm} + 5 \text{ cm} = 13 \text{ cm} > 6 \text{ cm}$$

Hence, these satisfy the property of sum of the sides of a triangle.

(d), (e) and (f) same as above.

Practice Time 6

1. (a) The centre of the circle is O.
(b) The diameter of the circle is AB.
(c) OA, OB and OP are the radii of the circle.
(d) The chords of the circle are CD and AB.
(e) The points A, P, D, B and C are on the circle.
(f) The points R and Q lie on the exterior of the circle.
(g) The points M, N and O lie in the interior of the circle.
(h) $AB = 2 \times OP$
(i) CD is a chord of the circle.
(j) The longest chord of the circle is diameter AB.
2. (a) The radius of a circle is double the diameter.
False.
(b) We can draw many diameters, radii and chords on a circle.
True
(c) A circle can have many centres.
False
(d) Every diameter of a circle is its chord.
True
(e) Every chord of a circle is its diameter.
False
(f) The circumference of a circle depends on its radius.
True.
3. (a) Radius = 2.5 cm (given)
We have, diameter = $2 \times$ radius
Therefore, diameter = $2 \times 2.5 \text{ cm} = 5 \text{ cm}$
(b) Radius = 3 cm (given)
We have, diameter = $2 \times$ radius
Therefore, diameter = $2 \times 3 \text{ cm} = 6 \text{ cm}$
(c) Radius = 11 mm (given)
We have, diameter = $2 \times$ radius
Therefore, diameter = $2 \times 11 \text{ mm} = 22 \text{ mm}$
(d) Radius = 8 cm (given)
We have, diameter = $2 \times$ radius
Therefore, diameter = $2 \times 8 \text{ cm} = 16 \text{ cm}$
4. (a) Diameter = 6 cm (given)
We have, radius = $\frac{\text{Diameter}}{2}$
Therefore, radius = $\frac{6}{2} \text{ cm} = 3 \text{ cm}$
(b) Diameter = 9 cm (given)
We have, radius = $\frac{\text{Diameter}}{2}$
Therefore, radius = $\frac{9}{2} \text{ cm} = 4.5 \text{ cm}$

(c) Diameter = 23 mm (given)

$$\text{We have, radius} = \frac{\text{Diameter}}{2}$$

$$\text{Therefore, radius} = \frac{23}{2} \text{ mm} = 11.5 \text{ mm}$$

(d) Diameter = 16 mm

$$\text{We have, radius} = \frac{\text{Diameter}}{2}$$

$$\text{Therefore, radius} = \frac{16}{2} \text{ mm} = 8 \text{ mm}$$

Mental Maths (Page 144)

$\angle ABC = 45^\circ$, $\angle PQR = 30^\circ$, $\angle STU = 255^\circ$, $\angle RST = 120^\circ$ and $\angle DEF = 90^\circ$.

$30^\circ < 45^\circ < 90^\circ < 120^\circ < 255^\circ$

Ascending order: $\angle PQR < \angle ABC < \angle DEF < \angle RST < \angle STU$

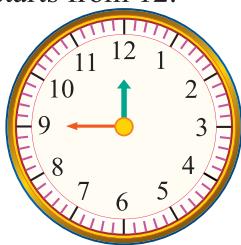
Brain Sizzlers (Page 144)

1. The angle between two consecutive spokes will be given by the total degrees (360°) divided by the number of spokes.

The angle between a pair of two consecutive

$$\text{spokes} = \frac{360^\circ}{48} = \left(\frac{15}{2}\right)^\circ = \left(7\frac{1}{2}\right)^\circ \text{ or } 7.5^\circ.$$

2. The hour hand of a clock makes 3 right angles to reach 9 if it starts from 12.



Chapter Assessment

1. (a) (iii) Reflex angle is greater than a straight angle.

(b) (iv) 360° , the minute hand of a clock turn through in one hour.

(c) (iv) 2 complete angles $= 360^\circ \times 2 = 720^\circ$

$$\frac{720^\circ}{90^\circ} = 8.$$

Hence, 2 complete angles have 8 right angles.

(d) (i) The maximum number of points of intersection of two non-parallel lines is 1.

2. (a) Five points are A, B, C, D and O.

(b) Three rays are \overrightarrow{OA} , \overrightarrow{OB} and \overrightarrow{OC} .

(c) Four line segments are \overline{AB} , \overline{BC} , \overline{CD} and \overline{DA} .

(d) Two lines are \overline{BD} and \overline{AC} .

3. Five line segments in the give figure are \overline{AB} , \overline{BC} , \overline{CD} , \overline{DE} and \overline{AC} . (Answer may vary)

4. (a) All pairs of interesting lines are \vec{a} and \vec{b} ; \vec{a} and \vec{c} ; \vec{a} and \vec{r} ; \vec{a} and \vec{p} , \vec{a} and \vec{q} ; \vec{b} and \vec{r} ; \vec{b} and \vec{p} ; \vec{b} and \vec{q} ; \vec{c} and \vec{p} ; \vec{c} and \vec{q} ; \vec{c} and \vec{r} .

(b) All pairs of parallel lines are $\vec{b} \parallel \vec{c}$ and $\vec{p} \parallel \vec{q}$.

5. $\angle 1 = \angle AOB$ (Given)

$$(a) \angle 1 + \angle 2 = \angle AOB + \angle BOC = \angle AOC$$

$$(b) \angle 1 + \angle 3 = \angle AOB + \angle COD$$

$$(c) \angle 2 + \angle 3 = \angle BOC + \angle COD = \angle BOD$$

$$(d) \angle 1 + \angle 2 + \angle 3 = \angle AOB + \angle BOC + \angle COD = \angle AOD$$

6. (a) Parallel lines: $\vec{l} \parallel \vec{n}$, $\vec{l} \parallel \vec{m}$, $\vec{m} \parallel \vec{n}$, $\vec{p} \parallel \vec{q}$

Interesting lines: \vec{l} and \vec{p} ; \vec{n} and \vec{p} ; \vec{m} and \vec{p} ; \vec{l} and \vec{q} ; \vec{m} and \vec{q} ; \vec{n} and \vec{q}

(b) Parallel lines: $\vec{q} \parallel \vec{r}$, Interesting lines: \vec{p} and \vec{q} , \vec{r} and \vec{s} , \vec{p} and \vec{s} , \vec{q} and \vec{s} , \vec{p} and \vec{r}

(c) Parallel lines: $\vec{a} \parallel \vec{b}$, Interesting lines: \vec{a} and \vec{c} , \vec{b} and \vec{c} .

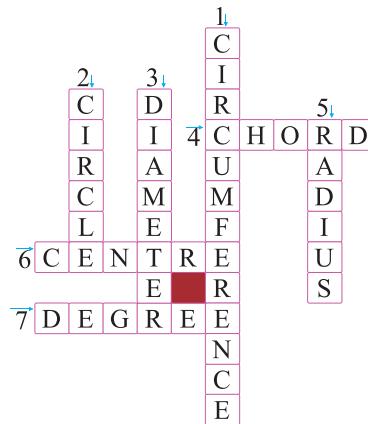
7. (a) Three triangles are: ΔPQS , ΔQSR and ΔPQR .

(b) Seven angles are: $\angle PQR$, $\angle PQS$, $\angle SQR$, $\angle SRQ$, $\angle PSQ$, $\angle RPQ$, $\angle RSQ$.

(c) Six line segments are: \overline{PQ} , \overline{QS} , \overline{QR} , \overline{SR} , \overline{PS} , \overline{PR}

(d) ΔPSQ and ΔQSR have $\angle S$ as common.

Maths Fun (Page 146)



MODEL TEST PAPER - 1

A.

1. (b) Smallest 6-digit number = 100000.
Greatest 5-digit number = 99999.
Difference = $100000 - 99999 = 1$.
2. (d) The greatest factor of a number is the number itself.
3. (b) A ray has 1 end point.
4. (c) Predecessor of smallest 5-digit number
 $= 10000 - 1 = 9999$.
5. (a) Face value and place value of each 0 in 410304 is always 0.
6. (b) 2, 3, 4 are factors of 12.
7. (d) $30000000 + 4000 + 50 + 8 = 30004058$.
8. (c) The smallest 7-digit number using the digits 3, 2, 1, 5 and 0 is 1000235.
9. (b) The product of a fraction and its reciprocal is 1.

B.

1. An obtuse angle is more than 90° but less than 180° .
2. An equilateral triangle has three sides of equal length.
3. A circle has infinite number of symmetry.

4. 11.11×1.11

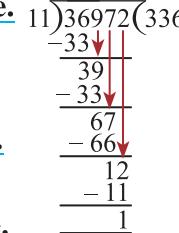
$$\begin{array}{r}
 11.11 \quad \times \quad 1.11 \quad = \quad 12.3321 \\
 \downarrow \quad \quad \quad \downarrow \quad \quad \quad \downarrow \\
 \text{Two decimal} \quad \text{2 decimal} \quad \text{4 decimal} \\
 \text{places} \quad \quad \quad \text{places} \quad \quad \quad \text{places}
 \end{array}$$

Thus, $11.11 \times 1.11 = 12.3321$.

$$\begin{aligned}
 5. \quad & 50 - 48 \div 6 \times 4 + 5 \\
 &= 50 - 8 \times 4 + 5 \quad (\text{Division: } 48 \div 6) \\
 &= 50 - 32 + 5 \quad (\text{Multiplication: } 8 \times 4) \\
 &= 50 + 5 - 32 \\
 &= 55 - 32 \quad (\text{Addition: } 50 + 5) \\
 &= 23 \quad (\text{Subtraction: } 55 - 32)
 \end{aligned}$$

C.

1. The number of zeroes in 100 millions are eight.
True.

2. 36972 is divisible by 11. **False.** 
3. Successor of 422 is CDXXIII.
 $CDXXIII = 400 + 20 + 3 = 423$.
True.
4. The HCF of two prime numbers is always 0. **False.**
5. To divide a fraction by another fraction, we multiply the dividend by the reciprocal of the divisor. **True.**

D.

1. (a) Least populous state in this list is Lakshadweep
(b) $1055450 - \text{Ten lakh fifty-five thousand four hundred fifty}$.
(c) Population of Arunachal Pradesh = 1382611
Place value of 3 in 1382611 = 300000.
(d) Population of Puducherry = 12444464.
Expanded form = $10000000 + 2000000 + 400000 + 40000 + 4000 + 400 + 60 + 4$.
(e) Mizoram - 1,091,014; Puducherry - 12,444,464;
Arunachal Pradesh - 1,382,611; Goa - 1,457,723;
Nagaland - 1,980,602.
(f) Mizoram
(g) Population of Chandigarh = 1055450.
Sum of place values of three 5s = $50000 + 5000 + 50 = 55050$.

$$\begin{aligned}
 2. \quad & 2\frac{1}{2} + 1\frac{1}{2} - \frac{2}{3} \times \frac{1}{3} \div 9 \\
 &= \frac{5}{2} + \frac{3}{2} - \frac{2}{3} \times \frac{1}{3} \times \frac{1}{9} \quad \left(\text{Division: } \frac{1}{3} \div 9 \right) \\
 &= \frac{5}{2} + \frac{3}{2} - \frac{2}{3} \times \frac{1}{27} \quad \left(\text{Multiplication: } \frac{1}{3} \times \frac{1}{9} \right) \\
 &= \frac{5}{2} + \frac{3}{2} - \frac{2}{81} \quad \left(\text{Multiplication: } \frac{2}{3} \times \frac{1}{27} \right) \\
 &= \frac{5+3}{2} - \frac{2}{81} \quad \left(\text{Addition: } \frac{5}{2} + \frac{3}{2} \right) \\
 &= \frac{8}{2} - \frac{2}{81} = 4 - \frac{2}{81} = \frac{324-2}{81} \\
 &= \frac{322}{81} \quad [\because \text{LCM of 1 and } 81 = 81]
 \end{aligned}$$

$$= 3\frac{79}{81} \quad \left(\text{Subtraction: } 4 - \frac{2}{81} \right) = 3\frac{79}{81} - \frac{243}{81}$$

3. Product = 108, LCM = 36 (Given)

We know that,

$\text{HCF} \times \text{LCM} = \text{Product of two numbers.}$

$$\text{HCF} \times 36 = 108$$

$$\text{HCF} = \frac{108}{36} = 3.$$

$$\begin{array}{r}
 5. \quad \boxed{3} \quad 8 \quad \boxed{6} \\
 126 \overline{)4 \quad 8 \quad 7 \quad 3 \quad 0} \\
 - \quad 3 \quad 7 \quad 8 \quad \downarrow \\
 \hline
 1 \quad 0 \quad 9 \quad 3 \\
 - \quad \boxed{1} \quad \boxed{0} \quad \boxed{8} \quad \downarrow \\
 \hline
 8 \quad 5 \quad \boxed{0} \\
 - \quad 7 \quad 5 \quad 6 \\
 \hline
 9 \quad 4
 \end{array}$$

6. Capacity of 8 water bottles = 12.8 L

So, capacity of 1 water bottle = $\frac{12.8}{8}$.

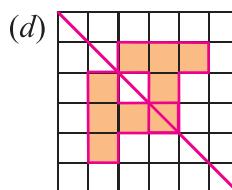
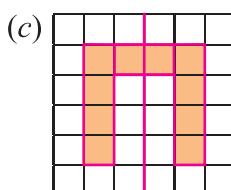
Therefore, capacity of 12 water bottles

$$= \frac{12.8}{8} \times 12 = \frac{153.6}{8} = 19.2 \text{ L.}$$

7. (a) AN is a ray (b) LC is a line
(c) EJ is a ray (d) DK is a line segment
(e) BC is a ray (f) LB is a ray

CHAPTER 7 : SYMMETRY AND PATTERNS

Let's Recall



3. (a) 12, 17, 22, 27, 32, 37, 42, 47.

(b) 55, 52, 49, 46, 43, 40, 37, 34.

4. (a)	1	12	12	9	19	23	5	12	12
	A	L	L	I	S	W	E	L	L

ALL IS WELL.

(b)	23	15	18	11	8	1	18	4
	W	O	R	K	H	A	R	D

WORK HARD.

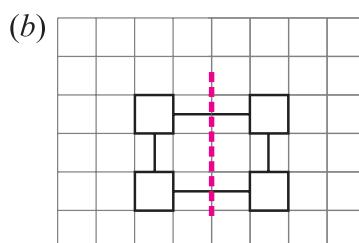
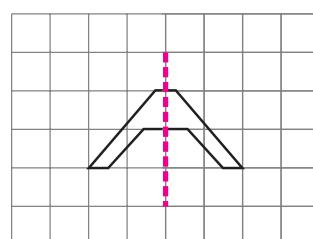
Think and Answer (Page 151)

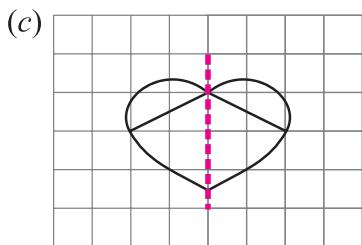
The five letters of english alphabet that have no line of symmetry are F, G, J, L, P.

Practice Time 7A

1. (a) An isosceles triangle has one line of symmetry.
(b) A rectangle has two lines of symmetry.
(c) An equilateral triangle has three lines of symmetry.
(d) A circle has infinite lines of symmetry.
(e) A letter 'H' has two lines of symmetry.

3. (a) one (b) two
(c) five (d) six
(e) infinite (f) two
(g) six (h) two





5. (a) Horizontal line of symmetry – B, C, D, E.
 (b) Vertical line of symmetry – A, M, T, U, V, W, Y.
 (c) Both horizontal and vertical lines of symmetry – H, I, O, X.

Think and Answer (Page 155)

1. $\frac{1}{4}$ turn = $\frac{1}{4} \times 360^\circ = 90^\circ$. i.e., 11:00
2. $\frac{1}{2}$ turn = $\frac{1}{2} \times 360^\circ = 180^\circ$. i.e., 11:15

Practice Time 7B

1. (a) Flip	(b) Turn	(c) Slide
(d) Turn	(e) Turn	(f) Flip
2. (a) Turn	(b) Slide	(c) Flip, Turn.

3.	Shape	Slide	Flip	Turn one-fourth $\left(\frac{1}{4}\right)$
(a)				
(b)				
(c)				
(d)				

4. (b) and (c)

5. (a), (c), (d)

6. (a) None (b) H, I, N, O, S, X and Z.

7. (a) $\frac{1}{4}$ turn clockwise or $\frac{3}{4}$ turn (anti-clockwise).

(b) $\frac{1}{4}$ turn (anti-clockwise) or $\frac{3}{4}$ turn clockwise.

4.	Shape	On $\frac{1}{4}$ turn	On $\frac{1}{2}$ turn
(a)			
(b)			
(c)			
(d)			

Practice Time 7C

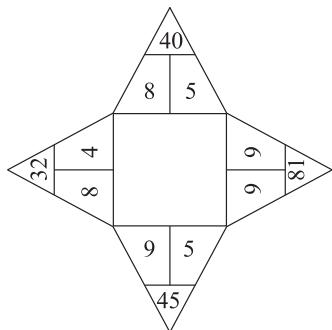
1. (a) Pattern made with $\frac{1}{4}$ turn.
 (b) Pattern made with $\frac{1}{4}$ turn.
 (c) Pattern made with $\frac{1}{2}$ turn.
 (d) Pattern made with $\frac{1}{2}$ turn.

2. (a)
 (b)
 (c)
 (d)

3. (a)
 (b)

4. (a) $98765 \times 9 + 3 = 888888$.
 $987654 \times 9 + 2 = 8888888$.
 (b) $1 + 3 + 5 + 7 + 9 + 11 + 11 = 36 = 6 \times 6$.
 $1 + 3 + 5 + 7 + 9 + 11 + 13 = 49 = 7 \times 7$.
 $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 = 64 = 8 \times 8$.
 (c) 37 \times 12 = 444; 37 \times 15 = 555.
 (d) $77762223 \div 7777 = 9999$.
 $77762223 \div 77777 = 9999$.
 (e) $1234321 \div 1111 = 1111$;
 $123454321 \div 11111 = 11111$.
 5. (a) 1, 3, 6, 10, 15, 21, 28, 36, 45, 55.
 (b) 4, 7, 10, 13, 16, 19, 22, 25, 28.
 (c) 6, 11, 21, 36, 56, 81, 111, 146, 186.
 (d) 81, 72, 63, 54, 45, 36, 27, 18.
 (e) $2 + 1, 2 + 5, 2 + 9, 2 + 13, 2 + 17, 2 + 21, 2 + 25$.
 (f) $1 + 2, 1 + 3, 1 + 5, 1 + 7, 1 + 11, 1 + 13, 1 + 17$.

Mental Math (Page 161)



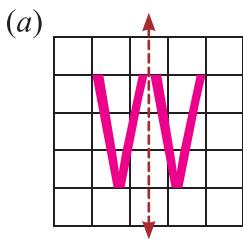
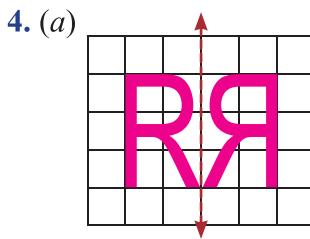
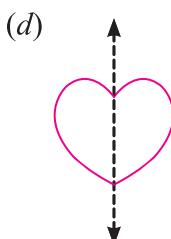
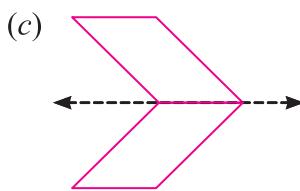
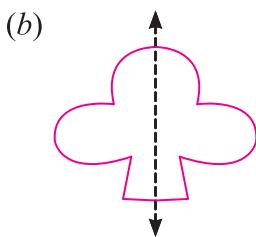
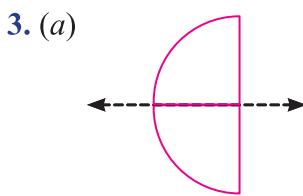
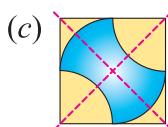
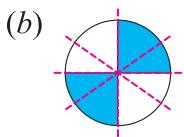
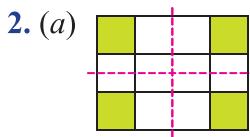
$$8 \times 5 = 40$$

$$4 \times 8 = 32$$

$$9 \times 9 = 81$$

Chapter Assessment (Page 163)

1. (a) - (i) The number of line (s) of symmetry in digit '3' is 1.
 (b) - (iii) Letter 'Z' does not have any line of symmetry.
 (c) - (iii) 8, 15, 22, 29, 36, 43.
 (d) - (ii)



5. The rotational symmetry of a shape describes how an object's shape remains the same when rotated on its own axis.

Since, T is rotated through a fixed point clockwise with 360° , then it will get its original position. Thus, the angle of rotation will be 360° .

6. CODE, DECIDE, CHOICE, BOX, ICE (Answer may vary)

9. (a) $4 + 5 + 6 = 15$, $5 + 6 + 7 = 18$.
 (b) $(9876 - 4) \div 8 = 1234$, $(98765 - 5) \div 8$ = 12345.

(c) $6666 \times 6666 = 44435556$, 66666×66666 = 4444355556.

(d) 29, 24, 19, 14, 9, 4
 (e) 15, 30, 45, 60, 75, 90.
 (f) 107, 98, 89, 80, 71, 62.

10. (a) 11th square number = 121.

(b) 9th triangular number = 45.

11. 1 and 36 are both square and triangular numbers.

