DETAILED SOLUTIONS

CHAPTER 1 : LARGE NUMBERS

Let's Recall

1. Distance between the Earth and the Moon = 384400 km.

Number name: Three lakh eighty-four thousand four hundred.

2. Greatest 6-digit number = 999999.

Smallest 6-digit number = 100000.

3. (*a*) 754894 = Seven lakh fifty-four thousand eight hundred ninety-four.

(*b*) 500489 = Five lakh four hundred eighty-nine.

4. (*a*) Eight lakh forty-seven thousand one = 8,47,001.

(*b*) Nine lakh ninety-nine thousand nine hundred ninety-nine = 9,99,999.

5. (*a*) Given number = 424781.

Face value = 2, Place value = 20000.

(*b*) Given number = 875014.

Face value = 0, Place value = 0

6. 540789 > 507489

540789 is greater.

Practice Time 1A

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

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

Number name

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

(*b*) Forty-six lakh thirty-four thousand five hundred sixty-one.

(*c*) Forty lakh fifty-six thousand two hundred forty-nine.

(*d*) Seven crore seventy-three lakh twenty-six thousand four hundred thirty-four.

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

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

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 = 4, hundreds = 9, thousands = 7, ten thousands = 8, lakhs = 7, ten lakhs = 6, crores = 1.

Think Tank (Page 11)

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

Practice Time 1B

1. (*a*)

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

Place value
7 × 10 = 70

(*b*)

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
4 × 100000 = 400000

(*d*)

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

Place value
0 × 100000 = 0

(*e*)

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

Place value
7 × 10000000 = 70000000

(*f*)

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

Place value
8 × 100000 = 800000

(*g*)

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

Place value
0 × 100 = 0

(*h*)

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

Place value
5 × 1000000 = 5000000

(*i*)

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

Place value
7 × 10000 = 70000

2. Given numbers = 8642819.

Place value of first digit 8 from left = 8000000.

Place value of second digit 8 = 800.

Difference = 8000000 – 800 = 7999200.

3. Place value of 6 in 76458 = 6 × 1000 = 6000.

Place value of 6 in 611389 = 6 × 100000 = 600000.

Sum of the place values = 6000 + 600000

= 606000.

4. (*a*) Given number = 2684503.

Predecessor = 2684503 – 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
2 × 1 = 2
3 × 10 = 30
4 × 100 = 400
6 × 1000 = 6000
5 × 10000 = 50000
8 × 100000 = 800000
7 × 1000000 = 7000000
7 × 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
9	5	6	7	8	9	8	1

Place value

1 × 1 = 1
8 × 10 = 80
9 × 100 = 900
8 × 1000 = 8000
7 × 10000 = 70000
6 × 100000 = 600000
5 × 1000000 = 5000000
9 × 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
7	3	4	0	7	1	8

Place value

8 × 1 = 8
1 × 10 = 10
7 × 100 = 700
0 × 1000 = 0000
4 × 10000 = 40000
3 × 100000 = 300000
7 × 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 + 5.

(*h*) Given number = 45600282.
Expanded form of 45600282
= 40000000 + 5000000 + 600000 + 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, respectively.

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

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 same, 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	6-digit
8	6	5	4	6	2	7	7-digit
7	8	2	5	2	1	6	7-digit
7	3	2	4	5	4	5	7-digit

So, the ascending order of the numbers is:

863532, 7324545, 7825216, 8654627

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

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

(*d*) 75463211, 75463251, 75464521, 75465421 (Same as above)

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, 87976 is greater than 76049.

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

Same

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

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

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

(*d*) 98645321, 9865021, 9864542, 9864521 (Same as above)

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 9999765.
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 = 9999765 and smallest number = 5555679.

(*c*) 7777320, 2000037

(*d*) 9999953, 3333359

Think Tank (Page 19)

We know that 1 million = 10 lakhs

∴ 10 million = 10 × 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

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 and replace the digit at ones place with 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 with 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 with 0. Thus, 4242 becomes 4240 after rounding off to nearest 10.

(*e*) to (*h*) — (Same as above).

2. (*a*) In 414, the digit at tens place is 1, which is less than 5.
So, we replace the digits at tens and ones place with 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 with 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 hundreds place by 1 and replace tens and ones digits with 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 digits at hundreds, tens and ones place with 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 digits with 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 digit at thousands place by 1 and replace hundreds, tens and ones digits with 0.
Thus, 107898 becomes 108000 after rounding off to the nearest 1000.
(*d*) to (*h*) — (Same as above).

4. (*a*) (*i*) 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 digits with 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 thousands place by 1 and replace hundreds, tens and ones digits with 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 digit with 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 with 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 digits with 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.
∴ CDIV < 406.

(*b*) CCCXC = 100 + 100 + 100 + (100 – 10)
= 300 + 90 = 390 > 380.
∴ CCCXC > 380.
(*c*) CMXC = (1000 – 100) + (100 – 10)
= 900 + 90 = 990.
∴ CMXC = 990.
(*d*) CDVIII = (500 – 100) + 5 + 3.
= 400 + 8 = 408 > 208.
∴ CDVIII > 208.
(*e*) CCCLXXXVI = 100 + 100 + 100 + 50 + 10 + 10 + 10 + 5 + 1 = 386 = 386.
∴ CCCLXXXVI = 386.
(*f*) CLXV = 100 + 50 + 10 + 5 = 165 < 168
∴ CLXV < 168.

4. (*b*), (*c*), (*d*), (*e*) and (*f*) are meaningless.

5. (*a*) Born in Porbandar, Gujarat - 1869
= MDCCCLXIX.
(*b*) Married to Kasturba Gandhi - 1883
= MDCCCLXXXIII.
(*c*) Started the boycott of British goods and non-cooperation movement - 1920 = MCMXX.
(*d*) Lead the salt March in Dandi - 1930
= MCMXXX.
(*e*) Launched the Quit India movement - 1942
= MCMXLII.
(*f*) Kasturba Gandhi died - 1944 = MCMXLIV.
(*g*) Gandhiji was assassinated in Delhi - 1948
= MCMXLVIII.

Mental Maths (Page 25)

1. (*a*) The number of zeros in 10 million is 7.
2. (*b*) 98, 76, 543 is the greatest.
3. (*d*) In 12,34,000; there are 1234 thousands.
4. (*a*) 49,99,999 is closest to 5 million, as 49,99,999 + 1 = 50,00,000 = 5,000,000.
5. (*a*) 80 lakh = 8 million. [∵ 10 lakh = 1 million]

Maths Connect (Page 25)

Ascending order:
Since 6,809,970 < 8,443,675 < 11,034,555 < 12,478,447
Thus, the metropolitan cities in ascending order according to their population are as follows:
Hyderabad < Bengaluru < Delhi < Mumbai
Further, in descending order: Mumbai > Delhi > Bengaluru > Hyderabad
Least populated city: According to 2011 Census: Kapurthala, Punjab
Population: 98,916 (Ninety-eight thousand nine hundred sixteen)
Most populated city: New Delhi,
Population: 30,222,405 (Thirty million two hundred twenty-two thousand four hundred five).

Maths Fun (Page 25)

The boatman can transport the lion, the sheep, and the bundle of grass safely across the river in a minimum of 7 trips (seven crossings).
The correct sequence of moves is:
Trip 1 (Start to Far Shore): Take the sheep across and leave it there. (The lion and grass are left safely together on the starting shore).
Trip 2 (Far Shore to Start): Return alone to the starting shore.
Trip 3 (Start to Far Shore): Take the lion across to the far shore.
Trip 4 (Far Shore to Start): Take the sheep back to the starting shore (to prevent the lion from eating it).
Trip 5 (Start to Far Shore): Take the bundle of grass across to the far shore and leave it with the lion.
Trip 6 (Far Shore to Start): Return alone to the starting shore.
Trip 7 (Start to Far Shore): Take the sheep across one last time.

Chapter Assessment

1. (*a*) - (*ii*) Thirty-three million seven hundred sixty-nine thousand fourteen
= 33,769,014.
Smallest place value = 0.
(*b*) - (*iii*) CCCLX + MDL = 100 + 100 + 100 + 50 + 10 = 360.
MDL = 1000 + 500 + 50
= 1550.
CCCLX + MDL = 360 + 1550
= 1910 = MCMX.
(*c*) - (*iv*) 500
(*d*) - (*iii*) To form the greatest 8-digit number using the given digits, by repeating the digit 1 thrice, 8 four times and 6 once.
Thus, the greatest 8-digit number formed using the given digits is 88886111.