CHAPTER 8 : MEASUREMENTS

Let's Recall

1. $3 \text{ m } 5 \text{ cm} = 3 \times 100 \text{ cm} + 5 \text{ cm}$
 $= 300 \text{ cm} + 5 \text{ cm} = 305 \text{ cm}$

2. $225 \text{ kg} = (225 \times 1000) \text{ g} = 225000 \text{ g}$

3. $4 \text{ L } 45 \text{ mL} = 4 \times 1000 \text{ mL} + 45 \text{ mL}$
 $= (4000 + 45) \text{ mL}$
 $= 4045 \text{ mL} = \frac{4045}{10} \text{ cL} = 404.5 \text{ cL}$

4. $32 \text{ m } 75 \text{ cm} + 8 \text{ m } 25 \text{ cm} = 41 \text{ m } 00 \text{ cm}$

$$\begin{array}{r}
 \text{m} \quad \text{cm} \\
 \text{①} \text{①} \quad \text{①} \\
 3 \quad 2 \quad 7 \quad 5 \\
 + \quad 8 \quad 2 \quad 5 \\
 \hline
 4 \quad 1 \quad 0 \quad 0
 \end{array}$$

5. $440 \text{ kg } 430 \text{ g} - 275 \text{ kg } 288 \text{ g} = 165 \text{ kg } 142 \text{ g}$

$$\begin{array}{r}
 \text{kg} \quad \text{g} \\
 \text{⑬} \quad \text{⑫} \\
 \text{③} \text{⑧} \text{⑩} \quad \text{③} \text{⑧} \text{⑩} \\
 \cancel{4} \cancel{4} \cancel{0} \quad \cancel{4} \cancel{3} \cancel{0} \\
 - \quad 2 \quad 7 \quad 5 \quad 2 \quad 8 \quad 8 \\
 \hline
 1 \quad 6 \quad 5 \quad 1 \quad 4 \quad 2
 \end{array}$$

$$\begin{array}{r}
 (d) \quad \mathbf{km} \quad \mathbf{m} \quad \text{Thus, } 5 \text{ km } 248 \text{ m} + 11 \text{ km} \\
 \qquad \qquad \qquad \textcircled{1} \textcircled{1} \quad 55 \text{ m} + 3 \text{ km } 6 \text{ m} = 19 \text{ km} \\
 \begin{array}{r}
 5 \quad 2 \quad 4 \quad 8 \\
 1 \quad 1 \quad 5 \quad 5 \\
 + \quad 3 \quad \quad 6 \\
 \hline
 1 \quad 9 \quad 3 \quad 0 \quad 9
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 (e) \quad \mathbf{g} \quad \mathbf{mg} \quad \text{Thus, } 18 \text{ g } 250 \text{ mg} + 10 \text{ g} \\
 \begin{array}{r}
 \textcircled{1} \quad \textcircled{1} \quad \textcircled{1} \quad 57 \text{ mg} + 6 \text{ g } 589 \text{ mg} = 34 \text{ g} \\
 1 \ 8 \quad 2 \ 5 \ 0 \quad 896 \text{ mg.} \\
 1 \ 0 \quad 5 \ 7 \\
 + \ 6 \quad 5 \ 8 \ 9 \\
 \hline
 3 \ 4 \quad 8 \ 9 \ 6
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 2. (a) \quad \mathbf{kL \ hL \ daL \ L} \quad \text{Thus, } 71 \mathbf{kL \ 9 \ hL \ 4 \ daL \ 2} \\
 \begin{array}{r}
 \mathbf{L} - 10 \mathbf{kL \ 2 \ hL \ 6 \ daL \ 4 \ L} \\
 \mathbf{= 61 \ kL \ 6 \ hL \ 7 \ daL \ 8 \ L}
 \end{array} \\
 \begin{array}{r}
 \mathbf{7 \ 1 \ 9 \ 4 \ 2} \\
 \mathbf{- 1 \ 0 \ 2 \ 6 \ 4} \\
 \hline
 \mathbf{6 \ 1 \ 6 \ 7 \ 8}
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 (b) \quad \mathbf{m} \ \mathbf{dm} \ \mathbf{cm} \ \mathbf{mm} \quad \text{Thus, } 6 \text{ m } 5 \text{ dm } 4 \text{ cm } 9 \\
 \quad \quad \quad \textcircled{4} \quad \textcircled{14} \quad \quad \quad \text{mm} - 3 \text{ m } 4 \text{ dm } 8 \text{ cm } 2 \\
 \begin{array}{r}
 6 \ \cancel{5} \ \cancel{4} \ \quad 9 \\
 - 3 \ \quad 4 \ \quad 8 \ \quad 2 \\
 \hline
 3 \ \quad 0 \ \quad 6 \ \quad 7
 \end{array} \quad \text{mm} = 3 \text{ m } 0 \text{ dm } 6 \text{ cm}
 \end{array}$$

$$\begin{array}{r}
 (c) \quad \mathbf{kg} \ \mathbf{hg} \ \mathbf{dag} \ \mathbf{g} \quad \text{Thus, } 5 \text{ kg } 7 \text{ hg } 2 \text{ dag } 6 \\
 \quad \quad \quad \begin{array}{cc} \textcircled{16} & \textcircled{11} \end{array} \quad \begin{array}{c} g - 3 \text{ kg } 8 \text{ hg } 5 \text{ dag } 9 \text{ g} = \\ 1 \text{ kg } 8 \text{ hg } 6 \text{ dag } 7 \text{ g} \end{array} \\
 \begin{array}{r} 4 \\ 5 \\ 7 \\ 2 \end{array} \quad \begin{array}{r} \cancel{6} \\ \cancel{8} \\ \cancel{7} \\ \cancel{9} \end{array} \quad \begin{array}{r} \cancel{1} \\ \cancel{1} \\ \cancel{2} \\ \cancel{6} \end{array} \quad \begin{array}{r} \textcircled{16} \\ \textcircled{11} \end{array} \\
 \begin{array}{r} - 3 \quad 8 \quad 5 \quad 9 \\ \hline 1 \quad 8 \quad 6 \quad 7 \end{array}
 \end{array}$$

$$\begin{array}{r}
 (d) \quad \mathbf{m} \quad \mathbf{cm} \quad \text{Thus, } 32 \text{ m } 75 \text{ cm} - 14 \text{ m } 25 \\
 \begin{array}{r}
 \textcircled{2} \text{ } \textcircled{12} \\
 3 \ 2 \ 7 \ 5 \\
 - 1 \ 4 \ 2 \ 5 \\
 \hline
 1 \ 8 \ 5 \ 0
 \end{array} \\
 \text{cm} = 18 \text{ m } 50 \text{ cm}
 \end{array}$$

$$\begin{array}{r}
 (e) \quad \begin{array}{r} \mathbf{g} \\ \text{⑩} \\ \begin{array}{r} X \quad \emptyset \quad 9 & 3 & 7 & 9 \\ - \quad 5 \quad 5 & 3 & 1 & 2 \\ \hline 5 & 4 & 0 & 6 & 7 \end{array} \end{array} \quad \begin{array}{l} \text{Thus, } 109 \text{ g } 379 \text{ mg} - \\ 55 \text{ g } 312 \text{ mg} = 54 \text{ g } 67 \text{ mg} \end{array}
 \end{array}$$

$$\begin{array}{r}
 (f) \quad \begin{array}{c} \textcircled{11} \quad \textcircled{14} \\ \cancel{6} \quad \cancel{4} \quad \textcircled{10} \end{array} \\
 \begin{array}{r} 7 \ 2 \ . \ 5 \ 0 \\ - 6 \ 5 \ . \ 6 \ 5 \\ \hline 0 \ 6 \ . \ 8 \ 5 \end{array} \quad \begin{array}{l} 0 \text{ mL} \\ 0 \text{ mL} \\ \hline 65.650 \text{ mL} \end{array} \quad \begin{array}{l} \text{Thus, } 72.5 \text{ mL} - \\ 65.650 \text{ mL} = 6.85 \text{ mL} \end{array}
 \end{array}$$

$$\begin{array}{r}
 3. (a) \quad \mathbf{m} \quad \mathbf{cm} \quad \text{Thus, } 25 \text{ m } 15 \text{ cm} \times 9 = \\
 \text{④ ① ④} \quad 226 \text{ m } 35 \text{ cm} \\
 2 \ 5 \ . \ 1 \ 5 \\
 \times \qquad \qquad \qquad 9 \\
 \hline
 2 \ 2 \ 6 \ . \ 3 \ 5
 \end{array}$$

$$\begin{array}{r}
 (b) \ 57 \text{ kg } 275 \text{ g} = 57.275 \text{ kg} \\
 \begin{array}{r}
 57.275 \\
 \times \quad \quad \quad 13 \\
 \hline
 171825 \\
 + 572750 \\
 \hline
 744.575
 \end{array}
 \end{array}$$

Thus, $57 \text{ kg } 275 \text{ g} \times 13 = 744 \text{ kg } 575 \text{ g}$

$$\begin{array}{r}
 (c) \ 5 \text{ kg } 7 \text{ hg } 6 \text{ dag } 9 \text{ g} = 5.769 \text{ kg} \\
 \begin{array}{r}
 5.769 \\
 \times 14 \\
 \hline
 23076 \\
 + 57690 \\
 \hline
 80.766
 \end{array}
 \end{array}
 \text{ Thus, } 5.769 \times 14 \text{ kg} = 80.766 \text{ kg} = 80 \text{ kg } 7 \text{ hg } 6 \text{ dag } 6 \text{ g}$$

$$(d) \ 6 \text{ km } 5 \text{ hm } 3 \text{ dam } 4 \text{ m} = 6.534 \text{ km}$$

$$\begin{array}{r}
 6.534 \\
 \times 12 \\
 \hline
 13068 \\
 +65340 \\
 \hline
 78.408
 \end{array}
 \text{ Thus, } 6 \text{ km } 5 \text{ hm } 3 \text{ dam } \\
 4 \text{ m} \times 12 = 78 \text{ km } 4 \text{ hm } 0 \\
 \text{dam } 8 \text{ m.}$$

$$(e) 25 \text{ L } 175 \text{ mL} \times 15 = 25.175 \text{ L}$$

$$\begin{array}{r}
 25.175 \\
 \times 15 \\
 \hline
 125875 \\
 +251750 \\
 \hline
 377.625
 \end{array}$$

Thus, 25 L 175 mL = 377 L 625 mL

$$(f) \quad 7 \text{ kL } 546 \text{ L} = 7.546 \text{ kL}$$

$$\begin{array}{r} 7.546 \\ \times 8 \\ \hline 60.368 \end{array} \quad \text{Thus, } 7 \text{ kL } 546 \text{ L} \times 8 = 60 \text{ kL } 368 \text{ L}$$

4. (a) $9 \text{ g } 6 \text{ dg } 5 \text{ cg } 1 \text{ mg} = 9.651 \text{ g}$

$$9.651 \text{ g} \div 7 = 1.3787 \text{ g}$$

Thus, $9 \text{ g } 6 \text{ dg } 5 \text{ cg } 1 \text{ mg} \div 7 = 1.3787 \text{ g}$

$$\begin{array}{r} 1.3787 \\ 7 \overline{)9.651} \\ -7 \\ \hline 26 \\ -21 \\ \hline 55 \\ -49 \\ \hline 61 \\ -56 \\ \hline 50 \\ -49 \\ \hline 1 \end{array}$$

(b) $56 \text{ kg } 349 \text{ g} = 56.349 \text{ kg}$

$$56.349 \text{ kg} \div 9 = 6.261 \text{ kg}$$

Thus, $56 \text{ kg } 349 \text{ g} \div 9 = 6.261 \text{ kg}$

$$\begin{array}{r} 6.261 \\ 9 \overline{)56.349} \\ -54 \\ \hline 23 \\ -18 \\ \hline 54 \\ -54 \\ \hline 09 \\ -9 \\ \hline 0 \end{array}$$

(c) $5 \text{ m } 8 \text{ dm } 4 \text{ cm } 8 \text{ mm} = 5.848 \text{ m}$

$$5.848 \div 8 = 0.731 \text{ m}$$

Thus, $5 \text{ m } 8 \text{ dm } 4 \text{ cm } 8 \text{ mm} \div 8 = 0.731 \text{ m}$

$$\begin{array}{r} 0.731 \\ 8 \overline{)5.848} \\ -56 \\ \hline 24 \\ -24 \\ \hline 08 \\ -8 \\ \hline 0 \end{array}$$

(d) $9 \text{ km } 5 \text{ hm } 6 \text{ dam } 4 \text{ m} = 9.564 \text{ km}$

$$9.564 \text{ km} \div 12 = 0.797 \text{ km}$$

Thus, $9 \text{ km } 5 \text{ hm } 6 \text{ dam } 4 \text{ m} \div 12 = 0.797 \text{ km}$

$$\begin{array}{r} 0.797 \\ 12 \overline{)9.564} \\ -84 \\ \hline 116 \\ -108 \\ \hline 84 \\ -84 \\ \hline 0 \end{array}$$

(e) $5 \text{ kL } 2 \text{ hL } 7 \text{ daL } 8 \text{ L} = 5.278 \text{ kL}$

$$5.278 \text{ kL} \div 13 = 0.406 \text{ kL}$$

Thus, $5 \text{ kL } 2 \text{ hL } 7 \text{ daL } 8 \text{ L} \div 13 = 0.406 \text{ kL}$

$$\begin{array}{r} 0.406 \\ 13 \overline{)5.278} \\ -52 \\ \hline 078 \\ -78 \\ \hline 0 \end{array}$$

(f) $9 \text{ L } 562 \text{ mL} = 9.562 \text{ L}$

$$9.562 \text{ L} \div 14 = 0.683 \text{ L}$$

Thus, $9 \text{ L } 562 \text{ mL} \div 14 = 0.683 \text{ L}$

$$\begin{array}{r} 0.683 \\ 14 \overline{)9.562} \\ -84 \\ \hline 116 \\ -112 \\ \hline 42 \\ -42 \\ \hline 0 \end{array}$$

5. The length of one piece of rope = 13.25 m
The length of another piece of ribbon = 18.85 m

Length of resultant piece of ribbon

$$= 13.25 \text{ m} + 18.85 \text{ m} = 32.1 \text{ m}$$

Thus, the length of resultant piece of ribbon is 32.1 m

6. Atul weights = 48 kg 250 g

Siya weights 8 kg 125 g less than

Atul	kg	g
4 8	2 5	8
- 8	1 2	5
4 0	1 2	5

Weight of Siya = $48 \text{ kg } 250 \text{ g} - 8 \text{ kg } 125 \text{ g}$

$$= 40 \text{ kg } 125 \text{ g}$$

Thus, weight of Siya = 40 kg 125 g

7. Capacity of one bucket = 18 L 350 mL

Capacity of other bucket

Capacity of other bucket	L	mL
= 16 L 755 mL	(1) (1)	(1)
+ 16 L 755 mL	1 8	3 5 0
3 5 1 0 5		

Total capacity of both the buckets = $18 \text{ L } 350 \text{ mL} + 16 \text{ L } 755 \text{ mL}$

$$= 35 \text{ L } 105 \text{ mL} = 35.105 \text{ L}$$

8. Capacity of 25 glasses

$$= 8 \text{ L } 205 \text{ mL} = 8.205 \text{ L}$$

Capacity of 1 glass	0.3282
= $8.205 \div 25 = 0.3282 \text{ L}$	25 \overline{)8.205}
Capacity of 5 glasses	0.3282
= $0.3282 \text{ L} \times 5 = 1.6410 \text{ L}$	0050
Thus, capacity 5 glasses of	0

Juice is 1 L 641 mL

Think and Answer (Page 177)

1. Distance travelled by car = 260 km

Time taken by the car to travel 260 km = 4 hours

So, Speed = $\frac{\text{Distance}}{\text{Time}} = \left(\frac{260}{4} \right) \text{ km/h} = 65 \text{ km/h}$

Thus, the speed of car is 65 km per hour or 65 km/h.

2. Speed = 85 km per hour

Time = 3 hours

We know that,

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$= 85 \times 3 \text{ m} = 255 \text{ km}$$

Thus, the train covered 255 km in 3 hours.

Chapter Assessment

1. (a) (iii) Approximate quantity of juice in the glass is 0.25 L

(b) (iii) My weight of myself in the morning
= 46 kg

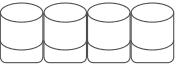
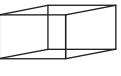
My weight with the book in my hand
= 46.20 kg

(c) (iii) 13 dg = 130 mg which is wrong statement.
Since 1 dg = 100 mg So, 13 dg
= $13 \times 100 = 1300$ mg

Thus, 13 dg = 130 mg is the incorrect.

(d) (iii)  = 3 L (Given)

 = 6 litres

So,  = 
= 6×4 L = 24 L.

2. Tina's books weigh = 2.5 kg; Her pencil box weighs = 0.257 kg. Her lunch box weigh = 480 g

$$= \frac{480}{1000} \text{ kg} = \frac{48}{100} \text{ kg} = 0.48 \text{ kg}$$

(a) Total weight of these items

$$= 2.5 \text{ kg} + 0.257 \text{ kg} + 480 \text{ g} = 3.237 \text{ kg}$$

$$\begin{array}{r} \textcircled{1} \quad \textcircled{1} \\ 2.500 \text{ kg} \\ 0.257 \text{ kg} \\ + 0.480 \text{ kg} \\ \hline 3.237 \text{ kg} \end{array}$$

(b) Least weight among the three items is of pencil box . Weight of Pencil box = 0.257 kg

$$= 0.257 \times 1000 \text{ g} = 257 \text{ g}$$

3. Venu's weight = 56.89 kg

$$\begin{array}{r} \textcircled{8} \quad \textcircled{10} \\ \text{So, Siya's weight} \quad 5.6.890 \text{ kg} \\ = 56.89 \text{ kg} - 13.782 \text{ kg} \quad - 1.3.782 \text{ kg} \\ \hline 4.3.108 \text{ kg} \end{array}$$

Thus, the weight of Siya is 43.108 kg.

4. Quantity of a medicinal syrup in a bottle = 125 mL

Quantity of syrup in 15 bottles

$$= 125 \text{ mL} \times 15 = 1875 \text{ mL} = 1.875 \text{ L}$$

Thus, quantity of syrup in 15 bottles is 1.875 L

5. Capacity of one container of water = 1.5 dL

$$1.5 \text{ dL} = \frac{1.5}{10} \text{ L} = 0.15 \text{ L}$$

Number of containers used to fill a jar of capacity

$$9 \text{ L} = \frac{9}{0.15} = 60.$$

Thus, 60 containers of capacity 1.5 dL will be used to fill a jar of capacity 9L.

6. Total distance between Delhi and Jaipur
= 310 km 400 m.

Speed of first car in 1 hour = 75 km 250 m

Speed of second car in 1 hour = 82 $\begin{array}{r} \text{km} \\ \text{km} 100 \text{ m} \end{array}$ $\begin{array}{r} \text{m} \\ \text{⑪ ⑩} \\ \text{⑦ ⑧ ⑩ ⑩} \end{array}$

Distance between both the cars $\begin{array}{r} \text{km} \\ \text{8 2} \\ \text{X 0} \end{array}$ after one hour $\begin{array}{r} \text{km} \\ - 7 5 2 5 0 \end{array}$

$$= 82 \text{ km } 100 \text{ m} - 75 \text{ km } 250 \text{ m} = \underline{\underline{0 6 8 5 0}}$$

6 km 850 m

Thus, distance between both the cars after one hour is 6 km 850 m

7. Height of ceiling of a room = 6 m = 600 cm

Height of Rahul = 160 cm

Height of the chair = 55 cm

Height of his stretched arm = 50 cm

Total height = 160 cm + 55 cm + 50 cm = 265 cm

Length of the stick he needs to reach the ceiling = 600 cm - 265 cm = 335 cm

Thus, required length of the stick he needs to reach the ceiling is 335 cm.

8. Side of square park = 200 m

Perimeter of square park = $4 \times$ side = 4×200 m = 800 m

Total distance Rohit covered = 2.4 km = 2.4×1000 m = 2400 m

Number of rounds of the park to covered the total

$$\text{distance} = \frac{2400}{800} = 3 \text{ rounds}$$

Thus, he takes 3 rounds of the park to cover a total distance of 2.4 km.

Mental Maths (Page 179)

1. $17 \text{ cm} + 20 \text{ mm}$

$$= 17 \times 10 \text{ mm} + 20 \text{ mm}$$

$$= 170 \text{ mm} + 20 \text{ mm} = 190 \text{ mm}$$

$$2. 12 \text{ km} - 600 \text{ m} = 12 \text{ km} - \frac{600}{1000} \text{ km}$$

$$= 12 \text{ km} - 0.6 \text{ km} = 11.400 \text{ km}$$

$$\begin{array}{r} \text{①} \quad \text{⑩} \\ 1 \ 2 \ . \ 0 \ 0 \ 0 \text{ km} \\ - \ 0 \ . \ 6 \ 0 \ 0 \text{ km} \\ \hline 1 \ 1 \ . \ 4 \ 0 \ 0 \text{ km} \end{array}$$

$$3. 10 \text{ kg} + 5 \text{ g} = 10 \times 1000 \text{ g} + 5 \text{ g}$$

$$= 10000 \text{ g} + 5 \text{ g} = 10005 \text{ g}$$

$$4. 7400 \text{ g} - 600 \text{ g} = 6800 \text{ g}$$

$$= \frac{6800}{1000} \text{ kg} = 6.800 \text{ kg}$$

$$5. 12 \text{ L} - 70 \text{ mL} = 12 \times 1000 \text{ mL} - 70 \text{ mL}$$

$$= 12000 \text{ mL} - 70 \text{ mL} = 11930 \text{ mL}$$

$$6. 4 \text{ L} - 700 \text{ mL} = 4 \text{ L} - \frac{700}{1000} \text{ L} = 4 \text{ L} - 0.7 \text{ L} = 3.300 \text{ L}$$

Brain Sizzlers (Page 179)

Distance covered by Riya in 30 paces = 18.750 m

$$\text{Distance covered by Riya in 1 pace} = \frac{18.750}{30} \text{ m}$$

$$= 0.625 \text{ m}$$

$$\text{Distance covered by Riya 10000 paces}$$

$$= 0.625 \times 10000 \text{ m} = 6250 \text{ m} = 6.250 \text{ km}$$

Thus, she walked 6.250 km after taking 10,000 paces.

CHAPTER 9 : TIME AND TEMPERATURE

Let's Recall

1. Super fast train

Departure time = 5:10 p.m.

Arrival time = 9:20 p.m.

Total time taken by the train from Lucknow to Varanasi = 4 hours 10 minutes

Express train

Departure time = 1730 p.m. = 5:30 p.m.

Arrival time = 2400 p.m. = 12:00 p.m.

Total time taken by the train from Lucknow to Varanasi = 6 hours 30 minutes.

Difference between their timings

= 6 hours 30 minutes - 4 hours 10 minutes

= 2 hours 20 minutes

Thus express train takes 2 hours 20 minutes more as compared to Super Fast train.

Practice Time 9A

$$1. (a) (i) 9:15 \text{ p.m.} = 2115 \text{ hours} (\because 1200 \text{ hours} + 915 \text{ hours} = 2115)$$

(b) (iii) Here, 2155 hours > 1200 hours.

Therefore, 2155 hours = 2155 hours - 1200 hours.
955 hours = 9:55 p.m.

$$2. (a) 0320 \text{ hours}$$

Here, 0320 hours < 1200 hours.

Therefore, 0320 hours = 3:20 a.m.

$$(b) 0428 \text{ hours}$$

Here, 0428 hours < 1200 hours.

Therefore, 0428 hours = 4:28 a.m.

$$(c) 0937 \text{ hours}$$

Here, 0937 hours < 1200 hours.

Therefore, 0937 hours = 9:37 a.m.

$$(d) 1429 \text{ hours}$$

Here, 1429 hours > 1200 hours.

Therefore, 1429 hours - 1200 hours = 2:29 p.m.

$$(e) 1330 \text{ hours}$$

Here, 1330 hours > 1200 hours.

Therefore, 1330 hours - 1200 hours = 1:30 p.m.

$$(f) 1740 \text{ hours}$$

Here, 1740 hours > 1200 hours.

Therefore, 1740 hours - 1200 hours = 5:40 p.m.

$$(g) 1825 \text{ hours}$$

Here, 1825 hours > 1200 hours.

Therefore, 1825 hours - 1200 hours = 6:25 p.m.

$$(h) 0000 \text{ hours}$$

Here, 0000 hours = 2400 hours.

0000 hours = 2400 hours - 1200 hours.

= 12:00 a.m. (midnight)

$$(i) 2222 \text{ hours}$$

Here, 2222 hours > 1200 hours.

Therefore, 2222 hours - 1200 hours = 10:22 p.m.

$$(j) 2138 \text{ hours}$$

Here, 2138 hours > 1200 hours.

Therefore, 2138 hours - 1200 hours = 9:38 p.m.

$$(k) 1348 \text{ hours}$$

Here, 1348 hours > 1200 hours.

Therefore, 1348 hours - 1200 hours = 1:48 p.m.

(l) 2000 hours

Here, 2000 hours > 1200 hours.

Therefore, 2000 hours – 1200 hours = 8:00 p.m.

3. (a) 1:40 a.m.

1:40 a.m. = 0140 hours

(\because 0140 hours < 1200 hours

\therefore 1:40 a.m. = 0140 hours)

(b) 4:57 a.m.

4:57 a.m. = 0457 hours

(\because 0457 hours < 1200 hours

\therefore 4:57 a.m. = 0457 hours)

(c) 12:06 a.m.

12:06 a.m. = 0006 hours

(\because 1206 hours > 1200 hours

\therefore 1206 hours – 1200 hours

= 0006 hours)

(d) 6:05 a.m.

6:05 a.m. = 0605 hours

(\because 0605 hours < 1200 hours

\therefore 6:05 a.m. = 0605 hours)

(e) 10:24 a.m.

10:24 a.m. = 1024 hours

(\because 1024 hours < 1200 hours

\therefore 10:24 a.m. = 1024 hours)

(f) 7:36 p.m.

7:36 p.m. = 1936 hours

(\because 1200 hours + 736 hours = 1936 hours)

(g) 12:15 p.m.

12:15 p.m. = 1215 hours.

(h) 2:17 p.m.

2:17 p.m. = 1417 hours

(\because 1200 hours + 217 hours = 1417 hours)

(i) 11:00 p.m.

11:00 p.m. = 2300 hours

(\because 1200 hours + 1100 hours = 2300 hours)

(j) 12:00 midnight

12:00 mid-night = 0000 hours or 2400 hours.

(k) 3:30 p.m.

3:30 p.m. = 1530 hours

(\because 1200 hours + 330 hours = 1530 hours)

(l) 9:40 p.m.

9:40 p.m. = 2140 hours

(\because 1200 hours + 940 hours = 2140 hours)

Practice Time 9B

1. (a) 9 minutes into seconds

Since, 1 minute = 60 seconds

So, 9 minutes = (9×60) seconds = 540 seconds.

(b) 12 minutes 54 seconds into seconds

12 minutes 54 seconds

= 12 minutes + 54 seconds

= (12×60) seconds + 54 seconds

[\because 1 minute = 60 seconds]

= 720 seconds + 54 seconds

= 774 seconds.

(c) 3 hours 25 minutes 16 seconds into seconds

= 3 hours + 25 minutes + 16 seconds

= (3×60) minutes + 25 minutes + 16 seconds

[\because 1 hour = 60 minutes]

= 180 minutes + 25 minutes + 16 seconds

= 205 minutes + 16 seconds

= (205×60) seconds + 16 seconds

[\because 1 minute = 60 seconds]

= 12300 seconds + 16 seconds

= 12316 seconds.

(d) 14 hours into minutes

Since, 1 hour = 60 minutes

So, 14 hours = (14×60) minutes = 840 minutes.

(e) 9 hours 54 minutes into minutes

= 9 hours + 54 minutes

= (9×60) minutes + 54 minutes

= 540 minutes + 54 minutes

= 594 minutes.

(f) 7 days into hours

Since, 1 day = 24 hours

So, 7 days = (7×24) hours = 168 hours.

(g) 8 days 19 hours into hours

= 8 days + 19 hours.

= (8×24) hours + 19 hours

[\because 1 day = 24 hours]

= 192 hours + 19 hours

= 211 hours.

(h) 7 weeks 3 days into days

= 7 weeks + 3 days

= (7×7) days + 3 days (\because 1 week = 7 days)

= 49 days + 3 days

= 52 days.

(i) 3 years into days

Since, 1 year = 365 days.

So, 3 years = (3×365) days = 1095 days.

(j) 10 years into months

Since, 1 year = 12 months

So, 10 years = (10×12) months = 120 months.

(k) 5 years 10 months into months

$$= 5 \text{ years} + 10 \text{ months}$$

$$= (5 \times 12) \text{ months} + 10 \text{ months}$$

$$= 60 \text{ months} + 10 \text{ months}$$

$$= 70 \text{ months.}$$

2. (a) 1318 seconds

Since, 60 seconds = 1 minute

1318 seconds

$$= (1318 \div 60) \text{ minutes.}$$

Quotient = 21, Remainder 58.

Thus, 1318 seconds = 21 minutes 58 seconds.

(b) 3165 seconds

Since, 60 seconds = 1 minute

3165 seconds

$$= (3165 \div 60) \text{ minutes}$$

Quotient = 52, Remainder = 45

Thus, 3165 seconds = 52 minutes 45 seconds.

3. (a) 238 minutes

Since, 60 minutes = 1 hour

238 minutes = $(238 \div 60)$ hours

Quotient = 3, Remainder = 58

Thus, 238 minutes = 3 hours 58 minutes.

(b) 498 minutes

Since, 60 minutes = 1 hour

498 minutes = $(498 \div 60)$ hours

Quotient = 8, Remainder = 18.

Thus, 498 minutes = 8 hours 18 minutes.

(c) 1032 minutes

$$= (1032 \div 60) \text{ hours}$$

(: 60 minutes = 1 hours)

Quotient = 17, Remainder = 12

Thus, 1032 minutes = 17 hours 12 minutes.

(d) 3024 minutes

$$= (3024 \div 60) \text{ hours}$$

(: 60 minutes = 1 hour)

Quotient = 50, Remainder = 24

Thus, 3024 minutes = 50 hours 24 minutes.

4. (a) 57 hours

Since, 24 hours = 1 day

57 hours = $(57 \div 24)$ days

Quotient = 2, Remainder = 9

Thus, 57 hours = 2 days 9 hours.

(b) 537 hours

Since, 24 hours = 1 day

537 hours = $(537 \div 24)$ days

Quotient = 22, Remainder = 9

Thus, 537 hours = 22 days 9 hours.

(c) 953 hours

953 hours = $(953 \div 24)$ day

(: 24 hours = 1 day)

Quotient = 39, Remainder = 17

Thus, 953 hours = 39 days 17 hours.

(d) 1810 hours

1810 hours = $(1810 \div 24)$ day

(: 24 hours = 1 day)

Quotient = 75, Remainder = 10

Thus, 1810 hours = 75 days 10 hours.

5. (a) 330 days

Since, 7 days = 1 week

330 days = $(330 \div 7)$ weeks

Quotient = 47, Remainder = 1

Thus, 330 day = 47 weeks 1 day.

(b) 438 days

Since, 7 days = 1 week

438 days = $(438 \div 7)$ weeks

Quotient = 62, Remainder = 4

Thus, 438 day = 62 weeks 4 days.

Practice Time 9C

1. (a) - (ii)

Step 1. Add months:

$$= 8 \text{ months} + 6 \text{ months} +$$

$$= 14 \text{ months}$$

$$= 12 \text{ months} + 2 \text{ months}$$

(: 12 months = 1 year)

$$= 1 \text{ year} + 2 \text{ months}$$

Step 2. Add years:

1 year (carried over) + 6 years + 8 years = 15 years.

Thus, 6 years 8 months + 8 years 6 months

Years	Months
1	
6	8
8	6
15	2

= 15 years 2 months

(b) - (i) Subtract minutes.

$\because 25 \text{ minutes} < 45 \text{ minutes}$

So, regroup hours and minutes

9 hours 25 minutes

$= 8 \text{ hours } 85 \text{ minutes}$

Now, 8 hours 85 minutes - 3 hours 45 minutes

$= 5 \text{ hours } 40 \text{ minutes}$

2. (a) 9 min 28 s and 6 min 16 s

Step 1. Add seconds:

$$\begin{array}{r} 28 \text{ seconds} + 16 \text{ seconds} \\ = 44 \text{ seconds.} \end{array}$$

Step 2. Add minutes:

$$\begin{array}{r} 9 \text{ minutes} + 6 \text{ minutes} \\ = 15 \text{ minutes.} \end{array}$$

Thus, 9 minutes 28 seconds + 6 minutes 16 seconds = 15 minutes 44 seconds.

(b) 9 h 32 min and 6 h 26 min

Step 1. Add minutes:

$$\begin{array}{r} 32 \text{ minutes} + 26 \text{ minutes} \\ = 58 \text{ seconds.} \end{array}$$

Step 2. Add hours:

$$\begin{array}{r} 9 \text{ hours} + 6 \text{ hours} \\ = 15 \text{ hours.} \end{array}$$

Thus, 9 hours 32 minutes + 6 hours 26 minutes = 15 hours 58 minutes.

(c) 2 days 17 h and 3 days 15 h

Step 1. Add hours:

$$\begin{array}{r} 17 \text{ hours} + 15 \text{ hours} \\ = 32 \text{ hours} \\ = 24 \text{ hours} + 8 \text{ hours} \\ (\because 1 \text{ day} = 24 \text{ hours}) \\ = 1 \text{ day} + 8 \text{ hours.} \end{array}$$

Step 2. Add days:

$$\begin{array}{r} 1 \text{ day (carried over)} + 2 \text{ days} + 3 \text{ days} \\ = 6 \text{ days.} \end{array}$$

Thus, 2 days 17 hours + 3 days 15 hours = 6 days 8 hours.

(d) 5 weeks 4 days and 4 weeks 6 days

Step 1. Add days:

$$\begin{array}{r} 4 \text{ days} + 6 \text{ days} \\ = 10 \text{ days} \\ = 7 \text{ days} + 3 \text{ days} \\ = 1 \text{ week} + 3 \text{ days} \\ (\because 1 \text{ week} = 7 \text{ days}) \end{array}$$

h	min
8	85
9	25
3	45
5	40

Step 2. Add week:

$$\begin{array}{r} 1 \text{ week (carried over)} \\ + 5 \text{ weeks} + 4 \text{ weeks} \\ = 10 \text{ weeks} \end{array}$$

Weeks	Days
1	
5	4
4	6
10	3

Thus, 5 weeks 4 day +

4 weeks 6 days = 10 weeks 3 days.

(e) 5 years 4 months and 3 years 7 months

Step 1. Add months:

$$\begin{array}{r} 4 \text{ months} + 7 \text{ months} \\ = 11 \text{ months} \end{array}$$

Years	Months
5	4
3	7
8	11

Step 2. Add years:

$$5 \text{ years} + 3 \text{ years} = 8 \text{ years}$$

Thus, 5 years 4 months + 3 years 7 months = 8 years 11 months.

3. (a) 20 min 48 s from 30 min

Step 1. Subtract seconds:

$\because 00 \text{ s} < 48 \text{ s}$

So, regroup minutes and seconds.

$\therefore 30 \text{ minutes} = 29 \text{ minutes } 60 \text{ seconds.}$ Now, 60 seconds - 48 seconds = 12 seconds.

min	s
29	60
30	00
20	48
9	12

Step 2. Subtract minutes:

$$29 \text{ minutes} - 20 \text{ minutes} = 9 \text{ minutes}$$

Thus, 30 minutes - 20 minutes 48 seconds = 9 minutes 12 seconds.

(b) 15 min 33 s from 18 min 40 s

Step 1. Subtract seconds:

$$\begin{array}{r} 40 \text{ seconds} - 33 \text{ seconds} \\ = 7 \text{ seconds.} \end{array}$$

min	s
13	10
18	40
15	33
03	07

Step 2. Subtract minutes:

$$\begin{array}{r} 18 \text{ minutes} - 15 \text{ minutes} \\ = 3 \text{ minutes} \end{array}$$

Thus, 18 minutes 40 seconds - 15 minutes 33 seconds = 3 minutes 7 seconds.

(c) 8 h 40 min from 24 h

Step 1. Subtract minutes:

$\because 00 \text{ min} < 40 \text{ min}$

So, regroup hours and minutes.

24 hours = 23 hours 60 minutes.

Now, 60 minutes - 40 minutes

$$= 20 \text{ minutes.}$$

h	min
23	60
24	00
8	40
15	20

Step 2. Subtract hours:

$$23 \text{ hours} - 8 \text{ hours} = 15 \text{ hours}$$

Thus, 24 hours - 8 hours 40

minutes = 15 hours 20 minutes

(d) 2 days 12 h from 4 days 20 h

Step 1. Subtract hours:

$$\begin{array}{r} 20 \text{ hours} - 12 \text{ hours} \\ = 8 \text{ hours.} \end{array}$$

days	h
	(1) 10
4	2 0
2	1 2
2	0 8

Step 2. Subtract days:

$$4 \text{ days} - 2 \text{ days} = 2 \text{ days.}$$

$$\begin{array}{r} \text{Thus, } 4 \text{ days } 20 \text{ hours} - 2 \text{ days } 12 \text{ hours} \\ = 2 \text{ days } 8 \text{ hours.} \end{array}$$

(e) 3 weeks 5 days from 5 weeks 3 days

Step 1. Subtract days:

$$\because 3 \text{ days} < 5 \text{ days}$$

$$\begin{array}{r} \text{So, regroup weeks and days. } 5 \\ \text{weeks } 3 \text{ days} = 4 \text{ weeks } 10 \text{ days.} \end{array}$$

Weeks	Days
(4)	10
5	3
3	5
1	5

$$\text{Now, } 10 \text{ days} - 5 \text{ days} = 5 \text{ days.}$$

Step 2. Subtract weeks:

$$4 \text{ weeks} - 3 \text{ weeks} = 1 \text{ week.}$$

$$\begin{array}{r} \text{Thus, } 5 \text{ weeks } 3 \text{ days} - 3 \text{ weeks } 5 \text{ days} \\ = 1 \text{ week } 5 \text{ days.} \end{array}$$

(f) 15 years 9 months from 20 years

Step 1. Subtract months:

$$\because 00 \text{ days} < 9 \text{ days}$$

$$\begin{array}{r} \text{So, regroup years and months.} \\ 20 \text{ years} = 19 \text{ years } 12 \text{ months.} \end{array}$$

Years	Months
(19)	12
20	00
15	9
4	3

$$\text{Now, } 12 \text{ months} - 9 \text{ months}$$

$$= 3 \text{ months.}$$

Step 2. Subtract years:

$$19 \text{ years} - 15 \text{ years} = 4 \text{ years.}$$

$$\begin{array}{r} \text{Thus, } 20 \text{ years} - 15 \text{ years } 9 \text{ months} \\ = 4 \text{ years } 3 \text{ months.} \end{array}$$

4. (a) 3 h 45 min after 8:30 p.m.?

Step 1. Convert 8:30 p.m. into 24 - hour clock.

$$\begin{array}{r} 8:30 \text{ p.m.} = 2030 \text{ hours} \\ = 20 \text{ hours } 30 \text{ minutes.} \end{array}$$

Step 2. Add 3 hours 45 minutes and 20 hours 30 minutes.

$$30 \text{ minutes} + 45 \text{ minutes} = 75 \text{ minutes}$$

$$75 \text{ minutes} = 60 \text{ minutes} + 15 \text{ minutes}$$

$$= 1 \text{ hour} + 15 \text{ minutes}$$

Now, 1 hour (carried over) + 20

$$\text{hours} + 3 \text{ hours} = 24 \text{ hours}$$

Step 3. Required time

$$= 24 \text{ hours } 15 \text{ minutes}$$

$$= 12:15 \text{ a.m.}$$

h	min
(1)	
20	30
3	45
24	15

(b) 5 h 30 min after 8:40 p.m.?

Step 1. Convert 8:40 p.m. into 24 - hour clock.

$$8:40 \text{ p.m.} = 2040 \text{ hours}$$

$$= 20 \text{ hours } 40 \text{ minutes.}$$

Step 2. Add 5 hours 30 minutes and 20 hours 40 minutes.

$$\begin{array}{r} 40 \text{ minutes} + 30 \text{ minutes} = 70 \text{ minutes} \\ 70 \text{ minutes} = 60 \text{ minutes} + 10 \text{ minutes} \\ = 1 \text{ hour} + 10 \text{ minutes} \end{array}$$

Now, 1 hour (carried over) + 20

$$\text{hours} + 5 \text{ hours} = 26 \text{ hours}$$

Step 3. Required time

$$= 26 \text{ hours } 10 \text{ minutes}$$

$$= 2610 \text{ hours}$$

$$= (2610 - 2400) \text{ hours}$$

$$= 210 \text{ hours.}$$

$$= 2:10 \text{ a.m.}$$

h	min
(1)	
20	40
5	30
26	10

5. (a) 4 h before 1:30 p.m.?

Step 1. Converting 1:30 p.m. into 24 - hour clock time.

$$1:30 \text{ p.m.} = 1330 \text{ hours}$$

$$= 13 \text{ hours } 30 \text{ minutes}$$

Step 2. Subtract 4 hours from 13

$$\text{hours } 30 \text{ minutes.}$$

$$30 \text{ minutes} - 00 \text{ minutes}$$

$$= 30 \text{ minutes and}$$

$$13 \text{ hours} - 4 \text{ hours} = 9 \text{ hours.}$$

Step 3. Required time = 9 hours 30 minutes

$$= 9:30 \text{ a.m.}$$

h	min
13	30
4	00
9	30

(b) 7 h 25 min before 3:20 p.m.?

Step 1. Converting 3:20 p.m. into 24 - hour clock.

$$3:20 \text{ p.m.} = 1520 \text{ hours}$$

$$= 15 \text{ hours } 20 \text{ minutes}$$

Step 2. Subtract 7 hours 25 minutes from 15 hours 20 minutes.

Subtract minutes.

$\because 20 \text{ min} < 25 \text{ min}$

So, regroup hours and minutes.

15 hours 20 minutes

$= 14 \text{ hours } 80 \text{ minutes.}$

$80 \text{ minutes} - 25 \text{ minutes} = 55 \text{ minutes.}$

Subtract hours.

$14 \text{ hours} - 7 \text{ hours} = 7 \text{ hours.}$

Step 3. Required time

$= 7 \text{ hours } 55 \text{ minutes} = 7:55 \text{ a.m.}$

6. 7:25 a.m. = 0725 hours = 7 h 25 min.

3:10 p.m. = 1510 hours = 15 h 10 min.

Subtract 7 h 25 min from 15 h 10 min.

Required time = 7 hours 45 minutes

h	min
14	80
15	20
7	25
7	55

7. (a) Closing time of the school

$= 1:30 \text{ p.m.} = 1330 \text{ hours.}$

Opening time of the school

$= 7:45 \text{ a.m.} = 0745 \text{ hours.}$

Shaneya's school hours

$= 1330 \text{ hours} - 0745 \text{ hours.}$

$= 0545 \text{ hours}$

$[\because 30 \text{ min} < 45 \text{ min regroup hours and minutes}]$

$= 5 \text{ hours } 45 \text{ minutes}$

Thus, her school hours is 5 hours 45 minutes.

(b) Closing time of the shop

$= 7:00 \text{ p.m.} = 1900 \text{ hours}$

Opening time of the shop

$= 10:30 \text{ a.m.} = 1030 \text{ hours}$

Time duration of the shop remains

open

$= 1900 \text{ hours} - 1030 \text{ hours}$

$= 0830 \text{ hours} = 8 \text{ hours } 30 \text{ minutes.}$

h	min
14	70
15	10
7	25
7	45

h	min
12	90
13	30
07	45
5	45

(c) Departure time of the bus

$= 5:30 \text{ a.m.} = 0530 \text{ hours}$

and arrival time at destination

$= 7:45 \text{ p.m.} = 1945 \text{ hours}$

Time duration of the journey

$1945 \text{ hours} - 0530 \text{ hours}$

Thus, time duration of the journey is 14 hours 15 minutes.

h	min
19	45
05	30
14	15

(d) The express train left Vadodara on

Monday $\rightarrow 4:40 \text{ p.m.} = 1640 \text{ hours.}$

Duration of the 1st day

$= 2400 \text{ hours} - 1640 \text{ hours} = 8:20 \text{ hours.}$

Tuesday \rightarrow Duration of the 2nd day = 24 hours

Wednesday \rightarrow Duration of the 3rd day

$= 24 \text{ hours}$

Thursday \rightarrow Duration of the 4th day when the train reached Guwahati.

$= 2400 \text{ hours} - 1230 \text{ hours} = 11:30 \text{ hours.}$

Total duration of the Journey =

h	min
1	
	8 : 2 0
2	4 : 0 0
2	4 : 0 0
+ 1	1 : 3 0
6	7 : 5 0

Thus, total duration of the journey is 67 hours 50 minutes.

(e) Age of Keshav when he started his job

$= 23 \text{ years } 7 \text{ months}$

His present age

$= 52 \text{ years } 2 \text{ months.}$

Duration of the job

$= 52 \text{ years } 2 \text{ months}$

$- 23 \text{ years } 7 \text{ months}$

$= 28 \text{ years } 7 \text{ months}$

Thus, he is in the job since 28 years 7 months.

Years	Months
51	14
52	2
23	7
28	7

Practice Time 9D

1. (a) 37 minutes 12 seconds by 3

min	s
37	12
	3
111	36

Thus, $37 \text{ minutes } 12 \text{ seconds} \times 3 = 111 \text{ minutes } 36 \text{ seconds.}$

(b) 6 hours 05 minutes by 3

h	min
6	05
	3
18	15

Thus, $6 \text{ hours } 05 \text{ minutes} \times 3 = 18 \text{ hours } 15 \text{ minutes.}$

(c) 8 hours 03 minutes 18 seconds by 6

Step 1. Multiply 18 seconds by 6.