2. To form the largest 7-digit even number using the given digits, repeat the digit 9 twice.
So, the largest 7- digit even number formed using the given digits is 9985314.
∴ Predecessor of 9985314 = 9985314 – 1
= 9985313.

3. In the number 6708813, the smallest digit having the same place value and face value is 0.

4. 100 thousands are in 1 lakh.

5. 10000 thousand make 10 million.

6. Let the number be 10234.
10234 rounded off to the nearest 10 = 10230.
10234 rounded off to the nearest 100 = 10200.
10234 rounded off to the nearest 1000 = 10000.
Thus, by rounding off a number to the nearest 1000, she will get the smallest number.

7. 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 by 3010000 m.

8. (*a*) 4,382,719
After interchanging the two digits 4 and 8 we get the number
8,342,719 > 6,000,000
Or 7 and 4 or 4 or 9 we get the numbers
7,382,419 > 6,000,000
Or 9,382,714 > 6,000,000 (Answer may vary).
(*b*) To make number less than 2,000,000, we can interchange the digits 1 and 4 only as
1,382,749 < 2,000,000.

9. Number of saplings planted in first phase = 2,37,856 = 2,40,000 (rounded to nearest ten-thousands)
Number of tree saplings planted in second phase = 1,89,745 = 1,90,000 (rounded to nearest ten-thousands)

10. Passengers travelled in express train = 1,234,567
Passengers travelled in local trains = 2,345,678
Since, 2,345,678 > 1,234,567
So, local train carried more passengers.

Challenge Question (Page 27)

Number of saplings planted = 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.

	L	TTh	Th	H	T	O
	(1)		(2)	(1)	(1)	
Number of toys produced in September =		2	2	4	6	6
Number of toys produced in October =	1	9	0	8	9	5
Number of toys produced in November = +	2	0	5	7	2	5
Total number of toys produced in three months =	4	1	9	0	8	6

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

2.

	TL	L	TTh	Th	H	T	O
		(11)	(12)				
	(6)	(~~1~~)	(~~2~~)	(11)		(6)	(12)
Total population of town =	~~7~~	~~2~~	~~3~~	~~1~~	5	~~7~~	~~2~~
Population of men in the town = –	4	7	9	7	2	3	7
Population of women in the town =	2	4	3	4	3	3	5

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

3.

	C	TL	L	TTh	Th	H	T	O
					①		①	
					②	①	③	
					②	①	②	
Number of bedsheets produced in one day =				3	0	4	2	5
Number of days in one year = 365 days = ×						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
Number of bedsheets produced in a year	1	1	1	0	5	1	2	5

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

4.
$$\begin{array}{r} 28 \\ 1895\overline{)\,53060} \\ -\,3790\downarrow \\ \hline 15160 \\ -\,15160 \\ \hline 0 \end{array}$$
Quotient

Remainder

Thus, the rate of rice per kg is ₹28.

Fast Check (Page 29)

Yes,

As, difference of 245 and 187 = 245 – 187 = 58

58 ÷ 2 = 29

So, we need to interchange numbers from both groups, so that the sum of the numbers of group A decreases by 29 and the sum of the numbers of group B increases by 29.

So, we can interchange 90 of group A and 61 of group B, such that

Group A: 12 + 65 + 78 + 61 = 216 and

Group B: 25 + 54 + 90 + 47 = 216.

Think Tank (Page 30)

Greatest 8-digit number = 9,99,99,999

Smallest 8-digit number = 1,00,00,000

Their sum = 10,99,99,999

Thus, there are 9 digits in their sum.

Fast Check (Page 31)

(*a*) Difference between two successive sums for 5 consecutive numbers is 5.

For example, 1 + 2 + 3 + 4 + 5 = 15 and 2 + 3 + 4 + 5 + 6 = 20

And the difference = 20 – 15 = 5

(*b*) Difference between two successive sums for 6 consecutive numbers is 6.

For example, 4 + 5 + 6 + 7 + 8 + 9 = 39 and 5 + 6 + 7 + 8 + 9 + 10 = 45

And the difference = 45 – 39 = 6

Fast Check (Page 32)

(*a*) Since the sum of 3 consecutive numbers is equal to 3 times the middle number.

77 + 78 + 79 = 3 × 78 = 234.

(*b*) Since the sum of 4 consecutive numbers is equal to 2 times the sum of the middle two numbers.

33 + 34 + 35 + 36 = 2 × (34 + 35)

= 2 × 69 = 138.

(*c*) Since the sum of 5 consecutive numbers is equal to 5 times the middle number.

51 + 52 + 53 + 54 + 55 = 5 × 53 = 265.

Practice Time 2A

1. (*a*)

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

Thus, 58,67,894 + 29,53,507

= 88,21,401

(*b*)

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

Thus, 64,67,849 + 34,53,570
= 99,21,419

(*c*)

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

Thus, 40,69,890 + 54,59,509
= 95,29,399

(*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

Thus, 79,80,037 + 6,78,987
= 86,59,024

(*e*)

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

Thus, 3,86,973 + 3,76,956 + 2,98,765
= 10,62,694

(*f*)

	TL	L	TTh	Th	H	T	O
	(1)	(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

Thus, 8,75,034 + 3,15,682 + 4,56,789
= 16,47,505

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	1
	8	0	0	4	2	7	2

Thus, 37,58,491 + 42,45,781
= 80,04,272

(*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	6	5	5	7	6	2

Thus, 2,24,32,646 + 4,42,23,116
= 6,66,55,762

(*c*) 12, 56, 16, 706 (Same as above).

(*d*) 10, 89, 90, 011 (Same as above).

3. (*a*)

	5	4	**3**	6	8
+	**6**	3	8	**3**	2
1	1	**8**	2	0	0

(*b*)

6	3	4	3	6	8
+	**4**	9	**3**	**6**	4
6	8	**3**	7	3	**2**

(*c*)

7	2	6	4	3	8
+	**2**	5	4	8	**4**	**3**
9	**8**	**1**	**2**	8	1

(*d*)

7	**1**	4	**6**	3	6
+	1	5	4	3	4	**2**
8	6	**8**	9	**7**	8

(*e*)

	5	**3**	6	4	3	6
+		6	2	3	**4**	**2**	9
1	1	5	**9**	8	6	**5**

(*f*)

	8	7	3	6	**4**
+		4	6	**3**	**7**	2
1	3	**3**	7	3	6

4. (*a*) 4326 + 26458 = 26458 + 4326
(*b*) 436483 + 71364 = 71364 + 436483
(*c*) 56436 + 0 = 56436
(*d*) 0 + 364834 = 364834

5. (*a*) The sum of 3 consecutive numbers is equal to 3 times the middle number.
So, 222 + 223 + 224 = 3 × 223 = 669.

(*b*) The sum of 4 consecutive numbers is equal to 2 times the sum of the middle two numbers.
So, 197 + 198 + 199 + 200 = 2 × (198 + 199) = 2 × 397 = 794.

(*c*) The sum of 5 consecutive numbers is equal to 5 times the middle number.
So, 439 + 440 + 441 + 442 + 443 = 5 × 441 = 2205.

(*d*) The sum of 6 consecutive numbers is equal to 3 times the sum of the middle two numbers.
So, 202 + 203 + 204 + 205 + 206 + 207 = 3 × (204 + 205) = 3 × 409 = 1227.