$18 \text{ seconds} \times 6 = 108 \text{ seconds}$ convert 108 seconds into minutes and seconds.
 $108 \text{ seconds} = 60 \text{ seconds} + 48 \text{ seconds}$
 carry 1 minute to the minutes column and 48 seconds write seconds in the seconds column.

h	min	s
8	(1)	18
	03	6
48	19	48

Step 2. Multiply 3 minutes by 6 and add carry over 1 minute to the product.

$3 \text{ minutes} \times 6 + 1 = 19 \text{ minutes}$.

Write 19 minutes in the minutes column.

Step 3. Multiply 8 hours by 6.

$8 \text{ hours} \times 6 = 48 \text{ hours}$.

Thus, the required product is 48 hours 19 min 48 seconds.

(d) 7 hours 11 minutes 3 seconds by 8

h	min	s
(1)		
7	11	3
57	28	24

Thus, $7 \text{ hours } 11 \text{ minutes } 3 \text{ seconds} \times 8 = 57 \text{ hours } 28 \text{ minutes } 24 \text{ seconds}$.

(e) 2 weeks 5 days by 3

Weeks	Days
(2)	
2	5
8	1

$\therefore 5 \text{ days} \times 3 = 15 \text{ days}$

$= 14 \text{ days} + 1 \text{ day} = 2 \text{ weeks } 1 \text{ day}$.

Carry over (2) week in weeks column.

And 2 weeks (carry over) + 2 weeks $\times 3 = 8$ weeks

Thus, $2 \text{ weeks } 5 \text{ days} \times 3 = 8 \text{ weeks } 1 \text{ day}$.

(f) 10 weeks 5 days 10 hours by 2

Weeks	Days	Hours
(1)		
10	5	10
21	3	20

$10 \text{ hours} \times 2 = 20 \text{ hours}$

$5 \text{ days} \times 2 = 10 \text{ days}$

Since, 1 week = 7 days.

So, 10 day = 7 days + 3 days

= 1 week 3 days.

And 1 week (carry over) + 10 weeks $\times 2$

= $1 + 20 = 21$ week

Thus, $10 \text{ weeks } 5 \text{ days } 10 \text{ hours} \times 2 = 21 \text{ weeks } 3 \text{ days } 20 \text{ hours}$.

2. (a) 15 minutes 48 seconds $\div 3$

Step 1. Divide 15 minutes by 3.

Write 5 minutes as quotient and 0 minutes as remainder.

$$\begin{array}{r} 3 \overline{)15} (5 \rightarrow \text{minutes} \\ -15 \\ \hline 0 \end{array}$$

Step 2. Divide 48 seconds by 3.

Write 16 seconds as quotient and 0 seconds as remainder.

$$\begin{array}{r} 3 \overline{)48} (16 \rightarrow \text{seconds} \\ -3 \\ \hline 18 \\ -18 \\ \hline 0 \end{array}$$

Thus, $15 \text{ minutes } 48 \text{ seconds} \div 3 = 5 \text{ minutes } 16 \text{ seconds}$.

(b) 8 hours 16 minutes $\div 2$

$$\begin{array}{r} 4 \text{ hours } 8 \text{ minutes} \\ 2 \overline{)8 \text{ hours } 16 \text{ minutes}} \\ -8 \text{ hours} \\ \hline 0 \text{ hours } + 16 \text{ minutes} \\ -16 \text{ minutes} \\ \hline 0 \text{ minutes} \end{array}$$

Thus, $8 \text{ hours } 16 \text{ minutes} \div 2 = 4 \text{ hours } 8 \text{ minutes}$.

(d) 4 days 15 hours 40 minutes $\div 8$.

$$\begin{array}{r} 4 \text{ days } 15 \text{ hours } 40 \text{ minutes} \\ = 24 \times 4 + 15 \text{ hours } + 40 \text{ minutes} \end{array}$$

$[\because 1 \text{ day} = 24 \text{ hours}]$

$$= 96 \text{ hours} + 15 \text{ hours} + 40 \text{ minutes}.$$

$$= 111 \text{ hours} + 40 \text{ minutes}.$$

$$\begin{array}{r} 13 \text{ hours} \\ 8 \overline{)111 \text{ hours}} \\ -104 \text{ hours} \\ \hline 7 \text{ hours} \end{array}$$

$$= 7 \text{ hours} + 40 \text{ minutes}$$

$$= 420 \text{ minutes} + 40 \text{ minutes}$$

$[\because 1 \text{ hours} = 60 \text{ minutes}]$

$$\begin{array}{r} 57 \text{ minutes} \\ 8 \overline{)460 \text{ minutes}} \\ -40 \text{ minutes} \\ \hline 60 \\ -56 \\ \hline 4 \text{ minutes} \end{array}$$

$$= 4 \times 60 = 240 \text{ seconds} \quad [\because 1 \text{ min} = \frac{30 \text{ seconds}}{60 \text{ seconds}}]$$

$$\begin{array}{r} 30 \text{ seconds} \\ 8 \) 240 \text{ seconds} \\ \hline 240 \text{ seconds} \\ \hline 0 \text{ seconds} \end{array}$$

Thus, 4 days 15 hours 40 minutes $\div 8 = 13$ hours 57 minutes 30 seconds.

3. Time taken by Suyash to ride 13 km

$$= 1 \text{ hour } 56 \text{ minutes } 47 \text{ seconds}$$

So, time taken by him to ride 1 km

$$= 1 \text{ hours } 56 \text{ minutes } 47 \text{ seconds } \div 13$$

$$1 \text{ hours } 56 \text{ minutes } 47 \text{ seconds}$$

$$= 60 \text{ minutes} + 56 \text{ minutes} + 47 \text{ seconds}$$

$$= 116 \text{ minutes} + 47 \text{ seconds}.$$

Now, divide 116 minutes 47 seconds $\div 13$

$$\begin{array}{r} 8 \text{ minutes} \\ 13 \) 116 \text{ minutes} \\ \hline 104 \text{ minutes} \\ \hline 12 \text{ minutes} \\ = 12 \times 60 \text{ seconds} + 47 \text{ seconds} \\ = 720 \text{ seconds} + 47 \text{ seconds} = 767 \text{ seconds} \\ \begin{array}{r} 59 \text{ seconds} \\ 13 \) 767 \text{ seconds} \\ \hline 65 \\ \downarrow \\ 117 \\ - 117 \\ \hline 0 \end{array} \end{array}$$

Thus, he takes 8 minutes 59 seconds to ride 1 km at uniform speed.

Quick Check (Page 195)

(a) - (ii) Temperature of boiling water = 100°C
 (b) - (iii) Temperature of freezing water = 32°F
 (c) - (i) Normal temperature of human body
 $= 98.6^\circ\text{F}$

Practice Time 9E

1. (a) - (iii) To convert temperature from $^\circ\text{C}$ to $^\circ\text{F}$,
 we use the formula $^\circ\text{F} = ^\circ\text{C} \times \frac{9}{5} + 32$.

So, multiply the $^\circ\text{C}$ temperature by $\frac{9}{5}$.

$$100 \times \frac{9}{5} = 20 \times 9 = 180.$$

Now, add 32 to the product obtained to get the temperature in $^\circ\text{F}$.

$$\text{Therefore, } F = 180 + 32 = 212$$

$$\text{Thus, } 100^\circ\text{C} = 212^\circ\text{F}$$

Alternative:

$$F = C \times \frac{9}{5} + 32$$

$$F = 100 \times \frac{9}{5} + 32$$

$$F = 180 + 32$$

$$F = 212^\circ\text{F}$$

(b) - (ii) To convert temperature from $^\circ\text{F}$ to $^\circ\text{C}$,

$$\text{we use the formula } ^\circ\text{C} = (\text{ }^\circ\text{F} - 32) \times \frac{5}{9}.$$

Subtract 32 from 122°F temperature.

$$122 - 32 = 90$$

Now, multiply the difference by $\frac{5}{9}$ to get the temperature in $^\circ\text{C}$

$$\text{Therefore, } C = 90 \times \frac{5}{9} = 10 \times 5 = 50$$

$$\text{Thus, } 122^\circ\text{F} = 50^\circ\text{C}.$$

2. (a) Thermometer is used to measure the temperature of objects.

(b) The boiling point of water is 100°C or 212°F .

(c) The normal human body temperature is about 37°C or 98.6°F .

3. (a) 8°C (b) 72°C (c) 57°F

4. (a) 25°C

Multiply the $^\circ\text{C}$ temperature by $\frac{9}{5}$.

$$25 \times \frac{9}{5} = 5 \times 9 = 45$$

Now, add 32 to the product obtained to get the temperature in $^\circ\text{F}$

$$\text{Therefore, } F = 45 + 32 = 77$$

$$\text{Thus, } 25^\circ\text{C} = 77^\circ\text{F}$$

(b) 48°C

Multiply the $^\circ\text{C}$ temperature by $\frac{9}{5}$.

$$48 \times \frac{9}{5} = \frac{432}{5} = 86.4$$

Now, add 32 to the product obtained to get the temperature in $^\circ\text{F}$.

$$\text{Therefore, } F = 86.4 + 32 = 118.4$$

$$\text{Thus, } 48^\circ\text{C} = 118.4^\circ\text{F}$$

(c) 75°C

Multiply the $^{\circ}\text{C}$ temperature by $\frac{9}{5}$.

$$75 \times \frac{9}{5} = 15 \times 9 = 135$$

Now, add 32 to the product obtained to get the temperature in $^{\circ}\text{F}$.

$$\text{Therefore, } F = 135 + 32 = 167$$

$$\text{Thus, } 75^{\circ}\text{C} = 167^{\circ}\text{F}$$

(d) 98°C

Multiply the $^{\circ}\text{C}$ temperature by $\frac{9}{5}$.

$$98 \times \frac{9}{5} = \frac{882}{5} = 176.4$$

Now, add 32 to the product obtained to get the temperature in $^{\circ}\text{F}$.

$$\text{Therefore, } F = 176.4 + 32 = 208.4^{\circ}\text{F}$$

$$\text{Thus, } 98^{\circ}\text{C} = 208.4^{\circ}\text{F}$$

(e) 50°C

Multiply the $^{\circ}\text{C}$ temperature by $\frac{9}{5}$.

$$50 \times \frac{9}{5} = 10 \times 9 = 90$$

Now, add 32 to the product obtained to get the temperature in $^{\circ}\text{F}$.

$$\text{Therefore, } F = 90 + 32 = 122^{\circ}\text{F}$$

$$\text{Thus, } 50^{\circ}\text{C} = 122^{\circ}\text{F}$$

5. (a) 68°F

Subtract 32 from $^{\circ}\text{F}$ temperature.

$$68 - 32 = 36$$

Now, multiply the difference by $\frac{5}{9}$ to get the temperature in $^{\circ}\text{C}$.

$$\text{Therefore, } C = 36 \times \frac{5}{9} = 4 \times 5 = 20$$

$$\text{Thus, } 68^{\circ}\text{F} = 20^{\circ}\text{C}.$$

Alternative:

$$C = (F - 32) \times \frac{5}{9}$$

$$C = (68 - 32) \times \frac{5}{9}$$

$$C = 36 \times \frac{5}{9}$$

$$C = 4 \times 5 = 20^{\circ}\text{C}$$

(b) 113°F

Subtract 32 from $^{\circ}\text{F}$ temperature.

$$113 - 32 = 81$$

Now, multiply the difference by $\frac{5}{9}$ to get the temperature in $^{\circ}\text{C}$.

$$\text{Therefore, } C = 81 \times \frac{5}{9} = 9 \times 5 = 45$$

$$\text{Thus, } 113^{\circ}\text{F} = 45^{\circ}\text{C}.$$

(c) 131°F

Subtract 32 from $^{\circ}\text{F}$ temperature.

$$131 - 32 = 99$$

Now, multiply the difference by $\frac{5}{9}$ to get the temperature in $^{\circ}\text{C}$.

$$\text{Therefore, } 99 \times \frac{5}{9} = 11 \times 5 = 55$$

$$\text{Thus, } 131^{\circ}\text{F} = 55^{\circ}\text{C}.$$

(d) 212°F

Subtract 32 from $^{\circ}\text{F}$ temperature.

$$212 - 32 = 180$$

Now, multiply the difference by $\frac{5}{9}$ to get the temperature in $^{\circ}\text{C}$.

$$\text{Therefore, } C = 180 \times \frac{5}{9}$$

$$C = 20 \times 5 = 100$$

$$\text{Thus, } 212^{\circ}\text{F} = 100^{\circ}\text{C}.$$

(e) 254.4°F

Subtract 32 from $^{\circ}\text{F}$ temperature.

$$254.4 - 32 = 222.4$$

Now, multiply the difference by $\frac{5}{9}$ to get the temperature in $^{\circ}\text{C}$.

$$\text{Therefore, } C = 222.4 \times \frac{5}{9}$$

$$C = \frac{1112}{9} = 123.56$$

$$\text{Thus, } 254.4^{\circ}\text{F} = 123.56^{\circ}\text{C}.$$

6. Temperature on Monday = 26°C

Temperature on next day = $26^{\circ}\text{C} + 5^{\circ}\text{C} = 31^{\circ}\text{C}$

Let us convert temperature into $^{\circ}\text{F}$.

We have,

$$\begin{aligned}
 F &= \left(C \times \frac{9}{5} \right) + 32 = \left(31 \times \frac{9}{5} \right) + 32 \\
 &= \frac{279}{5} + 32 = 55.8 + 32 = 87.8^{\circ}\text{F}
 \end{aligned}$$

Hence, temperature on Tuesday was 87.8°F .

Mental Maths (Page 197)

1. (b) Friday 2. (a) Monday
3. (c) Starting time of the show = 8.45 p.m.

Duration of the show = $1\frac{1}{2}$ hr = 1 hour 30 min.

h	min
8 : 45	
+ 1 : 30	
10 : 15	

$$\begin{aligned}
 &\text{Thus, } 8:45 + 1:30 = 9:75 \\
 &\qquad\qquad\qquad = 10:15 \text{ p.m.}
 \end{aligned}$$

4. (d) Ending time of the movie = 11:20 p.m.
 $= 1200 \text{ hours} + 1120 \text{ hours} = 2320 \text{ hours}$
Duration of movie with intermission break
 $= 0215 \text{ hours} + 10 \text{ minutes} = 0225 \text{ hours}$
Starting time of the movie
 $= 2320 \text{ hours} - 0225 \text{ hours} = 2055 \text{ hours}$

h	min
22	80
23	20
2	25
20	55

$$\begin{aligned}
 &\text{Thus, required time} \\
 &\qquad\qquad\qquad = 2055 \text{ hours}
 \end{aligned}$$

Chapter Assessment

1. (a) - (iv) Here, $1730 \text{ hours} > 1200 \text{ hours}$
Therefore, $1730 \text{ hours} - 1200 \text{ hours} = 530 \text{ hours}$
 $= 5:30 \text{ p.m.}$
(b) - (ii) $4:45 \text{ p.m.} = 1645 \text{ hours} (\because 1200 \text{ hours} + 445 \text{ hours} = 1645 \text{ hours})$
(c) - (iv) Scheduled departure time from Ahmedabad = 1730 hours.
Here, $1730 \text{ hours} > 1200 \text{ hours}$.
Therefore, $1730 \text{ hours} - 1200 \text{ hours} = 530 \text{ hours}$
 $= 5:30 \text{ p.m.}$
The train was $\frac{3}{4}$ an hours late = $\frac{3}{4} \times 60 = 45 \text{ minutes}$. $[\because 1 \text{ hour} = 60 \text{ minutes}]$

Thus, required departure time

$$\begin{aligned}
 &= 5:30 \text{ p.m.} + 45 \text{ minutes} \\
 &= 6:15 \text{ p.m.}
 \end{aligned}$$

(d) - (iii) The duration of the train took to reach New Delhi = 0855 hours + time interval from 6:15 p.m to 12 mid-night.

$$\begin{aligned}
 &= 0855 \text{ hours} + 2400 - 1815 \text{ hours} \\
 &\qquad\qquad\qquad [\because 1815 < 2400]
 \end{aligned}$$

$$\begin{aligned}
 &= 0855 \text{ hours} + 585 \text{ hours} \\
 &= 14 \text{ hours } 40 \text{ minutes.}
 \end{aligned}$$

2. Departure time of the train = 9:30 a.m.

Time duration from 9:30 a.m. to mid-night

$$\begin{aligned}
 &= 24:00 \text{ hours} - 9:30 \text{ hours} = 14:30 \text{ hours} \\
 &= 14 \text{ hours } 30 \text{ minutes}
 \end{aligned}$$

Train reaches its destination at = 6:45 a.m.
 $= 06:45 \text{ hours}$

Total duration of the journey

$$\begin{aligned}
 &= 14 \text{ hours } 30 \text{ minutes} + 6 \text{ hours } 45 \text{ minutes} \\
 &= 21 \text{ hours } 15 \text{ minutes}
 \end{aligned}$$

Thus, duration of the journey is 21 hours 15 minutes.

3. Duration of work for the company from 5 September 2013 to 4 September 2021, he works for complete 8 years

From 5 September 2021 to 4 December 2021
 $= 3 \text{ months}$

From 5 December 2021 to 3 January 2022
 $= 29 \text{ days}$

Thus, Duration of work for the company
 $= 8 \text{ years } 3 \text{ months } 29 \text{ days.}$

4. Duration of 5th December to 31st December
 $= 27 \text{ days.}$

Duration of 1st January to 12 January = 12 days.

Total duration when her school was closed
 $= 27 \text{ days} + 12 \text{ days} = 39 \text{ days.}$

5. Salman was born on 8th April 2003
Sopia was born on 3rd March 2011.
So, number of years from 8th April 2003 to 7th April 2010 = 7 years

CHAPTER 10 : MONEY

Let's Recall

1. (a)
$$\begin{array}{r} \text{₹} 1 \ 2 \ 4 \ . \ 6 \ 7 \\ + \text{₹} 2 \ 8 \ . \ 6 \ 6 \\ \hline \text{₹} 1 \ 5 \ 3 \ . \ 3 \ 3 \end{array}$$

(b)
$$\begin{array}{r} \text{₹} 5 \ 8 \ 7 \ . \ 7 \ 9 \\ - \text{₹} 2 \ 4 \ 3 \ . \ 4 \ 5 \\ \hline \text{₹} 3 \ 4 \ 4 \ . \ 3 \ 4 \end{array}$$

(c)
$$\begin{array}{r} \text{₹} 2 \ 8 \ 8.8 \ 8 \\ \times \text{₹} 4 \ 0 \\ \hline 0 \ 0 \ 0 \ 0 \ 0 \\ + 1 \ 1 \ 5 \ 5 \ 5 \ 2 \ 0 \\ \hline \text{₹} 1 \ 1 \ 5 \ 5 \ 5.2 \ 0 \end{array}$$

(d)
$$\begin{array}{r} 199.99 \\ 9)1799.91 \\ \downarrow \downarrow \downarrow \downarrow \\ 89 \\ -81 \\ \downarrow \downarrow \downarrow \downarrow \\ 89 \\ -81 \\ \downarrow \downarrow \downarrow \downarrow \\ 81 \\ -81 \\ \hline 0 \end{array}$$

2. (a) Mr Rohan spent money on hotel stay

Money spent on transport

Money Spent on food

Total amount spent on the trip = $\text{₹} 11,850$

Discount on the hotel stay = ₹400

Total money spent by him = $\text{₹} 11,850 - ₹400$
= ₹11,450

Thus, he spent ₹11,450 on the trip.

Practice Time 10A

1. (a) Cost of 1 dozen erasers = ₹36

Cost of 1 eraser = ₹36 ÷ 12 = ₹3

(\because 1 dozen = 12)

So, cost of 3 erasers = ₹3 × 3 = ₹9

(b) Cost of 6 erasers = ₹3 × 6 = ₹18

(c) Cost of 9 erasers = ₹3 × 9 = ₹27

2. Cost of 5 kg rice = ₹325

Cost of 1 kg rice = ₹325 ÷ 5 = ₹65

So, cost of 8 kg rice

= ₹65 × 8 = ₹520

Thus, the cost of 8 kg rice is ₹520.

3. Cost of 5 pens = ₹20

Cost of 1 pen = ₹20 ÷ 5 = ₹4

So, cost of 8 pens = ₹4 × 8 = ₹32

and cost of 15 pens = ₹4 × 15 = ₹60

Thus, the cost of 8 pens is ₹32 and cost of 15 pens is ₹60.

4. Cost of 35 apples = ₹245

Cost of 1 apple = ₹245 ÷ 35 = ₹7

So, the cost of 15 apples = ₹7 × 15 = ₹105

Thus, the cost of 15 apples is ₹105.

$$\begin{array}{r} 7 \\ 35)245 \\ \underline{-245} \\ 0 \\ \times \quad \quad \quad 15 \\ \quad \quad \quad 7 \\ \hline 105 \end{array}$$

5. Cost of 18 books = ₹2250

Cost of 1 book = ₹2250 ÷ 18

= ₹125

So, the cost of 4 books

= ₹125 × 4 = ₹500

$$\begin{array}{r} 125 \\ 18)2250 \\ \underline{-18} \\ 45 \\ \underline{-36} \\ 90 \\ \underline{-90} \\ 0 \end{array}$$

6. Cost of 12 kg of onions = ₹72

Cost of 1 kg of onions = ₹72 ÷ 12 = ₹6

So, cost of 27 kg of onions = ₹6 × 27

= ₹162

$$\begin{array}{r} 27 \\ 162 \\ \times \quad \quad \quad 6 \\ \hline 162 \end{array}$$

Thus, the cost of 27 kg onions is ₹162.

7. Cost of 4 shirts = ₹600

Cost of 1 shirt = ₹600 ÷ 4 = ₹150

So, cost of 1 dozen shirts

= ₹150 × 12 = ₹1800 (\because 1 dozen = 12)

Thus, the cost of 1 dozen shirts is ₹1800.

$$\begin{array}{r} 150 \\ 4)600 \\ \underline{-4} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

8. Mr. Gupta earns in 9 months = ₹6,30,000

Mr Gupta earns in 1 month

= ₹6,30,000 ÷ 9 = ₹70,000

$$\begin{array}{r} 70000 \\ 9)630000 \\ \underline{-63} \\ 0 \end{array}$$

Mr Gupta earn in 3 years

= ₹70,000 × 36 = ₹2,520,000

(\because 1 year = 12 months)

Thus, ₹25,20,000 he earn in 3 years.

Quick Check (Page 204)

1. (a) CP = ₹85, SP = ₹90

(b) CP = ₹55, SP = ₹63

(c) CP = ₹150, SP = ₹180

Think and Answer (Page 207)

Cost of 1 dozen bananas = ₹60

Cost of 1 banana = ₹60 ÷ 12 = ₹5

(\because 1 dozen = 12)

SP 3 bananas = ₹15

SP of 1 banana = ₹5

Since, CP = SP

Thus, the fruit seller earns no profit and no loss.

Detailed Solutions

Practice Time 10 B

1. (a) (i) Profit = SP – CP

(b) (iv) CP = SP – Profit or CP = SP + Loss

(c) (i) CP is greater than SP, then there is loss.

(d) (iii) SP = ₹100, CP = ₹108

We have, SP < CP, there is a loss.

Since, loss = CP – SP = ₹108 – ₹100 = ₹8

2. (a) CP = ₹194, SP = ₹203.50 (Given)

Since, SP > CP, there is a profit.

Since, profit = SP – CP = ₹203.50 – ₹194
= ₹9.50

Thus, profit is ₹9.50.

(b) CP = ₹164.25, SP = ₹155.50 (Given)

Since, SP < CP, there is a loss

Since, loss = CP – SP = ₹164.25 – ₹155.50
= ₹8.75

Thus, loss is ₹8.75.

(c) CP = ₹670, SP = ₹987 (Given)

Since, SP > CP, there is a profit.

Since, profit = SP – CP = ₹987 – ₹670 = ₹317
Thus, profit is ₹317.

(d) CP = ₹1426.25, SP = ₹1412.50 (Given)

Since, SP < CP, there is a loss.

Since, loss = CP – SP = ₹1426.25 – ₹1412.50
= ₹13.75

Thus, loss is ₹13.75.

3. CP of a dress = ₹1850

SP of the dress = ₹2025

Profit = SP – CP = ₹2025 – ₹1850 = ₹175

[∴ SP > CP]

Thus, Sonam earns a profit of ₹175.

4. CP of an old car = ₹345000

Cost on repairing = ₹6250

Total CP of car = CP + cost on repairing

= ₹345000 + ₹6250 = ₹351250

New CP of car = ₹351250

SP of the car = ₹415500

We have, SP > CP, then there is a profit.

Since, Profit = SP – CP = ₹415500 – ₹351250
= ₹64250

Thus, Narayan earned a Profit of ₹64250.

5. (a) We have, SP = ₹195, loss = ₹18

Since, CP = SP + loss

CP = ₹195 + ₹18

CP = ₹213

(b) We have, Profit = ₹83, CP = ₹894

Since, SP = CP + profit

= ₹894 + ₹83 = ₹977

(c) We have, SP = ₹2980, Profit = ₹105

Since, CP = SP – Profit

= ₹2980 – ₹105 = ₹2875

(d) We have, Loss = ₹1150.75, CP = ₹9449

Since, SP = CP – loss

SP = ₹9449 – ₹1150.75 = ₹8298.25

(e) We have, SP = ₹4368, Profit = ₹1486

Since, CP = SP – Profit

= ₹4368 – ₹1486 = ₹2882

(f) We have, Loss = ₹1328, CP = ₹19000

Since, SP = CP – loss

= ₹19000 – ₹1328 = ₹17672

6. CP of a harmonium = ₹7490

Cost on transportation = ₹500

Total CP of harmonium = ₹7490 + ₹500 = ₹7990

SP = ₹8350

We have, SP > CP, there is a profit

Since, profit = SP – CP = ₹8350 – ₹7990

Profit = ₹360

Thus, Swami earned a profit of ₹360.

7. CP of a table fan = ₹2950, loss = ₹170

Since, SP = CP – loss

SP = ₹2950 – ₹170 = ₹2780

Thus, the selling price of the table fan is ₹2780.

Mental Maths (Page 208)

1. We have, CP = ₹1354, SP = ₹1005

SP < CP, there is a loss.

Since, loss = CP – SP = ₹1354 – ₹1005

Loss = ₹349

Thus, there is a loss and amount is ₹349.

2. We have, CP = ₹21350, Profit = ₹2000

Since, SP = CP + Profit

SP = ₹21350 + ₹2000

SP = ₹23350

Thus, the selling price is ₹23350.

3. We have, $SP = ₹6724$, loss = ₹500

Since, $CP = SP + \text{loss}$

$$= ₹6724 + ₹500 = ₹7224$$

Thus, the cost price is ₹7224.

4. We have, $CP = ₹9702$, $SP = ₹10542$

Since, $SP > CP$, there is a profit.

$$\text{Profit} = SP - CP = ₹10542 - ₹9702 = ₹840$$

Thus, there is a profit and amount is ₹840.

Brain Sizzlers (Page 208)

Cost of 2 dozen eggs = ₹108

$$\text{Cost of 1 egg} = ₹108 \div 24 = ₹4.5$$

$$(\because 1 \text{ dozen} = 12)$$

Number of rotten eggs = 6

Loss = ₹27

Number of remaining eggs = $24 - 6 = 18$

$$\therefore SP = ₹108 - ₹27$$

$$SP = ₹81$$

Therefore, SP of 1 egg = ₹ $(81 \div 18)$ = ₹4.50

Thus, selling price of 1 egg was ₹4.50.

Chapter Assessment

1. (a) (iii) The cost of 6 eggs = ₹24

The cost of 1 egg = ₹ $24 \div 6$ = ₹4

Required number of eggs = ₹ $64 \div 4$ = ₹16

Thus, 16 eggs can be purchased for ₹64.

(b) (ii) 6 ball point pens = 1 fountain pen

4 ball point pens = 8 pencils.

$$\text{So, 1 ballpoint pen} = \frac{8}{4} = 2 \text{ pencils.}$$

So, 6 ballpoint pen = $6 \times 2 = 12$ pencils.

As, 1 fountain pen = 6 ball point pens = 12 pencils.

So, 4 fountain pen = $12 \times 4 = 48$ pencils.

Thus, 48 pencils have the same cost as 4 fountain pens.

(c) (ii) Ronnie earns in a week = ₹840

$$\text{Ronnie earns in 1 day} = ₹\frac{840}{7} = ₹120$$

$$(\because 1 \text{ week} = 7 \text{ days})$$

He will earn in 36 days = $36 \times 120 = ₹4320$

Thus, he will earn ₹4320 in 36 days.

2. Shikha has two 500-rupee notes i.e., ₹1000

Shikha can pick: Perfume + purse + earrings
= ₹300 + ₹500 + ₹200 = ₹1000

Or purse + sunglasses + earrings

$$= ₹500 + ₹100 + ₹200 = ₹800$$

Or dress + earrings

$$= ₹800 + ₹200 = ₹1000$$

(Answer may vary)

3. Cost price of 1 egg = ₹6

$$\text{Cost price of 12 eggs} = ₹6 \times 12 = ₹72$$

$$\text{Selling price of 1 egg} = ₹4.50$$

$$\text{So, cost of 12 eggs} = ₹4.50 \times 12 = ₹54.00 = ₹54$$

Since, $54 < 72$

∴ $SP < CP$, there is a loss

$$\text{Loss} = ₹72 - ₹54 = ₹18.$$

Thus, total loss is of ₹18.

4. SP of 1 kg of tomato = ₹20

$$\text{Loss} = ₹5$$

Since, $CP = SP + \text{Loss}$

$$CP = ₹20 + ₹5 = ₹25$$

Thus, the cost price of tomatoes is ₹25.

5. CP of old car = ₹65,000

Cost on turn it into as good as new = ₹5,500

$$\text{Total CP of car} = ₹65,000 + ₹5,500 = ₹70,500$$

$$CP \text{ of car} = ₹70,500$$

$$SP \text{ of car} = ₹85,000$$

Since, profit = $SP - CP$

$$= ₹85,000 - ₹70,500 = ₹14,500$$

Thus, Rohan earned a profit of ₹14,500.

6. Cost of 1 shirt = ₹2,499

Rekha has four notes of ₹500 = ₹ 500×4 = ₹2000

More money she needed to buy a shirt

$$= ₹2499 - ₹2000 = ₹499$$

Thus, she need ₹499 more to buy that shirt.

7. Cost price of 1 horse = ₹25,000

Profit on each horse = ₹7500

$$\text{Selling price of 1 horse} = ₹25000 + ₹7500 = ₹32500$$

$$(\because SP = CP + \text{Profit})$$

and Profit on 10 horses i.e., on total transaction
₹ 7500×10 = ₹75000

Thus, selling price of each horse is ₹32500 and total profit in the entire transaction he made is ₹75000.

8. Physiotherapy per sitting charges = ₹750
 Number of day in month of August = 31 days
 Spent on his physiotherapy in month of August
 $= ₹750 \times 31 = ₹23250$
 Thus, has he spent ₹23250 on his physiotherapy.

9. Cost of each plate of bhel puri = ₹45
 If she had 10 friends with her.
 Cost of 10 plates of bhel puri = ₹45 × 10 = ₹450
 Thus, she spent ₹450 on bhel puri.

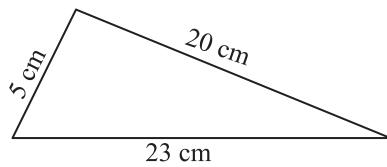
10. Cost price of a teddy-bear bought by Rani = ₹840
 Rani bears a loss of ₹60
 SP of teddy-bear for Rani = CP of same teddy-bear for Seema
 $\therefore CP = ₹840 - ₹60 = ₹780$
 Seema sold it to Garima at a Profit of ₹50
 $\therefore SP$ of teddy-bear for Seema = Cost price of teddy-bear for Garima
 $= ₹780 + ₹50 = ₹830.$
 Thus, the cost price of teddy-bear for Garima is ₹830.

11. Total quantity of apples a shopkeeper buys
 $= 20 \text{ kg}$
 Cost of 20 kg apples = ₹1900
 $\therefore \text{Cost of 1 kg apple} = ₹\frac{1900}{20} = ₹95$
 8 kg apples were sold at a loss of = ₹15 per kg
 $\therefore \text{Loss on 8 kg of apples} = ₹15 \times 8 \text{ kg} = ₹120$
 Cost of 8 kg apples = ₹95 × 8 kg = ₹760
 $\therefore \text{Cost of 8 kg Apples after loss}$
 $= ₹760 - ₹120 = ₹640$
 Remaining quantity of apples
 $= 20 \text{ kg} - 8 \text{ kg} = 12 \text{ kg}$
 $\therefore \text{Cost of 12 kg apples} = ₹95 \times 12 \text{ kg} = ₹1140$
 12 kg apples were sold at a profit of ₹20 per kg.
 $\therefore \text{Profit on 12 kg apples} = 20 \times 12 = ₹240$
 $\therefore \text{Cost of 12 kg apples after profit}$
 $= ₹1140 + ₹240 = ₹1380$
 $\therefore \text{Total transaction} = ₹640 + ₹1380 = ₹2020.$
 Since; ₹2020 > ₹1900. Hence, there is a profit .
 Thus, profit on total transaction
 $= ₹2020 - ₹1900 = ₹120.$

CHAPTER 11 : PERIMETER, AREA AND VOLUME

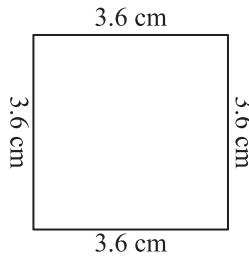
Let's Recall

1. (a)



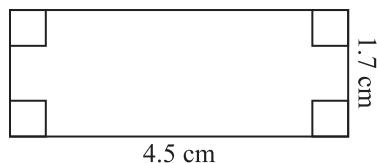
$$\text{Perimeter} = 5 \text{ cm} + 20 \text{ cm} + 23 \text{ cm} = 48 \text{ cm}$$

(b)



$$\begin{aligned} \text{Perimeter} &= 3.6 \text{ cm} + 3.6 \text{ cm} + 3.6 \text{ cm} + 3.6 \text{ cm} \\ &= 14.4 \text{ cm} \end{aligned}$$

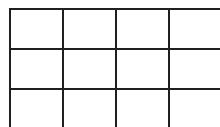
(c)



Perimeter of rectangle

$$\begin{aligned} &= 1.7 \text{ cm} + 1.7 \text{ cm} + 4.5 \text{ cm} + 4.5 \text{ cm} \\ &= 3.4 \text{ cm} + 9 \text{ cm} = 12.4 \text{ cm}. \end{aligned}$$

2. (a)



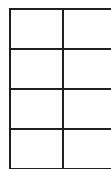
The given figure is a rectangle. And we know that,

Area of rectangle = length × breadth

Here, length = 4 units, breadth = 3 units

$$\therefore \text{Area} = 4 \text{ units} \times 3 \text{ units} = 12 \text{ sq. units}$$

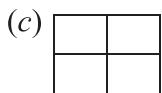
(b)



The given figure is a rectangle. And we know that, area of rectangle = length × breadth

Here, length = 4 units, breadth = 2 units

$$\therefore \text{Area} = 4 \text{ units} \times 2 \text{ units} = 8 \text{ sq. units}$$



The given figure is a square. And we know that,

$$\text{Area of square} = \text{side} \times \text{side}$$

$$\text{Here, side} = 2 \text{ units}$$

$$\therefore \text{Area} = 2 \times 2 \text{ units} = 4 \text{ sq. units}$$

Practice Time 11A

1. (a) length = 8 cm, breadth = 5 cm

$$\text{Length of rectangle} = 8 \text{ cm}$$

$$\text{Breadth of rectangle} = 5 \text{ cm}$$

$$\begin{aligned}\text{Perimeter of rectangle} &= 2(\text{length} + \text{breadth}) \\ &= 2(8 \text{ cm} + 5 \text{ cm}) \\ &= 2 \times 13 \text{ cm} = 26 \text{ cm.}\end{aligned}$$

Hence, the perimeter of the rectangle is 26 cm.

(b) length = 56 cm, breadth = 24 cm

$$\text{Length of rectangle} = 56 \text{ cm}$$

$$\text{Breadth of rectangle} = 24 \text{ cm}$$

$$\begin{aligned}\text{Perimeter of rectangle} &= 2(\text{length} + \text{breadth}) \\ &= 2(56 \text{ cm} + 24 \text{ cm}) \\ &= 2 \times 80 \text{ cm} = 160 \text{ cm.}\end{aligned}$$

Hence, the perimeter of the rectangle is 160 cm.

(c) length = 4.5 m, breadth = 1.2 m

$$\text{Length of rectangle} = 4.5 \text{ m}$$

$$\text{Breadth of rectangle} = 1.2 \text{ m}$$

$$\begin{aligned}\text{Perimeter of rectangle} &= 2(\text{length} + \text{breadth}) \\ &= 2(4.5 \text{ m} + 1.2 \text{ m}) \\ &= 2 \times 5.7 \text{ m} = 11.4 \text{ m.}\end{aligned}$$

Hence, the perimeter of the rectangle is 11.4 m.

(d) length = 8.2 m, breadth = 250 cm

$$\begin{aligned}\text{Length of rectangle} &= 8.2 \text{ m} = 8.2 \times 100 \text{ cm} \\ &= 820 \text{ cm}\end{aligned}$$

$$\text{Breadth of rectangle} = 250 \text{ cm}$$

$$\begin{aligned}\text{Perimeter of rectangle} &= 2(\text{length} + \text{breadth}) \\ &= 2(820 \text{ cm} + 250 \text{ cm}) \\ &= 2 \times 1070 \text{ cm} \\ &= 2140 \text{ cm or } 21.40 \text{ m}\end{aligned}$$

Hence, the perimeter of the rectangle is 2140 cm or 21.40 m

2. (a) 6 cm

$$\text{Side of square} = 6 \text{ cm}$$

$$\begin{aligned}\text{Perimeter of square} &= 4 \times \text{side} = 4 \times 6 \text{ cm} \\ &= 24 \text{ cm.}\end{aligned}$$

Hence, the perimeter of the square is 24 cm.

(b) 7.2 cm

$$\text{Side of square} = 7.2 \text{ cm}$$

$$\begin{aligned}\text{Perimeter of square} &= 4 \times \text{side} = 4 \times 7.2 \text{ cm} \\ &= 28.8 \text{ cm.}\end{aligned}$$

Hence, the perimeter of the square is 28.8 cm.

(c) 9 m

$$\text{Side of square} = 9 \text{ cm}$$

$$\begin{aligned}\text{Perimeter of square} &= 4 \times \text{side} = 4 \times 9 \text{ m} \\ &= 36 \text{ m.}\end{aligned}$$

Hence, the perimeter of the square is 36 m.

(d) 8.5 m

$$\text{Side of square} = 8.5 \text{ m}$$

$$\begin{aligned}\text{Perimeter of square} &= 4 \times \text{side} = 4 \times 8.5 \text{ m} \\ &= 34.0 \text{ m.}\end{aligned}$$

Hence, the perimeter of the square is 34 m.

3. (a) Sides of a triangle are 4 cm, 5 cm and 6 cm

Since, perimeter of the triangle

$$\begin{aligned}&= \text{Sum of its all sides} \\ &= 4 \text{ cm} + 5 \text{ cm} + 6 \text{ cm} \\ &= 15 \text{ cm.}\end{aligned}$$

Hence, the perimeter of the triangle is 15 cm.

(b) Sides of a triangle are 3.8 cm, 4.5 cm and 5.7 cm

Since, perimeter of the triangle

$$\begin{aligned}&= \text{Sum of its all sides} \\ &= 3.8 \text{ cm} + 4.5 \text{ cm} + 5.7 \text{ cm} \\ &= 14 \text{ cm.}\end{aligned}$$

Hence, the perimeter of the triangle is 14 cm.

(c) Sides of a triangle are 4.2 cm, 7 cm and 6.8 cm

Since, perimeter of the triangle

$$\begin{aligned}&= \text{Sum of its all sides} \\ &= 4.2 \text{ cm} + 7 \text{ cm} + 6.8 \text{ cm} \\ &= 18 \text{ cm.}\end{aligned}$$

Hence, the perimeter of the triangle is 18 cm.

(d) Sides of a triangle are 13 cm, 14 cm and 15 cm

Since, perimeter of the triangle

$$\begin{aligned}&= \text{Sum of its all sides} \\ &= 13 \text{ cm} + 14 \text{ cm} + 15 \text{ cm} \\ &= 42 \text{ cm.}\end{aligned}$$

Hence, the perimeter of the triangle is 42 cm.

4. (a) 6 cm

$$\text{Side of an equilateral triangle} = 6 \text{ cm.}$$

perimeter of an equilateral triangle

$$= 3 \times \text{side} = 3 \times 6 \text{ cm} = 18 \text{ cm}$$

Hence, the perimeter of an equilateral triangle is 18 cm.

(b) 4.8 cm

Side of an equilateral triangle = 4.8 cm.

Perimeter of an equilateral triangle

$$= 3 \times \text{side} = 3 \times 4.8 \text{ cm} = 14.4 \text{ cm}$$

Hence, the perimeter of an equilateral triangle is 14.4 cm.

(c) 7 cm

Side of an equilateral triangle = 7 cm.

Perimeter of an equilateral triangle

$$= 3 \times \text{side} = 3 \times 7 \text{ cm} = 21 \text{ cm}$$

Hence, the perimeter of an equilateral triangle is 21 cm.

(d) 9.6 cm

Side of an equilateral triangle = 9.6 cm.

Perimeter of an equilateral triangle

$$= 3 \times \text{side} = 3 \times 9.6 \text{ cm} = 28.8 \text{ cm}$$

Hence, the perimeter of an equilateral triangle is 28.8 cm.