6. (*a*)

		TL	L	TTh	Th	H	T	O
		(1)	(1)	(1)	(1)	(1)	(1)	
Number of toy cars manufactured in 2024	=			5	7	8	9	4
Number of toy cars manufactured in 2025	= +		9	8	7	3	7	9
Total number of toy cars manufactured in both years	=	1	0	4	5	2	7	3

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

(*b*)

		L	TTh	Th	H	T	O
		(1)	(2)	(2)	(1)		
Number of boys passed the examination	=		7	2	5	8	0
Number of girls passed the examination	=		3	7	9	8	7
Number of boys failed the examination	=			7	4	0	0
Number of girls failed the examination	= +			2	5	0	0
Number of students enrolled in the examination	=	1	2	0	4	6	7

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

(*c*)

		L	TTh	Th	H	T	O
		(1)	(1)	(2)	(1)	(1)	
Number of people visited the zoo in January	=		9	7	9	3	2
Number of people visited the zoo in February	=		7	5	3	0	7
Number of people visited the zoo in March	= +	1	0	5	9	7	5
Total number of people visited the zoo in these three months	=	2	7	9	2	1	4

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

(*d*)

		L	TTh	Th	H	T	O
		(1)	(1)				
A postal van has letters	=		7	5	6	0	3
Another van has letters	= +		7	8	3	0	0
Total letters in the two postal vans	=	1	5	3	9	0	3

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

Think Tank (Page 34)

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

Think Tank (Page 34)

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 Tank (Page 35)

Given number = 8 5 2 3 5 5 8 6

Place values of 5s = 5000000, 5000, 500

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 = 80000000, 80

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

1. (*a*)

	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
	0	9	9	1	0	8	1

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

(*b*)

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

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

(*c*)

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

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

(*d*) 72, 44, 065 (Same as above).
(*e*) 12, 56, 702 (Same as above).
(*f*) 56, 00, 306 (Same as above).

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

	L	TTh	Th	H	T	O
	(5)	(14)				
	~~6~~	~~4~~	3	6	4	8
–	1	7	3	6	4	3
	4	7	0	0	0	5

Check

	L	TTh	Th	H	T	O	
	(1)						
	4	7	0	0	0	5	← Difference
+	1	7	3	6	4	3	← Subtrahend
	6	4	3	6	4	8	← Minuend

Thus, 6,43,648 – 1,73,643 = 4,70,005.

(*b*) Arrange the minuend and subtrahend in columns.

	TL	L	TTh	Th	H	T	O
		(7)	(18)		(3)	(13)	
	7	~~8~~	~~8~~	2	~~4~~	~~3~~	6
–	5	2	9	0	3	6	4
	2	5	9	2	0	7	2

Check

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

Thus, 78,82,436 – 52,90,364 = 25,92,072.

(*c*) Arrange the minuend and subtrahend in columns.

	TL	L	TTh	Th	H	T	O
		(9)			(13)		
	(7)	~~(10)~~	(13)	(5)	~~(3)~~	(13)	
	~~8~~	~~0~~	~~3~~	~~6~~	~~4~~	~~3~~	6
–	4	2	9	3	6	7	3
	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	← Difference
+	4	2	9	3	6	7	3	← Subtrahend
	8	0	3	6	4	3	6	← Minuend

Thus, 80,36,436 – 42,93,673 = 37,42,763.

(*d*) 5, 32, 77, 165 (Same as above).

(*e*) 2, 72 ,77, 165 (Same as above).

(*f*) 66, 66, 667 (Same as above).

3. (*a*)

	5	2	**7**	3	**6**	4
–	**1**	1	2	**9**	1	8
	4	**1**	4	4	4	**6**

(*b*)

	6	0	8	**0**	9	0
–	**1**	8	0	5	**0**	8
	4	**2**	**7**	5	8	**2**

(*c*)

	4	7	6	4	**3**	6
–	2	3	9	4	8	**2**
	2	**3**	6	**9**	5	4

(*d*)

	5	7	3	6	**9**	4
–	2	9	4	8	3	**3**
	2	**7**	8	**8**	6	1

(*e*)

	6	7	3	**6**	4	8
–	4	1	**7**	3	4	2
	2	5	6	3	0	**6**

(*f*)

	8	4	**0**	3	6	5
–	**5**	2	9	**6**	**3**	7
	3	**1**	0	7	2	**8**

4. (*a*) 867383 – 0 = **867383**

(*b*) 64361 – **0** = 64361

(*c*) 420805 – 1 = **420804**

(*d*) 996494 – **1** = 996493

(*e*) 7143260 – 7143260 = **0**

(*f*) 243646 – **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~~	~~3~~	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)	~~(3)~~	~~(4)~~	~~(6)~~	~~(7)~~	~~(8)~~	(11)
	9	~~6~~	~~4~~	~~5~~	~~7~~	~~8~~	~~9~~	~~1~~
–		5	4	6	7	8	9	4
	9	0	9	8	9	9	9	7

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

Thus, 96457891 – 5467894 – 201345 = 9,07,88,652.

(*c*) and (*d*) — (Same as above).

6. (*a*)

	TC	C	TL	L	TTh	Th	H	T	O
		(9)	(9)	(9)	(9)	(9)	(9)	(9)	
		~~(10)~~	~~(10)~~	~~(10)~~	~~(10)~~	~~(10)~~	~~(10)~~	~~(10)~~	(10)
Smallest 9-digit number =	~~1~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~
Greatest 7-digit number = –			9	9	9	9	9	9	9
		9	0	0	0	0	0	0	1

Thus, their difference is nine crore one (90000001)

(*b*)

	C	TL	L	TTh	Th	H	T	O
			(16)	(18)				
		(6)	~~(6)~~	~~(8)~~	(15)			
The sum of two numbers =	~~7~~	~~7~~	~~9~~	~~5~~	6	9	7	4
First number = –		8	9	9	5	0	4	0
Other number =	6	8	9	6	1	9	3	4

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

(*c*)

	TL	L	TTh	Th	H	T	O
				(14)	(12)		
			(7)	~~(4)~~	~~(2)~~	(17)	
Number of votes candidate A got =	7	2	~~8~~	~~5~~	~~3~~	~~7~~	8
Number of votes candidate B got = –	7	1	3	7	3	9	5
Difference =	0	1	4	7	9	8	3

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

(*d*)

	L	TTh	Th	H	T	O
					(11)	
		(4)	(10)	(6)	~~(1)~~	(15)
Number of bags of wheat purchased by the government =	8	~~5~~	~~0~~	~~7~~	~~2~~	~~5~~
Number of bags of wheat sold by the government = –	4	0	8	3	6	8
Number of bags left in their stock =	4	4	2	3	5	7

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

(*e*)

	L	TTh	Th	H	T	O
		(14)			(14)	
	(5)	~~(4)~~	(10)	(6)	~~(4)~~	(10)
Number of bricks purchased for construction =	~~6~~	~~5~~	~~0~~	~~7~~	~~5~~	~~0~~
Number of bricks used in a building = –	5	8	5	0	5	1
Number of bricks remained with the contractor =	0	6	5	6	9	9

Thus, 65699 bricks remained with contractor.

(*f*)

	L	TTh	Th	H	T	O
	(8)	(15)				
Anil invested in the business =	~~9~~	~~5~~	5	8	9	0
Sunil invested in the business = −	6	8	2	5	8	0
=	2	7	3	3	1	0

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

Challenge Question (Page 37)

- All the 3-digit palindrome numbers between 101 and 200:
  111, 121, 131, 141, 151, 161, 171, 181, 191, i.e., 9 palindrome numbers.
- All the 4-digit palindrome numbers between 3000 and 4500:
  There are 15 palindrome numbers in this range:
  3003, 3113, 3223, 3333, 3443, 3553, 3663, 3773, 3883, 3993, 4004, 4114, 4224, 4334, 4444.
- Yes, there are 10 palindrome numbers in this range: 10001, 10101, 10201, 10301, 10401, 10501, 10601, 10701, 10801, 10901.

Fast Check (Page 40)

(*a*) $75 \times 31 = 75 \times (30 + 1) = 75 \times 30 + 75 \times 1 = 2250 + 75 = 2325$

(*b*) $99 \times 15 = (100 - 1) \times 15 = 100 \times 15 - 1 \times 15 = 1500 - 15 = 1485$.

Practice Time 2C

1. (*a*)

Step 1. Expand the multiplier. 123 = 100 + 20 + 3
Step 2. Multiply by the ones. 2563 × 3 = 7689
Step 3. Multiply by the tens. 2563 × 20 = 51260
Step 4. Multiply by the hundreds.
2563 × 100 = 256300
Step 5. Add all the partial products.
7689 + 51260 + 256300 = 3,15,249
Thus, 2563 × 123 = 3,15,249.