5. (a) - (i) We have, length = 4 cm, breadth = 7 cm

Since, perimeter of the rectangle

$$\begin{aligned} &= 2(\text{length} + \text{breadth}) \\ &= 2(4 \text{ cm} + 7 \text{ cm}) \\ &= 2 \times 11 \text{ cm} = 22 \text{ cm.} \end{aligned}$$

(ii) We have, length = 4.8 cm, breadth = 3.2 cm

Since, perimeter of the rectangle

$$\begin{aligned} &= 2(\text{length} + \text{breadth}) \\ &= 2(4.8 \text{ cm} + 3.2 \text{ cm}) \\ &= 2 \times 8.0 \text{ cm} \\ &= 2 \times 8 \text{ cm} \\ &= 16 \text{ cm.} \end{aligned}$$

(iii) We have, length = 7 cm

Perimeter of a rectangle = 24 cm

Since, perimeter of the rectangle

$$= 2(\text{length} + \text{breadth})$$

$$24 \text{ cm} = 2(7 \text{ cm} + \text{breadth})$$

$$\frac{24 \text{ cm}}{2} = 7 \text{ cm} + \text{breadth}$$

$$12 \text{ cm} = 7 \text{ cm} + \text{breadth}$$

$$\text{Breadth} = 12 \text{ cm} - 7 \text{ cm}$$

$$\text{Breadth} = 5 \text{ cm}$$

(iv) We have, breadth = 12 cm

Perimeter of a rectangle = 60 cm

Since, perimeter of the rectangle

$$= 2(\text{length} + \text{breadth})$$

$$60 \text{ cm} = 2(\text{length} + 12 \text{ cm})$$

$$\frac{60 \text{ cm}}{2} = \text{length} + 12 \text{ cm}$$

$$30 \text{ cm} = \text{length} + 12 \text{ cm}$$

$$\text{Length} = 30 \text{ cm} - 12 \text{ cm}$$

$$\text{Length} = 18 \text{ cm}$$

(v) We have, length = $9\frac{1}{2}$ cm = $\frac{19}{2}$

$$\text{Breadth} = 5\frac{1}{2} \text{ cm} = \frac{11}{2} \text{ cm}$$

Since, perimeter of the rectangle

$$\begin{aligned} &= 2(\text{length} + \text{breadth}) = 2\left(\frac{19}{2} \text{ cm} + \frac{11}{2} \text{ cm}\right) \\ &= 2\left(\frac{19 \text{ cm} + 11 \text{ cm}}{2}\right) = 2 \times \frac{30}{2} \text{ cm} = 30 \text{ cm} \end{aligned}$$

(vi) We have, length = 5.5 cm

Perimeter of a rectangle = 21 cm

Since, perimeter of the rectangle

$$= 2(\text{length} + \text{breadth})$$

$$21 \text{ cm} = 2(5.5 \text{ cm} + \text{breadth})$$

$$\frac{21 \text{ cm}}{2} = 5.5 \text{ cm} + \text{breadth}$$

$$10.5 \text{ cm} = 5.5 \text{ cm} + \text{breadth}$$

$$\text{Breadth} = 10.5 \text{ cm} - 5.5 \text{ cm} = 5 \text{ cm}$$

(b) - (i) We have, side of a square = 5 cm

Since, perimeter of the square = $4 \times \text{side}$

$$= 4 \times 5 \text{ cm}$$

$$= 20 \text{ cm.}$$

(ii) We have, side of a square = 12.5 cm

Since, perimeter of the square = $4 \times \text{side}$

$$= 4 \times 12.5 \text{ cm}$$

$$= 50 \text{ cm.}$$

(iii) We have, side of a square = 40 cm

Since, perimeter of the square = $4 \times \text{side}$

$$40 \text{ cm} = 4 \times \text{side}$$

$$\text{Side} = \frac{40}{4} \text{ cm} = 10 \text{ cm.}$$

(iv) We have, side of a square = $7\frac{1}{2}$ cm

Since, perimeter of the square = $4 \times \text{side}$

$$= 4 \times 7\frac{1}{2} \text{ cm} = 4 \times \frac{15}{2} \text{ cm} = 30 \text{ cm.}$$

(v) We have, perimeter of a square = 90
 Since, perimeter of the square = $4 \times$ side
 $90 \text{ m} = 4 \times$ side
 $\text{Side} = \frac{90}{4} \text{ m} = 22.5 \text{ m}$

(vi) Perimeter of a square = 19.6
 Since, perimeter of the square = $4 \times$ side
 $\therefore 19.6 \text{ m} = 4 \times$ side
 $\text{Side} = \frac{19.6}{4} \text{ m}$
 $\text{Side} = 4.9 \text{ m}$

6. Length of rectangular cardboard = 18 cm
 Breadth of rectangular cardboard = 9.8 cm
 Perimeter of rectangular cardboard
 $= 2(\text{length} + \text{breadth})$
 $= 2(18 \text{ cm} + 9.8 \text{ cm})$
 $= 2 \times 27.8 \text{ cm} = 55.6 \text{ cm}$

Hence, perimeter of rectangular cardboard is 55.6 cm

7. Side of an equilateral triangle = 8.9 cm
 Perimeter of an equilateral triangle = $3 \times$ side
 $= 3 \times 8.9 \text{ cm}$
 $= 26.7 \text{ cm}$

Hence, perimeter of an equilateral triangle is 26.7 cm

8. Perimeter of a triangle = 24 cm
 Let the first side = 4.9 cm, second side = 3.8 cm
 Since, perimeter of a triangle = Sum of its all sides
 $24 \text{ cm} = 4.9 \text{ cm} + 3.8 \text{ cm} + \text{third side}$
 $24 \text{ cm} = 8.7 \text{ cm} + \text{third side}$
 $\text{Third side} = 24 \text{ cm} - 8.7 \text{ cm}$
 $\text{Third side} = 15.3 \text{ cm}$
 Hence, length of the third side of the triangle is 15.3 cm

9. Perimeter of a rectangular garden = 196 m
 Breadth = 32 m
 Since, perimeter of rectangular garden
 $= 2 \times (\text{length} + \text{breadth})$

$$196 = 2 \times (\text{length} + \text{breadth})$$

$$\text{Length} + 32 \text{ m} = \frac{196}{2} \text{ m}$$

$$\text{Length} = 98 \text{ m} - 32 \text{ m} = 66 \text{ m}$$

10. Given sides of an isosceles triangle = 7.8 cm.
 Length of third side = 5.2 cm.
 Perimeter of given triangle
 $= \text{Sum of its all sides}$
 $= (7.8 \text{ cm} + 7.8 \text{ cm} + 5.2 \text{ cm})$
 $= 20.8 \text{ cm}$

Hence, perimeter of an isosceles triangle is 20.8 cm

11. Side of a square park = 102 m
 Since, perimeter of square park
 $= 4 \times \text{side} = 4 \times 102 \text{ m}$
 $= 408 \text{ m}$
 Distance covered in 4 round around a square park
 $= 4 \times 408 \text{ m}$
 $(\because 1 \text{ round} = 408 \text{ m})$
 $= 1632 \text{ m or } 1.632 \text{ km.}$

12. Since, fence around a square field = Perimeter of the square field = 308 m.
 Since, perimeter of a square = $4 \times$ side
 $\therefore 308 = 4 \times \text{side}$
 $\text{Side} = \frac{308}{4}$
 $\text{Side} = 77 \text{ m.}$

Cost of fencing at the rate of ₹28 per metre.
 Cost of fencing = $308 \times ₹28 = ₹8624$.
 Hence, length of each side of the square field is 77 m and cost of fencing is ₹8624.

Think and Answer (Page 218)

Given, Area of a square = Perimeter of the square
 \therefore Area of square = side \times side and perimeter of square = $4 \times$ side
 $\text{Side} \times \text{Side} = 4 \times \text{Side}$
 $\therefore \frac{\text{Side} \times \text{Side}}{\text{Side}} = 4$
 $\therefore \text{Side} = 4 \text{ units}$

Practice Time 11B

1. (a) Given: Length of a rectangle = 20 cm

Breadth of the rectangle = 12 cm

Since, area of a rectangle = length × breadth

$$\therefore \text{Area of the rectangle} = 20 \text{ cm} \times 12 \text{ cm} \\ = 240 \text{ sq. cm}$$

(b) Given: Length of a rectangle = 11.5 cm

Breadth of the rectangle = 10 cm

Since, area of a rectangle = length × breadth

$$\therefore \text{Area of the rectangle} = 11.5 \text{ cm} \times 10 \text{ cm} \\ = 115 \text{ sq. cm}$$

(c) Given: Length of a rectangle = 132 cm

Breadth of the rectangle = 80 cm

Since, area of a rectangle = length × breadth

$$\therefore \text{Area of the rectangle} = 132 \text{ cm} \times 80 \text{ cm} \\ = 10560 \text{ sq. cm}$$

(d) Given: Length of a rectangle = 4.5 m

$$\text{Breadth of the rectangle} = 180 \text{ cm} = \frac{180}{100} \text{ m}$$

Since, area of a rectangle = length × breadth

$$\therefore \text{Area of the rectangle} = 4.5 \text{ m} \times 1.8 \text{ m} \\ = 8.1 \text{ sq. m}$$

2. (a) Side of a square = 4.2 cm

Since, area of a square = side × side

$$\therefore \text{Area of the square} = 4.2 \text{ cm} \times 4.2 \text{ cm} \\ = 17.64 \text{ sq. cm}$$

(b) Side of a square = 64 cm

Since, area of a square = side × side

$$\therefore \text{Area of the square} = 64 \text{ cm} \times 64 \text{ cm} \\ = 4096 \text{ sq. cm}$$

(c) Side of a square = 8.5 m

Since, area of a square = side × side

$$\therefore \text{Area of the square} = 8.5 \text{ m} \times 8.5 \text{ m} \\ = 72.25 \text{ sq. m}$$

(d) Side of a square = 6.2 cm

Since, area of a square = side × side

$$\therefore \text{Area of the square} = 6.2 \text{ cm} \times 6.2 \text{ cm} \\ = 38.44 \text{ sq. cm}$$

3. (a) Given: Length of a rectangle = 9 cm

Breadth of the rectangle = 4.5 cm

Since, area of a rectangle = length × breadth

$$\therefore \text{Area of the rectangle} = 9 \text{ cm} \times 4.5 \text{ cm} \\ = 40.5 \text{ sq. cm}$$

(b) Given: Breadth of rectangle = 32 cm

Area of the rectangle = 1600 sq. cm

Since, area of a rectangle = length × breadth

$$\therefore 1600 \text{ sq. cm} = \text{length} \times 32 \text{ cm}$$

$$\text{Length} = \frac{1600}{32} \text{ cm} = 50 \text{ cm}$$

(c) Given: Breadth of a rectangle = 15 cm

Area of the rectangle = 345 sq. cm

Since, area of a rectangle = length × breadth

$$\therefore 345 \text{ sq. cm} = \text{length} \times 15 \text{ cm}$$

$$\text{Length} = \frac{345}{15} \text{ cm} = 23 \text{ cm}$$

(d) Given: Length of a rectangle = 8.5 cm

Area of the rectangle = 51 sq. cm

Since, area of a rectangle = length × breadth

$$\therefore 51 \text{ sq. cm} = 8.5 \text{ cm} \times \text{breadth}$$

$$\text{Breadth} = \frac{51}{8.5} = \frac{510}{85} \text{ cm}$$

Breadth = 6 cm

4. (a) Area of the shaded part = $\frac{1}{2} \times \text{Area of rectangle}$

$$= \frac{1}{2} \times \text{length} \times \text{breadth} = \frac{1}{2} \times 3 \times 2 \text{ units.} \\ = 3 \text{ sq. units}$$

(b) Area of the shaded part = $\frac{1}{2} \times \text{Area of rectangle}$

$$= \frac{1}{2} \times \text{length} \times \text{breadth} = \frac{1}{2} \times 4 \times 3 \text{ units.} \\ = 6 \text{ sq. units}$$

(c) Area of the shaded part = $\frac{1}{2} \times \text{Area of square}$

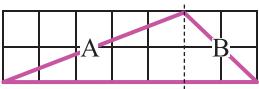
$$= \frac{1}{2} \times \text{side} \times \text{side} = \frac{1}{2} \times 3 \times 3 \text{ units} \\ = \frac{9}{2} = 4.5 \text{ sq. units.}$$

$$\begin{aligned}
 (d) \text{ Area of the shaded part} &= \frac{1}{2} \times \text{Area of rectangle} \\
 &= \frac{1}{2} \times \text{length} \times \text{breadth} = \frac{1}{2} \times 5 \times 3 \text{ units.} \\
 &= \frac{15}{2} = 7.5 \text{ sq. units.}
 \end{aligned}$$

5. (a) First, divide the figure into two parts as shown. Part A is a rectangle and part B is a square.

∴ Area of part A

$$\begin{aligned}
 &= \text{Area of rectangle} \\
 &= l \times b \\
 &= 5 \text{ units} \times 2 \text{ units} \\
 &= 10 \text{ sq. units}
 \end{aligned}$$



$$\begin{aligned}
 \text{And, area of triangle in part A} &= \frac{10 \text{ sq. units}}{2} \\
 &= 5 \text{ sq. units.}
 \end{aligned}$$

$$\begin{aligned}
 \text{Area of part B} &= \text{Area of square} \\
 &= \text{side} \times \text{side} \\
 &= 2 \text{ units} \times 2 \text{ units} \\
 &= 4 \text{ sq. units}
 \end{aligned}$$

$$\begin{aligned}
 \text{And, area of triangle in part B} &= \frac{4 \text{ sq. units}}{2} \\
 &= 2 \text{ sq. units}
 \end{aligned}$$

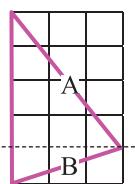
∴ Area of triangle in the given figure = Area of triangle in part A + Area of triangle in part B

$$\begin{aligned}
 \text{Area of triangle in the given figure} &= 5 \text{ sq. units} + 2 \text{ sq. units} \\
 &= 7 \text{ sq. units}
 \end{aligned}$$

(b) Same as above part.

(c) First, divide the figure into two parts as shown.

$$\begin{aligned}
 \therefore \text{Area of part A} &= \text{Area of rectangle} \\
 &= l \times b \\
 &= 4 \text{ units} \times 3 \text{ units} \\
 &= 12 \text{ sq. units}
 \end{aligned}$$



$$\begin{aligned}
 \text{And, area of triangle in part A} &= \frac{12 \text{ sq. units}}{2} \\
 &= 6 \text{ sq. units}
 \end{aligned}$$

$$\begin{aligned}
 \text{Area of part B} &= \text{Area of rectangle} \\
 &= l \times b \\
 &= 3 \text{ units} \times 1 \text{ units} \\
 &= 3 \text{ sq. units}
 \end{aligned}$$

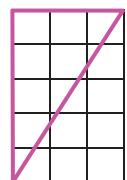
$$\text{And, area of triangle} = \frac{3 \text{ sq. units}}{2} = 1.5 \text{ sq. units}$$

Thus, area of given triangle = Area of triangle in part A + Area of triangle in part B

$$= 6 \text{ sq. units} + 1.5 \text{ sq. units} = 7.5 \text{ sq. units}$$

(d) Area of rectangle

$$\begin{aligned}
 &= l \times b \\
 &= 5 \text{ units} \times 3 \text{ units} \\
 &= 15 \text{ sq. units}
 \end{aligned}$$



$$\text{And, area of triangle} = \frac{\text{Area of rectangle}}{2}$$

$$\begin{aligned}
 &= \frac{15}{2} \text{ sq. units} \\
 &= 7.5 \text{ sq. units}
 \end{aligned}$$

6. Perimeter of a square = 120 m.

$$\begin{aligned}
 \text{Since, perimeter of a square} &= 4 \times \text{side} \\
 \therefore &120 \text{ m} = 4 \times \text{side}
 \end{aligned}$$

$$\text{So, side} = \frac{120}{4} \text{ m} = 30 \text{ m}$$

$$\begin{aligned}
 \text{Since, Area of square} &= \text{side} \times \text{side} \\
 &= 30 \text{ m} \times 30 \text{ m} \\
 &= 900 \text{ sq. m}
 \end{aligned}$$

7. Area of a rectangular plot = 2550 sq. m

Length of a rectangular plot = 75 m

Since, area of a rectangle = length × breadth

$$\therefore 2550 \text{ sq. m} = 75 \times \text{breadth}$$

$$\text{So, breadth} = \frac{2550}{75} \text{ m} = 34 \text{ m}$$

Thus, breadth of the rectangular plot is 34 m.

8. Length of a rectangle = 24 m and

Perimeter of the rectangle = 88 m

Since, perimeter of a rectangle = $2 \times (\text{length} + \text{breadth})$

$$\therefore 88 \text{ m} = 2 \times (24 \text{ m} + \text{breadth})$$

$$24 \text{ m} + \text{breadth} = \frac{88}{2} \text{ m}$$

$$24 \text{ m} + \text{breadth} = 44 \text{ m}$$

$$\begin{aligned}
 \text{Breadth} &= (44 - 24) \text{ m} \\
 &= 20 \text{ m.}
 \end{aligned}$$

Since, area of a rectangle = length × breadth

$$\begin{aligned}
 &= 24 \text{ m} \times 20 \text{ m} \\
 &= 480 \text{ sq. m}
 \end{aligned}$$

9. Length of a rectangular hall = 650 cm

$$= \frac{650}{100} \text{ m} = 6.5 \text{ m}$$

Breadth of a rectangular hall = 450 cm

$$= \frac{450}{100} \text{ m} = 4.5 \text{ m}$$

Since, area of a rectangle = length \times breadth

$$\text{Area of the rectangular hall} = 6.5 \text{ m} \times 4.5 \\ = 29.25 \text{ sq. m}$$

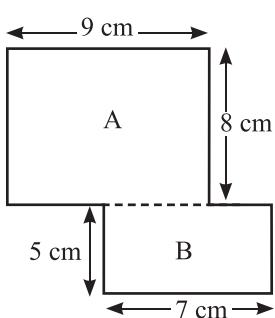
Cost of flooring of 1 sq. m = ₹30

Cost of flooring of 29.25 sq. m

$$= 29.25 \text{ sq. m} \times ₹30 = ₹877.5$$

Hence, the cost of flooring is ₹877.5.

10. (a)



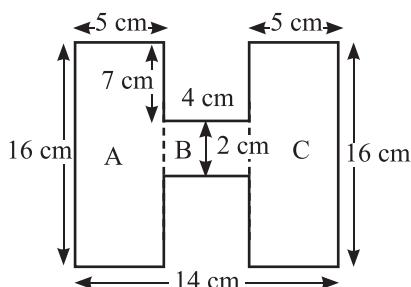
$$\text{Area of rectangle A} = 9 \text{ cm} \times 8 \text{ cm} = 72 \text{ sq. cm}$$

$$\text{Area of rectangle B} = 5 \text{ cm} \times 7 \text{ cm} = 35 \text{ sq. cm}$$

Thus, the area of the given shape

$$= \text{Area of rectangle A} + \text{Area of rectangle B} \\ = 72 \text{ sq. cm} + 35 \text{ sq. cm} = 107 \text{ sq. cm}$$

(b)



Area of part A = length \times breadth

$$= (16 \times 5) \text{ sq. cm} = 80 \text{ sq. cm}$$

Area of part B = length \times breadth

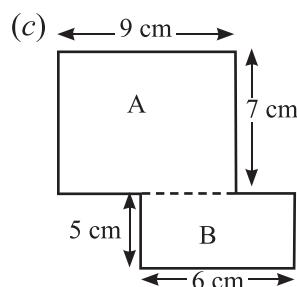
$$= (4 \times 2) \text{ sq. cm} = 8 \text{ sq. cm}$$

Area of part C = length \times breadth

$$= (16 \times 5) \text{ sq. cm} = 80 \text{ sq. cm}$$

$$\text{Total area} = (80 + 8 + 80) \text{ sq. cm}$$

$$= 168 \text{ cm}$$



$$\text{Area of figure A} = 9 \text{ cm} \times 7 \text{ cm} = 63 \text{ sq. cm}$$

$$\text{Area of figure B} = 6 \text{ cm} \times 5 \text{ cm} = 30 \text{ sq. cm}$$

Thus, the area of the given shape

$$= \text{Area of rectangle A} + \text{Area of rectangle B.} \\ = 63 \text{ sq. cm} + 30 \text{ sq. cm} \\ = 93 \text{ sq. cm}$$

Practice Time 11C

1. In the given figure, number of complete squares (m) = 133

Number of more than half squares (n) = 17

Number of half squares (p) = 2

Total area of the irregular closed figure

$$= m + n + \frac{1}{2} p = \left(133 + 17 + \frac{2}{2} \right) \text{ sq. units} \\ = (133 + 17 + 1) = \text{sq. units} \\ = 151 \text{ sq. units}$$

2. In the given figure, number of complete squares $m = 23$

Number of more than half squares $n = 9$

Number of half squares $p = 6$

Total area of the irregular closed figure

$$= m + n + \frac{1}{2} p = \left(23 + 9 + \frac{0}{2} \right) \text{ sq. units} \\ = (23 + 9 + 3) = \text{sq. units} \\ = 35 \text{ sq. units}$$

3. In the given figure, number of complete squares (m) = 42

Number of more than half squares (n) = 14

Number of half squares (p) = 0

Total area of the irregular closed figure

$$= m + n + \frac{1}{2} p = \left(42 + 14 + \frac{0}{2} \right) \text{ sq. units} \\ = 56 \text{ sq. units}$$

4. In the given figure, number of complete squares
(m) = 120

Number of more than half squares (n) = 16

Number of half squares p = 0

Total area of the irregular closed figure

$$= m + n + \frac{1}{2} p = \left(120 + 16 + \frac{0}{2}\right) \text{sq. units}$$

$$= 136 \text{ sq. units}$$

5. and 6. Same as above.

Practice Time 11D

1. (a) The given solid shape is made up of 8 unit cubes of 1 unit.

So, the volume of the solid shape is 8 cu. units.

(b) The given solid shape is made up of 7 unit cubes of 1 unit.

So, the volume of the solid shape is 7 cu. units.

(c) The given solid shape is made up of 10 cu. unit of 1 unit.

So, the volume of the solid shape is 10 cu. units.

(d) The given solid shape is made up of 9 cu. unit of 1 unit.

So, the volume of the solid shape is 9 cu. units.

2. (a) Volume of the cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$= 15 \text{ cm} \times 6 \text{ cm} \times 8.5 \text{ cm} = 765 \text{ cu. cm}$$

(b) Volume of the cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$= 5 \text{ cm} \times 2.5 \text{ cm} \times 1 \text{ cm} = 12.5 \text{ cu. cm}$$

(c) Volume of the cube

$$= \text{side} \times \text{side} \times \text{side}$$

$$= 12 \text{ cm} \times 12 \text{ cm} \times 12 \text{ cm} = 1728 \text{ cu. cm}$$

3. (a) Given, length = 11 cm, breadth = 12 cm, height = 8 cm

Volume of the cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$= 11 \text{ cm} \times 12 \text{ cm} \times 8 \text{ cm}$$

$$= 1056 \text{ cu. cm}$$

(b) Given, length = 5 m, breadth = 2.5 m, height = 2 m

Volume of the cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$= 5 \text{ m} \times 2.5 \text{ m} \times 2 \text{ m}$$

$$= 25 \text{ cu. m}$$

(c) Given, length = 180 mm, breadth = 78 mm, height = 45 mm

Volume of the cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$= 180 \text{ mm} \times 78 \text{ m} \times 45 \text{ mm}$$

$$= 631800 \text{ cu. mm}$$

(d) Given, length = 4.2 m, breadth = 1.8 m,

$$\text{height} = 60 \text{ cm} = \frac{60}{100} \text{ m} = 0.6 \text{ m}$$

Volume of the cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$= 4.2 \text{ m} \times 1.8 \text{ m} \times 0.6 \text{ m}$$

$$= 4.536 \text{ cu. m}$$

4. (a) Given, side = 18 mm

Since, volume of cube = side × side × side

$$= 18 \text{ mm} \times 18 \text{ mm} \times 18 \text{ mm}$$

$$= 5832 \text{ cu. mm}$$

(b) Given, side = 12 cm

Since, volume of cube = side × side × side

$$= 12 \text{ cm} \times 12 \text{ cm} \times 12 \text{ cm}$$

$$= 1728 \text{ cu. cm}$$

(c) Given, side = 3 m

Since, volume of cube = side × side × side

$$= 3 \text{ cm} \times 3 \text{ m} \times 3 \text{ m}$$

$$= 27 \text{ cu. m}$$

(d) Given, side = 1.05 cm

Since, volume of cube = side × side × side

$$= 1.05 \text{ cm} \times 1.05 \text{ cm} \times 1.05 \text{ cm}$$

$$= 1.157625 \text{ cu. cm}$$

(e) Given, side = 28 mm

Since, volume of cube = side × side × side

$$= 28 \text{ mm} \times 28 \text{ mm} \times 28 \text{ mm}$$

$$= 21952 \text{ cu. mm}$$

5. (a) Given, length = 3.5 m, breadth = 5 m, height = 2 m

Since, volume of cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$\therefore \text{Volume of cuboid} = 3.5 \text{ m} \times 5 \text{ m} \times 2 \text{ m}$$

$$= 35 \text{ cu. m}$$

(b) Given, length = 5 cm, breadth = 4 cm, volume = 140 cu. cm

Since, volume of cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$140 \text{ cu. cm} = 5 \text{ cm} \times 4 \text{ cm} \times \text{height}$$

$$\text{Height} = \frac{140 \text{ cu. cm}}{5 \text{ cm} \times 4 \text{ cm}} = \frac{140}{20} \text{ cm} = 7 \text{ cm}$$

$$\therefore \text{Height} = 7 \text{ cm}$$

(c) Given, length = 12 cm, height = 7 cm,
volume = 420 cu. cm

Since, volume of cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$420 \text{ cu. cm} = 12 \text{ cm} \times \text{breadth} \times 7 \text{ cm}$$

$$\text{Breadth} = \frac{420 \text{ cu. cm}}{12 \text{ cm} \times 7 \text{ cm}} = \frac{420}{84} \text{ cm} = 5 \text{ cm}$$

(d) Given, breadth = 9 m, height = 10 m,
volume = 1080 cu. cm

Since, volume of cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$1080 \text{ cu. cm} = \text{length} \times 9 \text{ m} \times 10 \text{ m}$$

$$\text{Length} = \frac{1080 \text{ cu. m}}{9 \text{ m} \times 10 \text{ m}} = \frac{1080}{90} = 12 \text{ m}$$

6. Given, length of the brick = 24 cm

Breadth of the brick = 12 cm

Height of the brick = 8 cm

Volume = length \times breadth \times height

\therefore Since, volume of the brick of shape cuboid

$$= 24 \text{ cm} \times 12 \text{ cm} \times 8 \text{ cm}$$

$$= 2304 \text{ cu. cm}$$

7. Side of cubical a tank = 3.2 m

Since, volume of a cube = side \times side \times side

$$= 3.2 \text{ m} \times 3.2 \text{ m} \times 3.2 \text{ m}$$

$$= 32.768 \text{ cu. m}$$

8. Given, volume of the cuboidal box = 196 cu. cm,
Length of the cuboidal box = 14 cm, Breadth of the cuboidal box = 7 cm

Since, volume of a cuboid

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$\therefore 196 \text{ cu. cm} = 14 \text{ cm} \times 7 \text{ cm} \times \text{height}$$

$$\text{Height} = \frac{196 \text{ cu. cm}}{14 \text{ cm} \times 7 \text{ cm}} = 2 \text{ cm.}$$

Mental Maths (Page 227)

$$\text{Area of part A} = 3 \times 3 = 9 \text{ sq. units}$$

$$\text{Area of part B} = 3 \times 2 = 6 \text{ sq. units}$$

$$\text{Area of part C} = 5 \times 3 = 15 \text{ sq. units}$$

$$\text{Area of part D} = 6 \times 3 = 18 \text{ sq. units}$$

$$\begin{aligned} \text{Area of part E} &= \frac{1}{2} (3 \times 5) + \frac{1}{2} (3 \times 5) \\ &= 15 \text{ sq. units} \end{aligned}$$

$$\begin{aligned} \text{Area of part F} &= \frac{1}{2} \times 3 \times 5 \\ &= 7.5 \text{ sq. units} \end{aligned}$$

$$\begin{aligned} \text{Area of part G} &= \frac{1}{2} \times 3 \times 4 \\ &= 6 \text{ sq. units} \end{aligned}$$

$$\begin{aligned} \text{Area of part H} &= \frac{1}{2} \times 3 \times 4 + \frac{1}{2} \times 2 \times 3 \\ &= 9 \text{ sq. units} \end{aligned}$$

$$\begin{aligned} \text{Area of part I} &= \frac{1}{2} \times 2 \times 3 + \frac{1}{2} \times 4 \times 3 \\ &= 9 \text{ sq. units} \end{aligned}$$

$$\begin{aligned} \text{Area of part J} &= \frac{1}{2} \times 4 \times 3 \\ &= 6 \text{ sq. units} \end{aligned}$$

$$\begin{aligned} \text{Area of part K} &= \frac{1}{2} \times 5 \times 3 \\ &= 7.5 \text{ sq. units} \end{aligned}$$

Area (in sq. units)	15	7.5	18	9	6
Shapes	C, E	F, K	D	A, H, I	B, G, J

Maths Connect (Page 228)

$$\begin{aligned} 1. \text{ Perimeter of the building} &= 2 (\text{length} + \text{breadth}) \\ &= 2 (209 \text{ m} + 75 \text{ m}) \\ &= 2 \times 284 \text{ m} = 568 \text{ m} \end{aligned}$$

$$\begin{aligned} 2. \text{ Area of the roof of the building} &= \text{length} \times \text{breadth} \\ &= 209 \text{ m} \times 75 \text{ m} \\ &= 15675 \text{ sq. m} \end{aligned}$$

$$\begin{aligned} 3. \text{ Area of the front door} &= \text{length} \times \text{breadth} \\ &= 6 \text{ m} \times 1.6 \text{ m} \\ &= 9.6 \text{ sq. m} \end{aligned}$$

$$\begin{aligned} 4. \text{ Area of the window} &= \text{side} \times \text{side} \\ &= 1.2 \text{ m} \times 1.2 \text{ m} \\ &= 1.44 \text{ sq. m} \end{aligned}$$

$$\begin{aligned} 5. \text{ Area of the compound} &= \text{length} \times \text{breadth} \\ &= 310 \text{ m} \times 100 \text{ m} \\ &= 31000 \text{ sq. m} \end{aligned}$$

Chapter Assessment

$$\begin{aligned} 1. (a) - (iii) \text{ Given, area of square} &= 100 \text{ sq. units} \\ \text{Since, area of square} &= \text{side} \times \text{side} \\ \therefore 100 \text{ sq. units} &= \text{side} \times \text{side} \end{aligned}$$

or $\text{Side} \times \text{Side} = 100 \text{ sq. units.}$
 $\text{Side} \times \text{Side} = 10 \times 10 \text{ sq. units}$
 on comparing, we get

$$\text{Side} = 10$$

We have, Perimeter of square = $4 \times \text{side}$
 $= 4 \times 10 \text{ units}$
 $= 40 \text{ units}$

(b) - (iv) Perimeter of each square = 4 units
 (given)

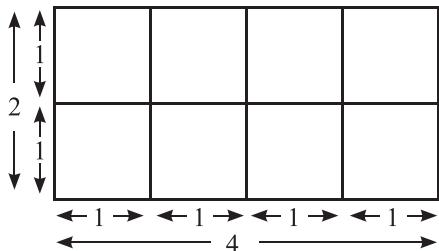
And we know that, perimeter of a square = $4 \times \text{side}$

$$\therefore 4 \text{ unit} = 4 \times \text{side}$$

$$\text{Side} = \frac{4}{4} \text{ units}$$

$$\therefore \text{Side} = 1 \text{ units.}$$

Now, length of rectangle formed with eight squares = 4 units
 (given)



$$\therefore \text{Breadth} = 2 \text{ units.}$$

And we know that, perimeter of a rectangle
 $= 2 \times (l + b)$

$$\therefore \text{Perimeter of the new rectangle} = 2 \times (4 + 2)$$

$$= 2 \times 6$$

$$= 12 \text{ units}$$

(c) - (ii) Given, length - breadth = 8 cm and
 perimeter = 64 cm

$$\text{So, } \text{length} = \text{breadth} + 8 \text{ cm} \quad \text{--- (i)}$$

$$\text{Perimeter of the rectangle} = 64 \text{ cm}$$

$$\text{Perimeter of rectangle} = 2(\text{length} + \text{breadth})$$

$$64 \text{ cm} = 2(B + 8 \text{ cm} + B)$$

$$64 \text{ cm} = 2(2B + 8 \text{ cm})$$

$$2B + 8 = \frac{64}{2} \text{ cm} = 2B + 8$$

$$= 32 \text{ cm}$$

$$\therefore 2B = 32 \text{ cm} - 8 \text{ cm} = 24 \text{ cm}$$

$$B = \frac{24}{2} \text{ cm} = 12 \text{ cm}$$

from (i),

$$L = B + 8 \text{ cm}$$

$$L = 12 \text{ cm} + 8 \text{ cm} = 20 \text{ cm}$$

Hence, dimensions of rectangle = $L = 20 \text{ cm}$
 and $B = 12 \text{ cm.}$

(d) - (i) Square area of each square = 1 sq. m

Now, Counting the number of squares in the given figure, we get, number of squares = 21

\therefore Area of shaded portion = 21 sq. m

(e) - (iii) The total number of cubes of 2 cm which can be packed, in a cubical box of 6 cm

$$\frac{\text{Volume of cubical box}}{\text{Volume cube box}} = \frac{6 \times 6 \times 6}{2 \times 2 \times 2} = 27$$

Thus, 27 cubes can be packed in a cubical box of 6 cm.

(f) - (iii) Side of bigger cube = 2 m

$$= 2 \times 100 \text{ cm} \quad [\because 1 \text{ m} = 100 \text{ cm}]$$

$$= 200$$

Side of smaller cube = 20 cm

Number of cubes that can be packed inside big cube = $\frac{\text{Volume of bigger cube}}{\text{Volume of smaller cube}}$

$$= \frac{200 \times 200 \times 200}{20 \times 20 \times 20} = 1000$$

$[\because \text{Volume of cube} = \text{side} \times \text{side} \times \text{side}]$

Thus, 1000 small cubes packed inside the bigger cube.

2. Side of a square carpet = 40 cm

$$\text{Area of square carpet} = 40 \text{ cm} \times 40 \text{ cm}$$

$$= 1600 \text{ sq. cm}$$

$[\because \text{Area of square} = \text{side} \times \text{side}]$

$$\text{Area of room} = 16 \text{ m} \times 10 \text{ m}$$

$[\because \text{Area of rectangle} = \text{length} \times \text{breadth}]$

$$= 1600 \text{ cm} \times 1000 \text{ cm}$$

$[\because 1 \text{ m} = 100 \text{ cm}]$

$$\text{Number of square carpets} = \frac{1600000}{1600} = 1000$$

3. Length of a rectangular park = 0.14 km

$$= 0.14 \times 1000 \text{ m}$$

$[\because 1 \text{ km} = 1000 \text{ m}]$

$$= 140 \text{ m}$$

Breadth of the rectangular park = 80 m
 Perimeter of the park = $2(l + b) = 2(140 + 80)$ m
 $= 2 \times 220$ m = 440 m.
 Wire required to fencing the park in three rounds
 $= 3 \times 440$ m = 1320 m
 Cost of fencing 1 m wire = ₹220
 \therefore Cost of fencing the park = $1320 \text{ m} \times ₹2.20$
 $= ₹2904$

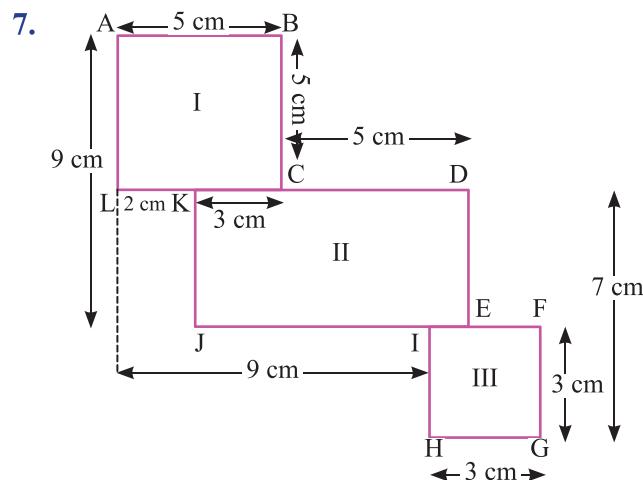
4. Length of the garden = 340 m
 Breadth of the garden = 80 m
 \therefore Area of the garden = $340 \text{ m} \times 80 \text{ m}$
 $= 27200 \text{ sq. m}$
 Side of square flower bed = 8 m
 \therefore Area of square flower bed = $8 \text{ m} \times 8 \text{ m}$
 $= 64 \text{ sq. m}$
 \therefore Required Number of flower beds
 $= \frac{27200}{64} = 425$

Hence, 425 flower beds can be formed.

5. Length of the block = 25 cm.
 Breadth of the block = 12 cm
 \therefore Area of the block = length \times breadth
 $= 25 \times 12 \text{ sq. cm}$
 Length of the path = $12.5 \text{ m} = 12.5 \times 100 \text{ cm}$
 $= 1250 \text{ cm}$
 Breadth of the path = $4.8 \text{ m} = 4.8 \times 100 \text{ cm}$
 $= 480 \text{ cm}$
 \therefore Required number of blocks = $\frac{\text{Area of path}}{\text{Area of block}}$
 $= \frac{1250 \times 480}{25 \times 12} = \frac{600000}{300} = 2000 \text{ blocks}$

6. Length of the room = 4 m 50 cm = 4.5 m
 Side of the room = 6 m
 Area of the room = $4.5 \text{ m} \times 6 \text{ m} = 27 \text{ sq. m}$
 Area of 4 walls = $27 \times 4 \text{ sq. m} = 108 \text{ sq. m}$
 Cost of painting per sq. m is ₹10
 \therefore Cost of painting the 4 walls
 $= ₹10 \times 108 = ₹1080$

Thus, cost of the painting is ₹1080.



Perimeter of given figure = sum of all the sides
 \therefore Perimeter of given figure = $AB + BC + CD + DE + EF + FG + GH + HI + IJ + JK + KL + LA$
 $= 5 + 5 + 5 + (7 - 3) + [(9 + HG) - (AB + CD)] +$
 $3 + 3 + 3 + (9 - KL) + (9 - 5) + (LC - KC) + 5$
 $= 15 + 4 + [(9 + 3) - (5 + 5)] + 9 + (9 - KL) + 4$
 $+ (5 - 3) + 5$
 $= 19 + 2 + 9 + 7 + 4 + 2 + 5 = 48 \text{ cm.}$

Now, Area of 1st square = side \times side
 $= 5 \text{ cm} \times 5 \text{ cm} = 25 \text{ sq. cm}$
 Area of rectangle = length \times breadth
 $= 8 \text{ cm} \times 4 \text{ cm} = 32 \text{ sq. cm}$
 Area of 2nd square = side \times side
 $= 3 \text{ cm} \times 3 \text{ cm} = 9 \text{ sq. cm}$
 \therefore Area of the given figure = Area of 1st square +
 Area of rectangle + Area of 2nd square.
 $= (25 + 32 + 9) \text{ sq. cm}$
 $= 66 \text{ sq. cm}$

Hence, Perimeter = 48 cm and Area = 66 sq. cm

8. Side of a cubes = 5 unit.
 Volume of cube = side \times side \times side = $5 \times 5 \times 5$
 $= 125 \text{ cu. units}$
 Number of cubes in 1st level = $5 \times 5 = 25$
 Number of cubes in 2nd level
 $= 5 \times 2 + 3 \times 1 + 2 \times 2$
 $= 10 + 3 + 4 = 17$

Number of cubes in third level = $2 \times 2 = 4$
 Total number of cubes = $25 + 17 + 4 = 46$ cubes
 Number of cubes needed to get the cube of
 dimensions $5 \times 5 \times 5 = (125 - 46)$
 $= 79$ units cubes

9. Given, volume of the cuboid = 3000 cu. m

Area of the base = 300 sq. m

\therefore Volume of cuboid = $l \times b \times h$

(\because Area of base = $l \times b$)

$$3000 = 300 \times h$$

$$h = \frac{3000}{300} \text{ m} = 10 \text{ m.}$$

Thus, height of the cuboid is 10 m.

10. Given, Area of base = 1360 sq. cm,

Height = 12 cm

We have, volume of cuboid = $l \times b \times h$

$$= \text{Area of base} \times h$$

$$= 1360 \text{ sq. cm} \times 12 \text{ cm}$$

$$= 16320 \text{ cu. cm}$$

Thus, volume of the box is 16320 cu. cm

11. Side of the cube = 10 m

Volume of the cube = side \times side \times side

$$= 10 \text{ m} \times 10 \text{ m} \times 10 \text{ m}$$

$$= 1000 \text{ cu. m}$$

According to question,

Volume of cuboid = 5×1000 cu. m = 5000 cu. m

Hence, volume of the cuboid is 5000 cu. m.

12. Length of the tank = 60 cm, breadth = 30 cm and height = 45 cm

Volume of the tank = length \times breadth \times height

$$= 60 \text{ cm} \times 30 \text{ cm} \times 45 \text{ cm}$$

$$= 81000 \text{ cu. cm}$$

Volume of cubical fish tank filled with water

$$= \frac{2}{3} \times 81000 \text{ cu. cm} = 27000 \times 2 \text{ cu. cm}$$

$$= 54000 \text{ cu. cm}$$

Volume of the unfilled portion of the tank

= Volume of tank – Volume of tank filled with water

$$= 81000 \text{ cu. cm} - 54000 \text{ cu. cm}$$

$$= 27000 \text{ cu. cm.}$$

13. Given, length of the bricks = 15 cm, breadth = 6 cm and height = 3 cm

Since, the brick is in the shape of a cuboid.

\therefore Volume of the brick = $15 \text{ cm} \times 6 \text{ cm} \times 3 \text{ cm}$

Given: Length of the wall = 45 m, breadth = 12 m, height = 5 m.

\therefore Volume of the wall = $l \times b \times h$

$$= 45 \text{ m} \times 12 \text{ m} \times 5 \text{ m}$$

$$= 4500 \text{ cm} \times 1200 \text{ cm} \times 500 \text{ cm}$$

\therefore Required number of bricks

$$= \frac{\text{Volume of the wall}}{\text{Volume of the brick}}$$

$$= \frac{4500 \text{ cm} \times 1200 \text{ cm} \times 500 \text{ cm}}{15 \text{ cm} \times 6 \text{ cm} \times 3 \text{ cm}}$$

$$= \frac{2700000000 \text{ cu. cm}}{270 \text{ cu. cm}}$$

$$= 1,00,00,000$$

Hence, the required number of bricks is 1,00,00,000.

14. Length of Siya's lunch box = 10 cm,

breadth = 8 cm and height = 6 cm

\therefore Volume of Siya's lunch box = $l \times b \times h$

$$= 10 \text{ cm} \times 8 \text{ cm} \times 6 \text{ cm} = 480 \text{ cu. cm}$$

Length of Swati's lunch box = 12 cm,

breadth = 9 cm and height = 4 cm

\therefore Volume of Swati's lunch box = $l \times b \times h$

[\because Lunch box is in the cuboidal shape]

$$= 12 \text{ cm} \times 9 \text{ cm} \times 4 \text{ cm} = 432 \text{ cu. cm}$$

Since, 480 cu. cm > 432 cu. cm

Hence, Siya's lunch box is bigger in size.

Brain Sizzler's (Page 230)

1. Dimensions of plastic box = 10 cm, 3 cm and 5 cm.

$$\text{Volume of plastic box} = 10 \text{ cm} \times 3 \text{ cm} \times 5 \text{ cm}$$

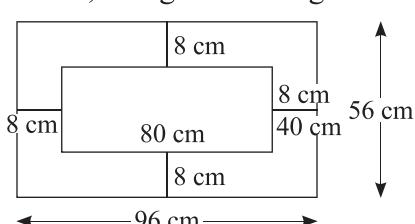
$$= 150 \text{ cu. cm}$$

Since, 1 cubic cm can hold 5 grans of sugar.

So, weight of sugar = $150 \times 5 \text{ g} = 750 \text{ grams.}$

Hence, 750 grams of sugar the box can hold.

2.



$$\text{Length of the table with cloth} = (80 + 8 + 8) \text{ cm}$$

$$= 96 \text{ cm}$$

$$\text{Width of the table with cloth} = (40 + 8 + 8) \text{ cm}$$

$$= 56 \text{ cm}$$

$$\text{Area of the table with cloth} = \text{length} \times \text{breadth}$$

$$= (96 \text{ cm} \times 56 \text{ cm}) = 5376 \text{ sq. cm}$$

Area of the table cloth = $l \times b$

$$= (80 \times 40) \text{ sq. cm} = 3200 \text{ sq. cm}$$

Area of the table not covered by the cloth

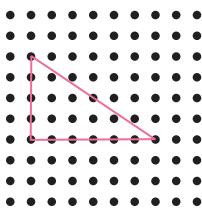
$$= 5376 \text{ sq. cm} - 3200 \text{ sq. cm} = 2176 \text{ sq. cm}$$

CHAPTER 12 : VISUALISATION OF 3D OBJECTS AND MAPS

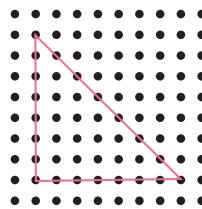
Let's Recall

1. (b) and (c) can be folded to form a cuboid

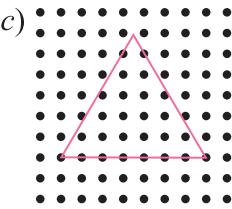
2. (a)



(b)



(c)



Practice Time 12A

1. (b) and (d) are nets of a cube

2. (a) - (iii)

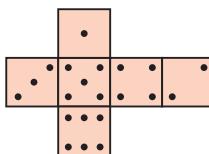
(b) - (iv)

(c) - (i)

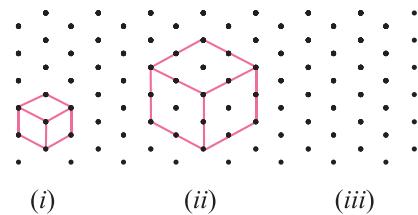
(d) - (ii)

(e) - (v)

3.



4.



(i)

(ii)

(iii)

Practice Time 12B

2. (a) (i) Front view

(ii) Top view

(iii) Side view

(b) (i) Front view

(ii) Side view

(iii) Top view

(c) (i) Side view

(ii) Front view

(iii) Top view

Practice Time 12C

1. (b) Panchkuian Road goes in north-west direction from the Connaught Place.

(c) Underground Parking

(d) We can see 6 blocks A, B, C, D, E and F with the inner circle.

(e) Take Janpath road and turn right from the outer circle then take left turn on Parliament street. Now, take right turn on Hanuman Road to reach Gurudwara.

(f) Baba Kharak Singh Marg.

2. (a) Distance of Dinesh's house from nursing home
= 1 km

and distance of nursing home to Neha's House
= 2 km

∴ Total distance = 1 km + 2 km = 3 km.

(b) Distance of Super Market to Maya's house
= 500 m

and distance of Maya's house to Zoya's house
= 5 km

Total distance = 500 m + 5 km = 5.5 km.

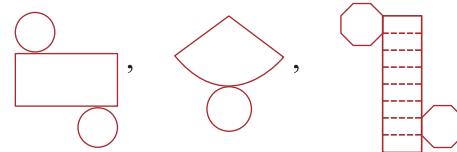
(c) Zoya covered the longest distance i.e., 4 km to reach the school.

(d) Maya's house is farthest from the park i.e.,
2 km + 5 km = 7 km

Chapter Assessment

1. Option (c) can be folded to make cubes.

2. Shapes



3. (a) When the objects approach the Vanishing Point, they appear smaller.

(b) 2D figures have only one perspective.

(c) 3D objects have many Perspective.

(d) A compass helps us find a direction.