	L	TTh	Th	H	T	O	
			(1)	(1)			
			(1)	(1)			
			2	5	6	3	
×				1	2	3	← 100 + 20 + 3
	(1)	(1)	(1)	(1)			
			7	6	8	9	← 2563 × 3
		5	1	2	6	0	← 2563 × 20
+	2	5	6	3	0	0	← 2563 × 100
	3	1	5	2	4	9	

(*b*) — (Same as above).

(*c*)

	TL	L	TTh	Th	H	T	O	
				7	8	9	4	
×					3	0	6	← 300 + 0 + 6
			4	7	3	6	4	← 7894 × 6
		0	0	0	0	0	0	← 7894 × 0
+	2	3	6	8	2	0	0	← 7894 × 300
	2	4	1	5	5	6	4	

Thus, 7894 × 306 = 24,15,564.

(*d*)

	C	TL	L	TTh	Th	H	T	O	
					4	8	7	9	2	
×							2	1	6	← 200 + 10 + 6
				2	9	2	7	5	2	← 48792 × 6
				4	8	7	9	2	0	← 48792 × 10
+		9	7	5	8	4	0	0		← 48792 × 200
	1	0	5	3	9	0	7	2		

Thus, 48792 × 216 = 1,05,39,072.

(*e*) to (*h*) — (Same as above).

2. (*a*) 7557 × 10 = 75,570
(*b*) 78051 × 100 = 78,05,100
(*c*) 4655 × 100 = 4,65,500
(*d*) 97,435 × 100 = 97,43,500
(*e*) 7263 × 100 = 7,26,300
(*f*) 5090 × 1000 = 50,90,000

3. (*a*) 5326 × 60 = 60 × 5326
(*b*) 2897 × 0 = 0
(*c*) (100 × 20) × 5 = (100 × 5) × 20
(*d*) 1 × 5566 = 5566
(*e*) (500 + 75) × 16 = 500 × 16 + 75 × 16

4. (*a*) (*iii*) 8753 × 20 = 1,75,060
(*b*) (*iv*) 2 × 5 × 483 = 10 × 483 = 4830
(*c*) (*i*) 4 × 573 × 50 = 2292 × 50 = 1,14,600
(*d*) (*ii*) 10 × 3845 × 10 = 100 × 3845 = 3,84,500
(*e*) (*vi*) 900 × 714 = 9 × 100 × 714
= 6426 × 100 = 6,42,600
(*f*) (*v*) 4000 × 36 = 4 × 1000 × 36 = 1,44,000

5. (*a*) 250 × 8 × 100 = 2000 × 100 = 2,00,000
(*b*) 5 × 195 × 20 = 5 × 20 × 195 = 100 × 195
= 19,500
(*c*) 1500 × 50 × 2 = 1550 × 100 = 1,55,000
(*d*) 400 × 25 × 4 = 4 × 100 × 25 × 4
= 100 × 4 × 100 = 40,000
(*e*) 4365 × 20 × 5 = 4365 × 100 = 4,36,500
(*f*) 10 × 3364 × 10 = 100 × 3364 = 3,36,400
(*g*) 50 × 1000 × 2 = 100 × 1000 = 1,00,000
(*h*) 4 × 6666 × 25 = 6666 × 100 = 6,66,600
(*i*) 2005 × 50 × 20 = 2005 × 1000 = 20,05,000

6. (*a*) 12 × 25
Double of 25 = 50
Half of 12 = 6
So, 12 × 25 = 50 × 6 = 300
(*b*) 24 × 50
Double of 50 = 100
Half of 24 = 12
So, 24 × 50 = 12 × 100 = 1200
(*c*) – (*f*) same as part (*a*) and (*b*)
(*g*) 190 × 50
Double of 50 = 100
Half of 190 = 95
So, 190 × 50 = 95 × 100 = 9500
(*h*) Same as part (*g*).

7. (*a*) 18 × 26 = 18 × (30 – 4) = 18 × 30 – 18 × 4
= 540 – 72 = 468.
(*b*) 12 × 28 = 12 × (30 – 2) = 12 × 30 – 12 × 2
= 360 – 24 = 336.
(*c*) – (*e*) same as part (*a*) and (*b*).
(*f*) 102 × 26 = (100 + 2) × 26 = 100 × 26 + 2 × 26
= 2600 + 52 = 2652.
(*g*) 199 × 99 = 199 × (100 – 1) = 199 × 100 – 199
= 19900 – 199 = 19,701.
(*h*) Same as part (*g*).

8. (*a*) Cost of one ceiling fan = ₹3199
So, cost of 150 ceiling fans = 3199 × 150

	₹		3	1	9	9
×				1	5	0
			0	0	0	0
	1	5	9	9	5	0
+	3	1	9	9	0	0
	₹ 4	7	9	8	5	0

Thus, the cost of 150 ceiling fans = ₹4,79,850
(*b*) Supply of milk in one day from dairy
= 1250 litres
Supply of milk in a leap year from dairy
= 1250 × 366 litres [∵ 1 leap year = 366 days]
= 4,57,500

	₹			1	2	5	0
×					3	6	6
				7	5	0	0
			7	5	0	0	0
+		3	7	5	0	0	0
	₹	4	5	7	5	0	0

Thus, the dairy supplies 4,57,500 litres of milk in a leap year.
(*c*) Number of toys contained in one box = 150
Number of toys contained in 4500 boxes
= 4500 × 150 = 6,75,000 toys

	L	TTh	Th	H	T	O
			4	5	0	0
×				1	5	0
			0	0	0	0
	2	2	5	0	0	0
+	4	5	0	0	0	0
	6	7	5	0	0	0

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

(*d*) Milk sold in one day by the booth
= 1258 litres

Milk sold in the month of December
= 1258 × 31 litres = 38998 litres

	TTh	Th	H	T	O
		1	2	5	8
×				3	1
		1	2	5	8
+	3	7	7	4	0
	3	8	9	9	8

Cost of one litre milk = ₹48

So, cost of 38998 litres milk = 38998 × 48

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

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

Think Tank (Page 44)

The required number is 420 ÷ 2 = 210

Hence, the number is 210.

Think Tank (Page 45)

Life of an inverter battery = 8760 hours

Number of hours in one whole day
= 24 hrs

∴ Number of days the battery will run
= 8760 ÷ 24 days

Thus, the battery will run for 365 days.

```
24)8760(365
 −72
  156
 −144
   120
  −120
     0
```

Practice Time 2D

1. (*a*) 275736 ÷ 9

```
Divisor ---> 9)275736(30637 <--- Quotient
            −27
             057
            − 54
              33
             −27
              66
             −63
               3 <--- Remainder
```

Step 1. 9 > 2, we divide 2-digit number 27 by 9. 9 × 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 × 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 × 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 × 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 × Divisor + Remainder = Dividend

30637 × 9 + 3 = 275736

⇒ 275736 = 275736

Thus, the division is correct.

(*b*) 876048 ÷ 7

```
          Dividend
Divisor ---> 7)876048(125149 <--- Quotient
            −7
             17
            −14
             036
            −35
              010
             −07
               034
              −28
                068
               −63
                 05 <--- Remainder
```

Thus, Quotient = 125149 and Remainder = 5.

Checking:

Quotient × Divisor + Remainder = Dividend

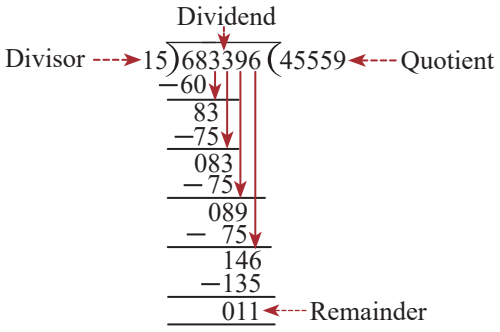
125149 × 7 + 5 = 876048

876043 + 5 = 876048

876048 = 876048

Thus, the divison is correct.

(*c*) 683396 ÷ 15



Thus, Q = 45559 and R = 11.

Checking:

Quotient × Divisor + Remainder = Dividend

45559 × 15 + 11 = 683396

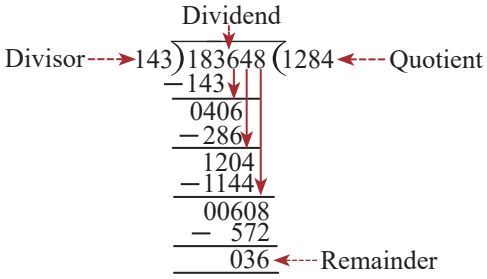
683385 + 11 = 683396

683396 = 683396

Thus, the division is correct.

(*d*) and (*e*) — (Same as above).

(*f*) 183648 ÷ 143



Thus, Q = 1284 and R = 36.

Checking

Quotient × Divisor + Remainder = Dividend

1284 × 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 × Divisor + Remainder

= 75 × 136 + 31

= 10200 + 31

= 10231

Thus, Dividend = 10,231.

(*b*) Divisor = 403, Quotient = 801 and Remainder = 325 (Given)

We know that,

Dividend = Quotient × Divisor + Remainder

= 801 × 403 + 325

= 322803 + 325

= 323128

Thus, Dividend = 3,23,128.

3. (*a*) 789 ÷ 789 = 1

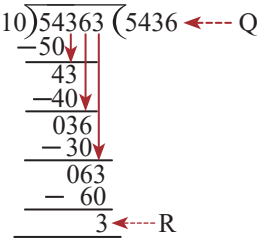
(*b*) 5342 ÷ 1 = 5342

(*c*) 6574 ÷ 6574 = 1

(*d*) 0 ÷ 218 = 0

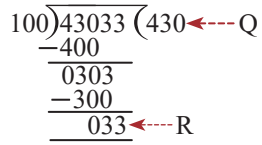
(*e*) 24 × 168 = 4032

4. (*a*) (*iii*) 54363 ÷ 10



Thus, Q = 5436 and R = 3.

(*b*) (*i*) 43033 ÷ 100



Thus Q = 430 and R = 33.

(*c*) (*v*) 921735 ÷ 1000 ⇒ Q = 921 and R = 735

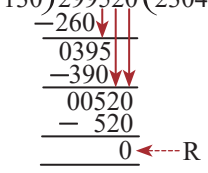
(*d*) (*vi*) 55569 ÷ 100 ⇒ Q = 555 and R = 69

(*e*) (*ii*) 4876 ÷ 10 ⇒ Q = 487 and R = 6

(*f*) (*iv*) 697770 ÷ 1000 ⇒ Q = 697 and R = 770

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

Cost of 1 radio set = ₹299520 ÷ 130 = ₹2304



Thus, cost of 1 radio set is ₹2304.

(*b*) The product of two numbers = 332878

First number = 826

So, second number = 332878 ÷ 826 = 403

826)332878(403 ← Q
−3304
002478
− 2478
0 ← R

Thus, other number = 403

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

Number of people = 437

Amount of money each person got

= ₹98762 ÷ 437 = ₹226

437)98762(226 ← Q
−874
1136
− 874
2622
−2622
0 ← R

Thus, each person got ₹226.

(*d*) Mangoes sold last year = 349300 kg

Mangoes in each box = 35 kg

Number of boxes used throughout the year

= 349300 ÷ 35 = 9980

35)349300(9980 ← Q
−315
0343
− 315
0280
− 280
00
− 00
0 ← R

Thus, he used 9980 boxes throughout the year.

Practice Time 2E

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

10322 $\xrightarrow{\text{rounded to nearest 10000}}$ 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 $\xrightarrow{\text{rounded to nearest 1000}}$ 3000

124 $\xrightarrow{\text{rounded to nearest 100}}$ 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 $\xrightarrow{\text{rounded to nearest 100000}}$ 700000

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

Estimated difference

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

Actual difference

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

The estimated difference is close to the actual difference.

(*d*) 2,56,311 $\xrightarrow{\text{rounded to nearest 100000}}$ 300000

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

Estimated quotient

300000 ÷ 600 = 500

Actual quotient

578)256311(443
−2312
02511
− 2312
01991
− 1734
0257

Thus, estimated quotient = 500

Actual quotient = 443

2. (*a*) Cost of washing machine =

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

Cost of mobile phone =

36,435 $\xrightarrow{\text{rounded to nearest thousand}}$ 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 earphones

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

Difference of the cost of washing machine and earphones = 29,000 – 4,000 = ₹25,000

(*c*) Total amount spent by Varun

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

$$= 6{,}98{,}655 \xrightarrow[\text{nearest thousand}]{\text{rounded to}} 6{,}99{,}000$$

= Thus, Varun spent ₹6,99,000.

3. Estimated quotient

3,25,870 → 300000

(Rounding off to the nearest lakh)

5543 → 6000

(Rounding off to the nearest thousand)

Estimated quotient = 300000 ÷ 6000 = 50

Thus, estimated quotient = 50

4. Estimated sum:

= 483479 + 567891

= 480000 + 570000

= 10,50,000.

Actual sum

	4	8	3	4	7	9
+	5	6	7	8	9	1
1	0	5	1	3	7	0

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

5. $1{,}439 \xrightarrow[\text{nearest } 1{,}000]{\text{rounded to}} 1{,}000$

$784 \xrightarrow[\text{nearest } 100]{\text{rounded to}} 800$

Actual product

				1	4	3	9
×					7	8	4
				5	7	5	6
		1	1	5	1	2	0
+	1	0	0	7	3	0	0
	1	1	2	8	1	7	6

Estimated product

1000 × 800 = 800000

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

6. Number of votes cast in constituency A =

$$23{,}52{,}167 \xrightarrow[\text{nearest ten lakhs}]{\text{rounded to}} 20{,}00{,}000$$

Number of votes cast in constituency B =

$$30{,}14{,}184 \xrightarrow[\text{nearest ten lakhs}]{\text{rounded to}} 30{,}00{,}000$$

Difference between the votes cast in these two constituencies

= 30,00,000 – 20,00,000 = 10,00,000

Practice Time 2F

1. 32 – 8 × 2 = 32 – 16 (Multiplication: 8 × 2)
= 16 (Subtraction: 32 – 16)

2. 18 + 20 ÷ 4 = 18 + 5 (Division: 20 ÷ 4)
= 23 (Addition: 18 + 5)

3. 15 × 10 ÷ 2 = 15 × 5 (Division: 10 ÷ 2)
= 75 (Multiplication: 15 × 5)

4. 35 × 48 + 2024 = 1680 + 2024 (Multiplication: 35 × 48)
= 3704 (Addition: 1680 + 2024)

5. 4025 ÷ 175 + 1362
= 23 + 1362 (Division: 4025 ÷ 175)
= 1385 (Addition: 23 + 1362)

6. 16 – 16 ÷ 2 – 3 = 16 – 8 – 3 (Division: 16 ÷ 2)
= 8 – 3 (Subtraction: 16 – 8)
= 5 (Subtraction: 8 – 3)

7. 8 × 13 – 4 × 15
= 104 – 60 (Multiplication: 8 × 13 and 4 × 15)
= 44 (Subtraction: 104 – 60)

8. 37 – 6 × 4 + 32 ÷ 4
= 37 – 6 × 4 + 8 (Division: 32 ÷ 4)
= 37 – 24 + 8 (Multiplication: 6 × 4)
= 37 + 8 – 24
= 45 – 24 (Addition: 37 + 8)
= 21 (Subtraction: 45 – 24)

9. 30 – 28 + 36 ÷ 2
= 30 – 28 + 18 (Division: 36 ÷ 2)
= 30 + 18 – 28
= 48 – 28 (Addition: 30 + 18)
= 20 (Subtraction: 48 – 28)

10. $96 \div 16 + 34 \times 10 - 13$
$= 6 + 34 \times 10 - 13$ (Division: $96 \div 16$)
$= 6 + 340 - 13$ (Multiplication: 34×10)
$= 346 - 13$ (Addition: $6 + 340$)
$= 333$ (Subtraction: $346 - 13$)

11. $3 \times 4 - 45 \div 9 + 12 \times 5$
$= 3 \times 4 - 5 + 12 \times 5$ (Division: $45 \div 9$)
$= 12 - 5 + 60$ (Multiplication: 3×4 and 12×5)
$= 12 + 60 - 5$
$= 72 - 5$ (Addition: $12 + 60$)
$= 67$ (Subtraction: $72 - 5$)

12. $70 \div 14 \times 6 - 10 \div 5 + 1$
$= 5 \times 6 - 2 + 1$ (Division: $70 \div 14$ and $10 \div 5$)
$= 30 - 2 + 1$ (Multiplication: 5×6)
$= 30 + 1 - 2$
$= 31 - 2$ (Addition: $30 + 1$)
$= 29$ (Subtraction: $31 - 2$)