4. (a) (i) Top view (b) (i) Front view

(ii) Front view (ii) Top view

(iii) Side view (iii) Side view

(c) (i) Top view

(ii) Side view

(iii) Side view

5. (a) A Circle is above the horizon line.
 (b) A Rectangle is on the horizon line.
 (c) A Circle is below the horizon line.

6. (a) Valsad is the southern most town of Gujarat.
 (b) Mehsana is the immediate east of Patan.
 (c) Kachchh is in the western most of Gujarat.
 (d) South-east direction.

7. (a) The shortest distance between house A-55 and A-53 is of 5 cm or 750 m. ($1 \text{ cm} = 150 \text{ m}$)
 (b) The least distance that the postman can travel from A-52 to A-54 via A-51 then finally A-56 via A-54 = $2.5 \text{ cm} + 2.5 \text{ cm} + 2 \text{ cm} = 7 \text{ cm}$ or 1050 m or 1 km 50 m.

CHAPTER 13 : DATA HANDLING

1. 20 students like rope climbing.

2. Bungee jumping is the most preferred adventure activity.

3. Boating is the least preferred adventure activity.

4. Number of students who like bungee jumping = $7 \times 5 = 35$ students
 Number of students who like giant wheel = $6 \times 5 = 30$ students.
 Thus total number of students who likes both = $(35 + 30)$ students = 65 students

5. Number of students who like dancing car = $5 \times 5 = 25$ students.
 Number of students who like rope climbing = $4 \times 5 = 20$ students.
 Difference between their number of students = $25 \text{ students} - 20 \text{ students} = 5 \text{ students}$

6. Total number of students in class V = $24 \times 5 = 120$ students.
 Thus, 120 students are there in class V.

Think and Answer (Page 251)

- There are 5 students who likes red colour.
- There are 2 students who likes yellow colour.
- White colour is the least favourite colour.
- Blue is the most favourite colour of the students.

Practice Time 13A

1.	Fruits	Tally marks	Number of students
	Mango		6
	Banana		8
	Apple		4
	Papaya		9
	Orange		10
	Grapes		16

2. (a) Dancing and watching TV are liked the most by the students.
 (b) Reading is liked the least.
 (c) 3 students like reading.
 (d) The student who like singing, dancing and painting are $(5 + 9 + 7) = 21$.
 (e) Number of students who likes watching TV = 9.
 Number of students who likes swimming = 5.
 \therefore Their difference = $9 - 5 = 4$.

3.	Car colour	Tally marks	Number
	Red		7
	Green		8
	White		10
	Blue		5
	Yellow		6
	Silver		2
	Black		2
			Total = 40

(a) Priya counts 10 white cars.
 (b) Priya counts 8 green cars.
 (c) The most popular car colour she counted was white.

4.	Weight (in kg)	Tally marks	Number
	40		4
	43		2
	47		4
	53		4
	55		3
	57		3
			Total = 20

Practice Time 13B

1. (a) Graph represents the sales of TV sets by 2 dealer in a particular week.
- (b) Scale : 1 square unit = 2 TV sets
- (c) 16 TV sets were sold on Wednesday.
- (d) The least sell of TV sets were on Friday and Saturday.
- (e) The highest sell of TV sets was on Sunday.
- (f) Total sells of TV sets during the week

$$= 10 + 16 + 16 + 8 + 6 + 6 + 20 = 82.$$

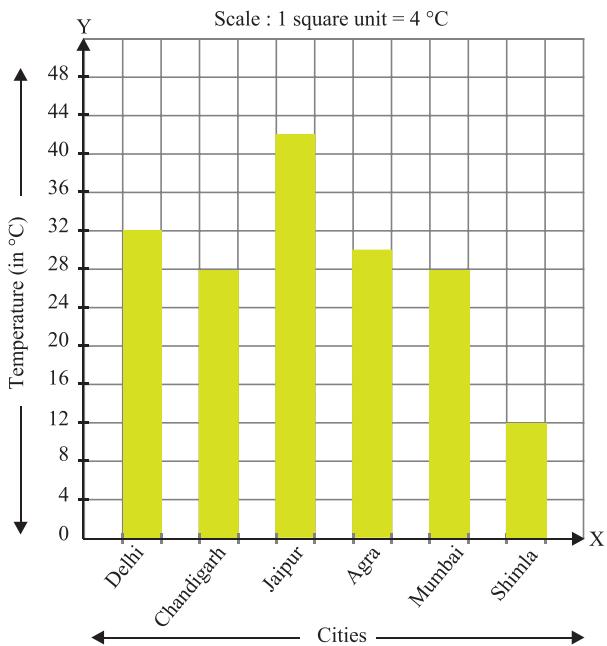
2. (a) ₹6000 is spent on education.

- (b) Least money is spent on others expenses.
- (c) Total money spent in a month

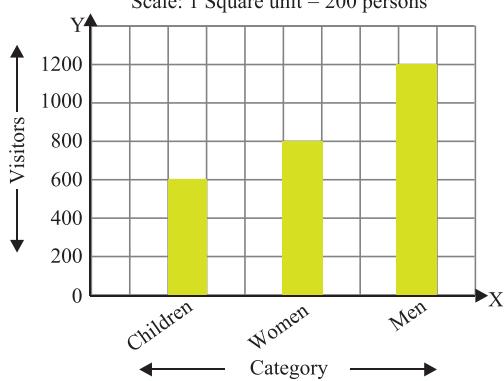
$$= ₹4000 + ₹5000 + ₹6000 + ₹3000 + ₹2000$$

$$= ₹20000.$$
- (d) Maximum money is spent on education.

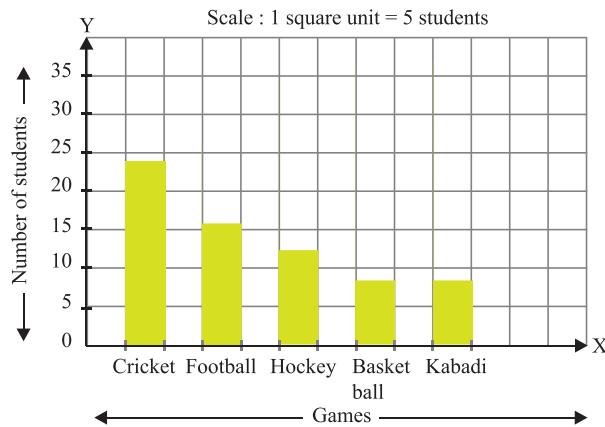
3.



4.



5.



Practice Time 13C

1. (a) Spring season is most popular among the students.
- (b) $\frac{1}{4}$ of the students like Autumn season.
- (c) Winter and Summer seasons are equally popular.
- (d) Autumn season is favourite for $\frac{1}{4}$ of students.

2. First find the total number of students

$$= 10 + 6 + 6 + 3 + 5 = 30$$

Fraction of children whose hobby is to dance

$$= \frac{10}{30} = \frac{1}{3}$$

Fraction of children whose hobby is to listening

$$\text{music} = \frac{6}{30} = \frac{1}{5}$$

Fraction of children whose hobby is drawing

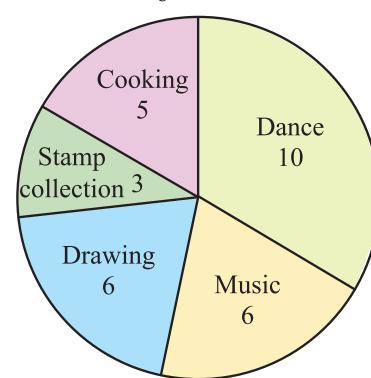
$$= \frac{6}{30} = \frac{1}{5}$$

Fraction of children whose hobby is stamp

$$\text{collection} = \frac{3}{30} = \frac{1}{10}$$

Fraction of children whose hobby is cooking

$$= \frac{5}{30} = \frac{1}{6}$$



3. First find the total number of children = $4 + 8 + 3 + 6 + 3 = 24$

∴ Fraction of students who like to watch action movies = $\frac{4}{24}$.

∴ Fraction of students who like to watch Cartoon movies = $\frac{8}{24}$.

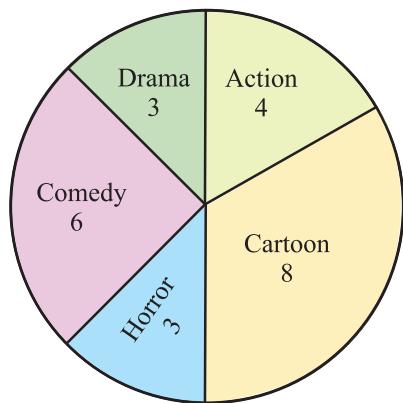
∴ Fraction of students who like to watch horror movies = $\frac{3}{24}$.

∴ Fraction of students who like to watch comedy movies = $\frac{6}{24}$.

∴ Fraction of students who like to watch drama movies = $\frac{3}{24}$.

The denominator of each corresponding fraction is equal.

Now, divide a circle into 24 equal parts and shade its 4 parts for action, 8 parts for cartoon, 3 parts for horror, 6 parts for comedy and 3 parts for drama movies as shown in the circle graph given below.



Brain Sizzlers (Page 259)

Total number of children = 100

Sum of fractions showing liking of fruits except orange

$$= \frac{1}{5} + \frac{3}{10} + \frac{1}{4} + \frac{1}{10}$$

LCM of 5, 10, 4 and 10

$$= 2 \times 2 \times 5 = 20$$

$$= \frac{4 + 6 + 5 + 2}{20} = \frac{17}{20}$$

2	5, 10, 4, 10
2	5, 5, 2, 5
5	5, 5, 1, 5
	1, 1, 1, 1

So, number of children who likes fruits except oranges

$$= \frac{17}{20} \times 100 = 85$$

So, number of children who like oranges

$$= 100 - 85 = 15$$

Thus, 15 children like oranges.

Chapter Assessment

1. (a) - (iv) The quantity of bananas sold (in kg)

$$= \frac{1200}{2} \text{ kg} = 600 \text{ kg}$$

(b) - (i) Sale of grapes in a day = $\frac{1200}{8} \text{ kg}$
 $= 150 \text{ kg}$

Sale of oranges in a day = $\frac{1200}{8} \text{ kg} = 150 \text{ kg}$.

∴ The difference between the sales of grapes and oranges = $150 \text{ kg} - 150 \text{ kg} = 0 \text{ kg}$.

(c) - (ii) Total fruit were sold in a day = 1000 kg.

∴ The quantity of apples sold in that day = $\frac{1000}{4} \text{ kg} = 250 \text{ kg}$

2. (a) Any information in the form of numbers or figures are called data.

(b) Representation of data using rectangles is called a bar graph.

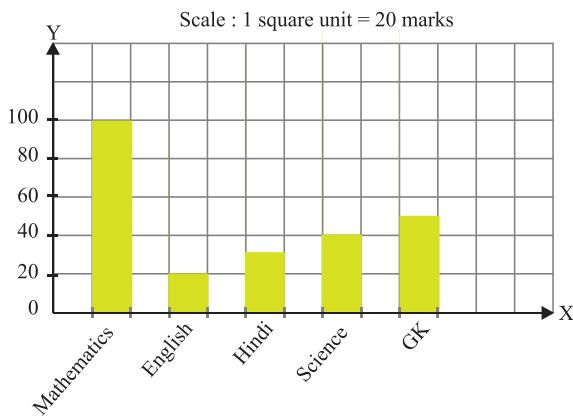
(c) Other name of pie chart is a circle graph.

(d) Tally marks come in groups of five.

Weight (in kg)	Tally marks	Number
26		2
28		4
30		2
32		4
36		2
40		3
42		3
		Total = 20

4. (a) 15 families have three members.
 (b) 5 people live alone.
 (c) There are 4 members in most of the families.

5.



6. First find the total time of activities

$$= 6h + 3h + 2h + 8h + 1h + 4h = 24h$$

$$\text{Fraction of school activity} = \frac{6h}{24h} = \frac{1}{4}$$

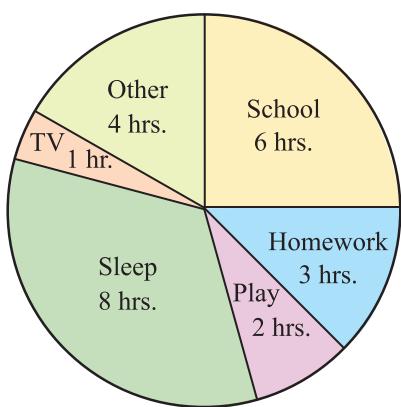
$$\text{Fraction of homework activity} = \frac{3h}{24h} = \frac{1}{8}$$

$$\text{Fraction of play activity} = \frac{2h}{24h} = \frac{1}{12}$$

$$\text{Fraction of sleep activity} = \frac{8h}{24h} = \frac{1}{3}$$

$$\text{Fraction of watching TV activity} = \frac{1h}{24h} = \frac{1}{24}$$

$$\text{Fraction of others activity} = \frac{4h}{24h} = \frac{1}{6}$$



MODEL TEST PAPER - 2

A.

1. (b) Volume of cube = side \times side \times side

Given, volume of cube = 1 cu. cm

$$= 1 \text{ cm} \times 1 \text{ cm} \times 1 \text{ cm}$$

$$= 10 \text{ mm} \times 10 \text{ mm} \times 10 \text{ mm}$$

$$(\because 1 \text{ cm} = 10 \text{ mm})$$

$$\therefore \text{Side} = 10 \text{ mm}$$

2. (c) Convert 2:20 p.m. into 24 hour clock.

$$= 1420 \text{ hours}$$

$$= 14 \text{ hours } 20 \text{ minutes}$$

Subtract 3:30 hours from

$$14 \text{ hours } 20 \text{ minutes}$$

$$\text{Required time} = 10:50 \text{ hours}$$

$$= 10:50 \text{ a.m.}$$

h	min
(13) 80	
14 : 20	
3 : 30	
10 : 50	

3. (c) We know that, $F = C \times \frac{9}{5} + 32$

$$F = 100 \times \frac{9}{5} + 32$$

$$F = 180 + 32 = 212$$

Hence, $100^\circ\text{C} = 212^\circ\text{F}$

4. (c) The door is a solid shape that has length breadth and height.

So, solid shape is cuboid.

5. (b) Since, 7 cars are represented by 1 flower.

Then, 6 flowers represents by $(7 \times 6 =) 42$ cars.

6. (b) The cost of 2 dozen eggs = ₹120

$$\therefore 2 \text{ dozen} = 24 \text{ eggs}$$

$$\therefore \text{The cost of 1 egg} = \frac{\text{₹}120}{24} = \text{₹}5$$

$$\text{The cost of 8 eggs} = \text{₹}5 \times 8$$

$$= \text{₹}40$$

Hence, the cost of 8 eggs is ₹40.

7. (b) Side of equilateral triangle = 14.6 cm (given)

Since, perimeter of an equilateral triangle
 $= 3 \times \text{side}$

$$\therefore \text{Perimeter of the equilateral triangle} \\ = 3 \times 14.6 \text{ cm} \\ = 43.8 \text{ cm}$$

8. (c) Side of a square = 20 cm (given)

Since, area of square = side \times side

$$\therefore \text{Area of square} = 20 \text{ cm} \times 20 \text{ cm} \\ = 400 \text{ sq. cm}$$

9. (a) 8 = |||||

10. (c) The next number = 0, 2, 6, 12, 20, 30, 42.

B.

$$1. 37 \text{ cm} + 20 \text{ mm} = (37 \times 10) \text{ mm} + 20 \text{ mm} \\ (\because 1 \text{ cm} = 10 \text{ mm})$$

$$\therefore 370 \text{ mm} + 20 \text{ mm} = 390 \text{ mm.}$$

2. The boiling point of water is 100°C or 212°F .

3. If CP is greater than SP, then there is a loss.

$$4. \text{Side of a cubical tank} = 3.2 \text{ m} = 3.2 \times 100 \text{ cm} \\ = 320 \text{ cm.}$$

$$\text{Volume of cubical tank} = \text{side} \times \text{side} \times \text{side} \\ = 320 \text{ cm} \times 320 \times 320 \text{ cm} \\ = 32768000 \text{ cu. cm}$$

5. The collection of information in the form of numbers is called data.

C.

1. Perimeter of a region

= Sum of all the sides.

Perimeter of shaded region = AB + BC + CG + GH + HI + IE + EF + FA.

$$= [20 + 5 + 5 + 5 + 5 + 5 + (20 - 10) + 15] \text{ m} \\ = (45 + 10 + 15) \text{ m} = 70 \text{ m}$$

Now, Area of rectangle = $l \times b$

Given: $l = 20 \text{ m}$ and $b = 15 \text{ m}$

\therefore Area of shaded region

$$= \text{Area of rectangle ABDF} \\ - \text{Area of rectangle DEIJ} \\ - \text{Area of square CGHJ}$$

Area of shaded region

$$= (l \times b) - (l \times b) - (\text{side} \times \text{side}) \\ = (20 \times 15) \text{ m} - (10 \times 5) \text{ m} - (5 \times 5) \text{ m} \\ = 300 \text{ m} - 50 \text{ m} - 25 \text{ m} \\ = 225 \text{ sq. m}$$

2. Cost of air cooler = ₹7,500

Transportation charges = ₹100

Total cost of air cooler = ₹7500 + ₹100 = ₹7600

Loss = ₹180.

$$\therefore \text{Selling price of the air cooler} = ₹7600 - ₹180 \\ = ₹7420$$

3. Number of days of vacations in December

$$= 15 \text{ December to 31 December} = 17 \text{ days}$$

and number of days of vacations from 1 January to 14 January = 14 days

Number of days her school was closed

$$= 17 \text{ days} + 14 \text{ days} = 31 \text{ days}$$

4. First find the total number of hours Geetika spent in a day = $6 \text{ h} + 1 \text{ h} + 2 \text{ h} + 9 \text{ h} + 1 \text{ h} + 5 \text{ h} = 24 \text{ h}$

$$\therefore \text{Fraction of hours she spent in school} = \frac{6}{24} \text{ h}$$

$$\text{Fraction of hours she spent in doing her homework} \\ = \frac{1}{24} \text{ h}$$

$$\text{Fraction of hours she spent in playing} = \frac{2}{24} \text{ h}$$

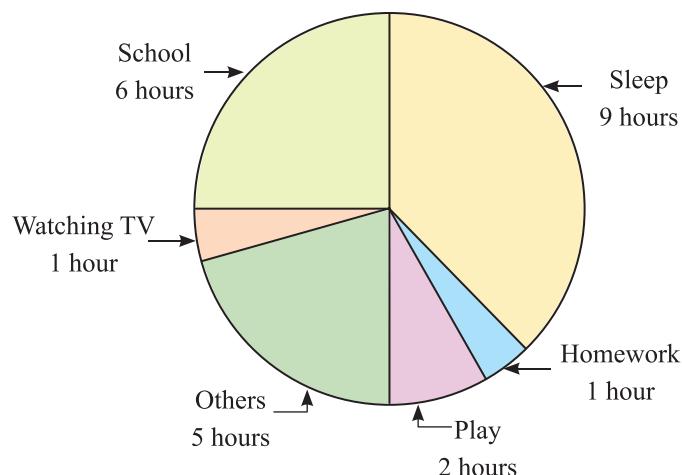
$$\text{Fraction of hours she spent in sleeping} = \frac{9}{24} \text{ h}$$

$$\text{Fraction of hours she spent in watching TV} = \frac{1}{24} \text{ h}$$

Fraction of hours she spent in others activity

$$= \frac{5}{24} \text{ h}$$

Now, divide a circle into 24 equal parts and shade its 6 parts for school, 1 part for home work, 2 parts for playing, 9 parts for sleeping, one hour for TV, 5 parts for others as shown in the circle graph given below.



5. Volume of ice tray = $3 \text{ cm} \times 6 \text{ cm} \times 9 \text{ cm}$

(Since, volume of cuboid = Length \times Breadth \times height) = 162 cu. cm

Side of an ice cube = 3 cm

The volume of an ice cube = $3 \text{ cm} \times 3 \text{ cm} \times 3 \text{ cm}$

(Since, volume of a cube = side \times side \times side)

$$= 27 \text{ cu. cm}$$

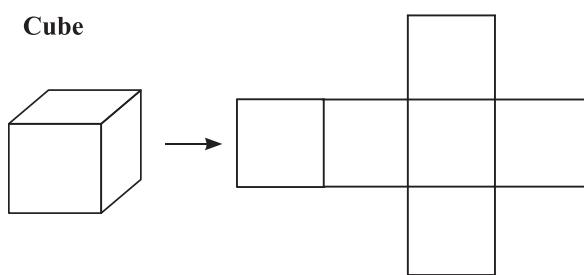
$$\begin{aligned}\text{Number of ice cubes} &= \frac{\text{Volume of tray}}{\text{Volume of an ice cube}} \\ &= \frac{162}{27} = 6\end{aligned}$$

Thus, 6 ice cubes can fit in the ice tray.

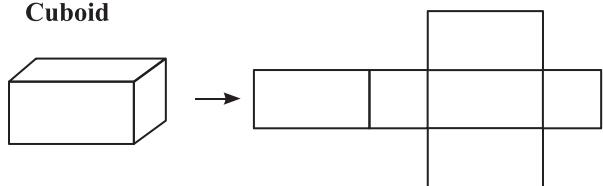
6.

Bill for Shweta			
Item	Quantity	Rate	Cost
(a) Sugar	5 kg	₹47	₹235
(b) Ketchup	6 bottles	₹155	₹930
(c) Mustard oil	1 $\frac{1}{2}$ litre	₹118	₹177
(d) Rice	10 kg	₹72	₹720
			Total Cost = ₹2062

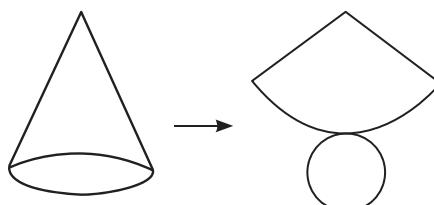
7. (a) Cube



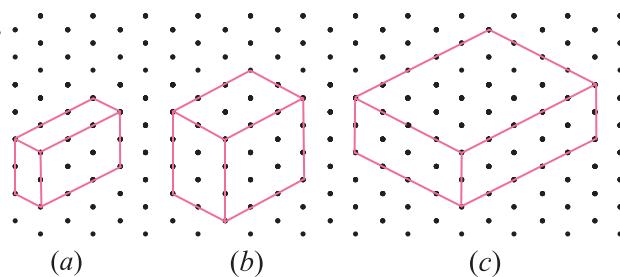
(b) Cuboid



(c) Cone



8.



9. (a) $\frac{1}{4}$ turn

(c) $\frac{1}{4}$ turn

(b) $\frac{1}{2}$ turn

(d) $\frac{1}{2}$ turn