Practice Time 2G

1. $63 \div [24 - \{15 - (4 \times 3)\}]$
$= 63 \div [24 - \{15 - 12\}]$
(Multiplication: 4×3, in the parentheses)
$= 63 \div [24 - 3]$
(Subtraction: $15 - 12$, in the curly bracket)
$= 63 \div 21$
(Subtraction: $24 - 3$, in the square brackets)
$= 3$ (Division: $63 \div 21$)

2. $[97 + \{30 - (5 \times 2)\}] \times 15$
$= [97 + \{30 - 10\}] \times 15$
(Multiplication: 5×2, in the parentheses)
$= [97 + 20] \times 15$
(Subtraction: $30 - 10$, in the curly brackets)
$= 117 \times 15$
(Addition: $97 + 20$, in the square brackets)
$= 1755$ (Multiplication: 117×15)

3. $17 + [20 \times \{15 - (8 \div 4)\}]$
$= 17 + [20 \times \{15 - 2\}]$
(Division: $8 \div 4$, in the parentheses)
$= 17 + [20 \times 13]$
(Subtraction: $15 - 2$, in the curly bracket)
$= 17 + 260$
(Multiplication: 20×13, in the square brackets)
$= 277$ (Addition: $17 + 260$)

4. $102 \times [72 \div \{65 + 7\}]$
(Division: $84 \div 12$, in the parentheses)
$= 102 \times [72 \div 72]$
(Addition: $65 + 7$, in the curly brackets)
$= 102 \times 1$
(Division: $72 \div 72$, in the square brackets)
$= 102$ (Multiplication: 102×1)

5. $3982 \times \{45 - (90 \div 2)\}$
$= 3982 \times \{45 - 45\}$
(Division: $90 \div 2$, in the parentheses)
$= 3982 \times 0$
(Subtraction: $45 - 45$, in the curly brackets)
$= 0$ (Multiplication: 3982×0)

6. $84 \div [40 - \{15 + (13 - 9)\}]$
$= 84 \div [40 - \{15 + 4\}]$
(Subtraction: $13 - 9$, in the parentheses)
$= 84 \div [40 - 19]$
(Addition: $15 + 4$, in the curly brackets)
$= 84 \div 21$
(Subtraction: $40 - 19$, in the square brackets)
$= 4$ (Division: $84 \div 21$)

7. $[25 \times \{33 - (3 \times 10)\}] \div 3$
$= [25 \times \{33 - 30\}] \div 3$
(Multiplication: 3×10, in the parentheses)
$= [25 \times 3] \div 3$
(Subtraction: $33 - 30$, in the curly brackets)
$= 75 \div 3$
(Multiplication: 25×3, in the square brackets)
$= 25$ (Division: $75 \div 3$)

8. $237 + [764 - \{165 + (132 \div 33)\}]$
$= 237 + [764 - \{165 + 4\}]$
(Division: $132 \div 33$, in the parentheses)
$= 237 + [764 - 169]$
(Addition: $165 + 4$, in the curly brackets)
$= 237 + 595$
(Subtraction: $764 - 169$, in the square brackets)
$= 832$ (Addition: $237 + 595$)

9. $80 + [20 \times \{20 - (10 \div 5)\}]$
$= 80 + [20 \times \{20 - 2\}]$
(Division: $10 \div 5$, in the parentheses)
$= 80 + [20 \times 18]$
(Subtraction: $20 - 2$, in the curly brackets)
$= 80 + 360$
(Multiplication: 20×18, in the square brackets)
$= 440$ (Addition: $80 + 360$)

10. $17 \times [96 + \{30 - (11 + 5)\}]$
$= 17 \times [96 + \{30 - 16\}]$
(Addition: 11 + 5, in the parentheses)
$= 17 \times [96 + 14]$
(Subtraction: 30 – 16, in the curly brackets)
$= 17 \times 110$
(Addition: 96 + 14, in the square brackets)
$= 1870$ (Multiplication: 17 × 110)

Think Tank (Page 51)

(*a*) $7 + 6 \times 8 = 104$
$(7 + 6) \times 8 = 104$
$13 \times 8 = 104$
$104 = 104$
Correct answer is
$(7 + 6) \times 8 = 104$

(*b*) $5 + 3 \times 5 - 5 = 35$
$(5 + 3) \times 5 - 5 = 35$
$8 \times 5 - 5 = 35$
$40 - 5 = 35$
Correct answer is
$(5 + 3) \times 5 - 5 = 35$

Challenge Question (Page 51)

1.

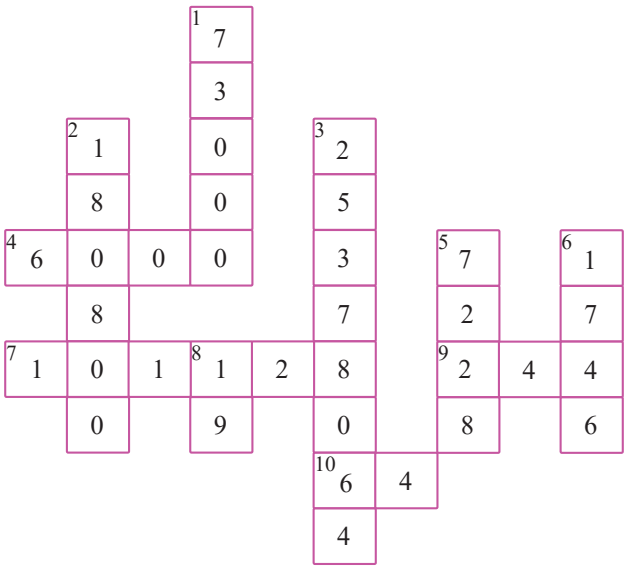
			1	1	1	1
×				1	1	1
			1	1	1	1
		1	1	1	1	0
+	1	1	1	1	0	0
	1	2	3	3	2	1

2. $124\overline{)3\,4\,6\,8\,9\,6\,(2\,7\,9\,7}$

$-2\,4\,8$
$9\,8\,8$
$-\,8\,6\,8$
$1\,2\,0\,9$
$-\,1\,1\,1\,6$
$9\,3\,6$
$-\,8\,6\,8$
$6\,8$

Thus, A = 1

Maths Fun (Page 51)



Maths Connect (Page 52)

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

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 =

	L	TTh	Th	H	T	O
		(17)			(9)	
	(4)	~~(7)~~	(15)	(8)	~~(10)~~	(10)
	~~5~~	~~8~~	~~5~~	~~9~~	~~0~~	~~0~~
–	4	9	9	7	2	9
	0	8	6	1	7	1

Thus, 86171 toys fell short of the target.

(*b*) (*iii*)

$573 \xrightarrow[\text{nearest } 100]{\text{rounded to}} 600$ and $133 \xrightarrow[\text{nearest } 100]{\text{rounded to}} 100$

Estimated product = 600 × 100 = 60000

		6	0	0	
×		1	0	0	
		0	0	0	
	0	0	0	0	
+	6	0	0	0	0
	6	0	0	0	0

Thus, estimated product of 573 and 133 is 60000.

(*c*) (*i*) Cost of a house = ₹1,78,25,194
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

	C	TL	L	TTh	Th	H	T	O
			(7)	(12)				
	1	7	~~8~~	~~2~~	5	1	9	4
–			7	9	5	0	0	0
	1	7	0	3	0	1	9	4

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

(*d*) (*iii*) $11 \div 11 + 11 \times 11$
$= 1 + 11 \times 11$ (Division: $11 \div 11$)
$= 1 + 121$ (Multiplication: 11×11)
$= 122$ (Addition: 1 + 121)

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 =

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

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

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

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

Total amount 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	2	0
	₹	4	0	6	1	1	4	0

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

Amount left with them 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 is left.

4. 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 milk in a day = 1258 litres

Milk booth sells 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.

5. Total loaves of bread = 1,30,893

Number of bakeries = 23

Quantity of loaves of bread each bakery got

= 130893 ÷ 23 = 5691

```
23)130893(5691
 −115↓
  158
 −138↓
   209
  −207↓
    23
   −23
     0
```

Thus, each bakery got 5691 loaves of bread.

6. Distance covered in 175 days = 43400 km

Distance covered in one day = 43400 ÷ 175

```
175)43400(248
 −350↓
  840
 −700↓
  1400
 −1400
     0
```

Thus, distance covered each day is 248 km

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

8. Ranjna reads 128 pages in 2 days

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

Apurv reads 372 pages in 4 days

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

and Nikhil reads 574 pages in 1 week

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

Thus, Apurv reads the fastest.

9. Number of books Yash and his 4 friends each read for the year = 24

Each book has 295 average number of pages.

$\therefore$ Number of pages they all read in total in that year

= 295 × 5 × 24 = 295 × 120 = 35400

Thus, they read 35,400 pages in total that year.

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

11. 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 = $4 \times 5 - 6$

12. 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

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

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

14. (*a*) $125 \div 25 + 3 \times 10 = 5 + 30 = 35$
So, $125 \boxed{\div} 25 + 3 \times 10 = 35$

(*b*) $78 \div 3 + 16 - 4 = 26 + 12 = 38$
So, $78 \div 3 \boxed{+} 16 - 4 = 38$

(*c*) $20 + 5 \times 6 - 30 \div 6 = 20 + 30 - 5 = 50 - 5 = 45$
So, $20 \boxed{+} 5 \times 6 - 30 \div 6 = 45$

(*d*) $46 \div 2 - 8 \times 2 = 23 - 16 = 7$
So, $46 \div 2 \boxed{-} 8 \times 2 = 7$

Mental Maths (Page 54)

1. (*d*) Smallest 4-digit number = 1000
Smallest 5-digit number = 10000
Smallest 6-digit number = 100000
Sum = 1000 + 10000 + 100000
= 111000

2. (*c*) 786200 ÷ 100 = 7862

```
100)786200(7682
 −700↓
  862
 −800↓
  620
 − 600↓
  200
 −  200
    0
```

3. (*a*) 493685 ÷ 1000

```
100)493685(493
 −4000↓
  9368
 − 9000↓
  3685
 − 3000
   685 <---R
```

Remainder = 685

4. (*d*) ÷ 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.
11 is not divisible by 3.
Thus, 533 is not divisible by 3.

(*c*) False. 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.

```
4)134(33
 −12↓
  14
 −12
   2
```

(*d*) True. 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.

$$\begin{array}{r|l} 10 & 1210 \\ -10 & 121 \\ \hline 21 & \\ -20 & \\ \hline 10 & \\ -10 & \\ \hline 0 & \end{array} \qquad \begin{array}{r|l} 11 & 1210 \\ -11 & 110 \\ \hline 11 & \\ -11 & \\ \hline 00 & \\ -00 & \\ \hline 0 & \end{array}$$

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.

There is 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.

There is 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.

$$\begin{array}{r|l} 9 & 1004 \\ -9 & 111 \\ \hline 10 & \\ -9 & \\ \hline 14 & \\ -9 & \\ \hline 5 & \end{array}$$

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.

$$\begin{array}{r|l} 8 & 148 \\ -8 & 18 \leftarrow Q \\ \hline 68 & \\ -64 & \\ \hline 4 & \leftarrow R \end{array}$$

(*b*) Divide 296 by 16.

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

$$\begin{array}{r|l} 16 & 296 \\ -16 & 18 \leftarrow Q \\ \hline 136 & \\ -128 & \\ \hline 08 & \leftarrow R \end{array}$$

(*c*) Divide 342 by 24.

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

$$\begin{array}{r|l} 24 & 342 \\ -24 & 14 \leftarrow Q \\ \hline 102 & \\ -96 & \\ \hline 06 & \leftarrow R \end{array}$$

(*d*) Divide 441 by 21.

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

$$\begin{array}{r|l} 21 & 441 \\ -42 & 21 \leftarrow Q \\ \hline 021 & \\ -21 & \\ \hline 0 & \leftarrow R \end{array}$$

Fast Check (Page 59)

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

Think Tank (Page 60)

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 are even numbers.

(*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 × 1 = 13, 13 × 2 = 26, 13 × 3 = 39, 13 × 4 = 52 and 13 × 5 = 65.
Thus, the first five multiples of 13 are 13, 26, 39, 52 and 65.

(*c*) We know that, 18 × 1 = 18, 18 × 2 = 36, 18 × 3 = 54, 13 × 4 = 72 and 18 × 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 × 48 = 384.
Thus, the 8th multiple of 48 is 384.

(*b*) We know that, 10 × 50 = 500.
Thus, the 10th multiple of 50 is 500.

(*c*) Same as above.

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

(*e*) We know that, 1 × 11 = 11, 3 × 11 = 33, 5 × 11 = 55, 7 × 11 = 77 and 9 × 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 220 are 125, 150, 175 and 200.

(*c*) The multiples of 19 between 140 and 160 is 152.

(*d*) Multiples of 15, which are 2-digit numbers are: 15, 30, 45, 60, 75, 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.

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

(*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.

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

(*c*) If 386 is a multiple of a, then it should be completely divisible by 9.

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

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.

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

Practice Time 3C

1. (*b*) **Divisible by 2.**
Given number = 1605.
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, so it is not divisible by 2.
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.

(*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.

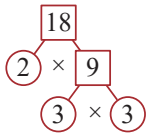
(*b*) 2 is the smallest and only even prime number.

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

(*d*) The prime factors of 32 are 2 × 2 × 2 × 2 × 2.

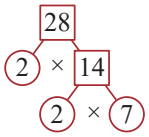
(*e*) 9 is the smallest odd composite number.

3. (*a*)



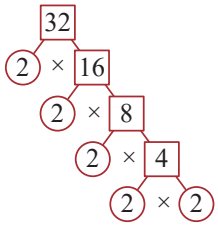
Therefore, 18 = 2 × 3 × 3.

(*b*)



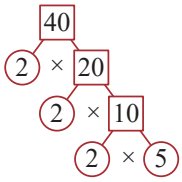
Therefore, 28 = 2 × 2 × 7.

(*c*)



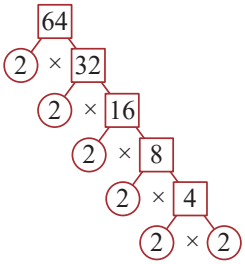
Therefore, 32 = 2 × 2 × 2 × 2 × 2.

(*d*)



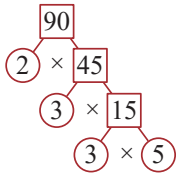
Therefore, 40 = 2 × 2 × 2 × 5.

(*e*)



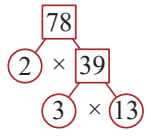
Therefore, 64 = 2 × 2 × 2 × 2 × 2 × 2.

(*f*)



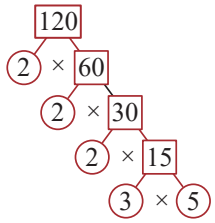
Therefore, 90 = 2 × 3 × 3 × 5.

(*g*)



Therefore, 78 = 2 × 3 × 13.

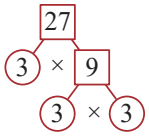
(*h*)



Therefore, 120 = 2 × 2 × 2 × 3 × 5.

4. (*a*)

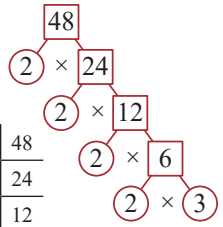
3	27
3	9
3	3
	1



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

(*b*)

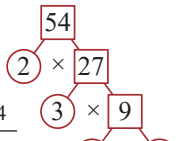
2	48
2	24
2	12
2	6
3	3
	1



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

(*c*)

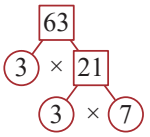
2	54
3	27
3	9
3	3
	1



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

(*d*)

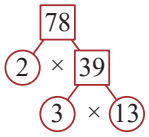
3	63
3	21
7	7
	1



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

(*e*)

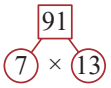
2	78
3	39
13	13
	1



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

(*f*)

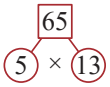
7	91
13	13
	1



Therefore, $91 = 7 \times 13$.

(*g*)

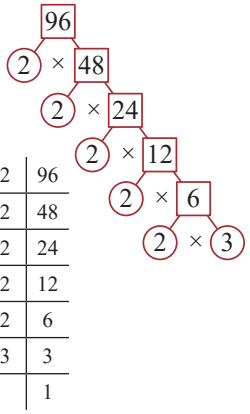
5	65
13	13
	1



Therefore, $65 = 5 \times 13$.

(*h*)

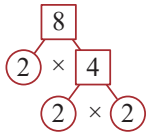
2	96
2	48
2	24
2	12
2	6
3	3
	1



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

(*i*)

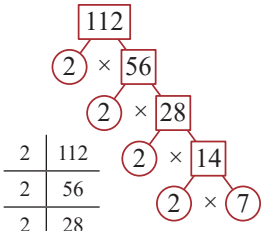
2	8
2	4
2	2
	1



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

(*j*)

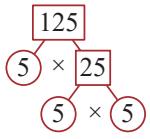
2	112
2	56
2	28
2	14
7	7
	1



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

(*k*)

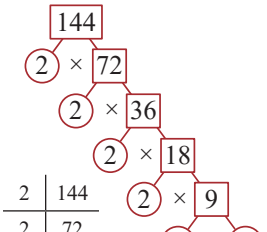
5	125
5	25
5	5
	1



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

(*l*)

2	144
2	72
2	36
2	18
3	9
3	3
	1



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

Think Tank (Page 66)

HCF (As HCF is the biggest factor of two or more numbers)

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, 12 and 24.

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, 20.
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, 11 and 55.

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, 24.
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).

3. (*a*)

3	15
5	5
	1

$15 = 3 \times 5$

2	24
2	12
2	6
3	3
	1

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

The common factors of 15 and 24 is 3.

$\therefore$ HCF of 15 and 24 = 3.

(*b*)

2	18
3	9
3	3
	1

2	90
3	45
3	15
5	5
	1

$18 = 2 \times 3 \times 3$ $90 = 2 \times 3 \times 3 \times 5$

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

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

(*c*)

2	32
2	16
2	8
2	4
2	2
	1

2	40
2	20
2	10
5	5
	1

$32 = 2 \times 2 \times 2 \times 2 \times 2$ $40 = 2 \times 2 \times 2 \times 5$

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

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

(*d*)

2	42
3	21
7	7
	1

2	56
2	28
2	14
7	7
	1

$42 = 2 \times 3 \times 7$ $56 = 2 \times 2 \times 2 \times 7$

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

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

(*e*) and (*f*) — (Same as above).

(*g*)

2	12
2	6
3	3
	1

2	24
2	12
2	6
3	3
	1

2	48
2	24
2	12
2	6
3	3
	1

$12 = 2 \times 2 \times 3$ $24 = 2 \times 2 \times 2 \times 3$ $48 = 2 \times 2 \times 2 \times 2 \times 3$

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

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

(*h*)

2	22
11	11
	1

3	33
11	11
	1

2	66
3	33
11	11
	1

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

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

$\therefore$ HCF of 22, 33 and 66 = 11.

(*i*)

2	24
2	12
2	6
3	3
	1

2	36
2	18
3	9
3	3
	1

2	56
2	28
2	14
7	7
	1

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

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

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

(*j*)

2	22
11	11
	1

2	66
3	33
11	11
	1

3	99
3	33
11	11
	1

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

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

$\therefore$ HCF of 22, 66 and 99 = 11.

(*k*) and (*l*) — (Same as above).

4. (*a*) HCF of 21 and 63.

$$21\overline{)63}(3$$
$$-63$$
$$0$$

Thus, HCF of 21 and 63 is 21.

(*b*) HCF of 35 and 49.

$$35\overline{)49}(1$$
$$-35$$
$$14\overline{)35}(2$$
$$-28$$
$$7\overline{)14}(2$$
$$-14$$
$$0$$

Thus, HCF of 35 and 49 is 7.

(*c*) HCF of 92 and 132.

$$92\overline{)132}(1$$
$$-92$$
$$40\overline{)92}(2$$
$$-80$$
$$12\overline{)40}(3$$
$$-36$$
$$4\overline{)12}(3$$
$$-12$$
$$0$$

Thus, HCF of 92 and 132 is 4.

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

```
36)54(1
 – 36
   18)36(2
    – 36
       0
```

∴ HCF of 36 and 54 = 18.

Now, we find the HCF of 18 and 72.

```
18)72(4
  – 72
     0
```

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

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

```
132)140(1
  – 132
      8)132(16
       – 8↓
         52
       – 48
          4)8(2
          – 8
            0
```

∴ HCF of 132 and 140 = 4.

Now, we find the HCF of 4 and 250.

```
4)250(62
 – 24↓
   10
  – 8
    2)4(2
    – 4
      0
```

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

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

```
165)285(1
  – 165
    120)165(1
      – 120
         45)120(2
           – 90
             30)45(1
              – 30
                15)30(2
                 – 30
                    0
```

∴ HCF of 165 and 285 = 15.

Now, we find the HCF of 15 and 205.

```
15)205(13
 – 15↓
    55
 –  45
    10)15(1
     – 10
        5)10(2
        – 10
           0
```

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

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

```
164)180(1
  – 164
     16)164(10
      – 160
          4)16(4
          – 16
             0
```

∴ HCF of 164 and 180 = 4.

Now, we find the HCF of 4 and 112.

```
4)112(28
 – 8↓
   32
 – 32
    0
```

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

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

```
285)350(1
  – 285
     65)285(4
      – 260
         25)65(2
          – 50
            15)25(1
             – 15
               10)15(1
                – 10
                   5)10(2
                   – 10
                      0
```

∴ HCF of 285 and 300 = 5.

Now, we find the HCF of 5 and 1875.

```
5)1875(375
 – 15↓
    37
  – 35↓
     25
   – 25
      0
```

Thus, HCF of 285, 350 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.

2	1320
2	660
2	330
3	165
5	55
11	11
	1

2	1480
2	740
2	370
5	185
37	37
	1

Factors of 1320 = 2 × 2 × 2 × 3 × 5 × 11
Factors of 1480 = 2 × 2 × 2 × 5 × 37
The common factors of 1320 and 1480 are 2, 2, 2 and 5.
So, HCF of 1320 and 1480 = 2 × 2 × 2 × 5 = 40
Thus, the greatest number of baskets required is 40.

6. The largest 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.

2	448
2	224
2	112
2	56
2	28
2	14
7	7
	1

2	560
2	280
2	140
2	70
5	35
7	7
	1

2	920
2	460
2	230
5	115
23	23
	1

Factors of 448 = 2 × 2 × 2 × 2× 2 × 2 × 7
Factors of 560 = 2 × 2 × 2 × 2 × 5 × 7
Factors of 920 = 2 × 2 × 2 × 5 × 23
The common factors of 448, 560 and 920 are 2, 2 and 2.
So, HCF of 448, 560 and 920 = 2 × 2 × 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.

2	220
2	110
5	55
11	11
	1

2	336
2	168
2	84
2	42
3	21
7	7
	1

Factors of 220 = 2 × 2 × 5 × 11
Factors of 336 = 2 × 2 × 2 × 2 × 3 × 7
The common factors of 220 and 336 are 2 and 2.
So, HCF of 220 and 336 = 2 × 2 = 4
Thus, the capacity should the container to take out the maximum amount of oil from both the drums is 4 litres.

Challenge Question (Page 70)

To solve this, we need to find the HCF of 132, 176 and 264.
132 = 2 × 2 × 3 × 11; 176 = 2 × 2 × 2 × 2 × 11 and 264 = 2 × 2 × 2 × 3 × 11
So, the greatest number of trees planted in each row = 2 × 2 × 11 = 44.

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 110 are 110, 220, 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*) to (*l*) — (Same as above).

3. (*a*) We write the prime factorisation of each number.
$14 = 2 \times 7$
$17 = 1 \times 17$
Thus, LCM of 14 and 17 is $2 \times 7 \times 17 = 238$.

2	14
7	7
	1

17	17
	1

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

$51 = 3 \times 17$

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

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

3	51
17	17
	1

2	54
3	27
3	9
3	3
	1

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

$78 = 2 \times 3 \times 13$

$82 = 2 \times 41$

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

2	78
3	39
13	13
	1

2	82
41	41
	1

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

$25 = 5 \times 5$

$75 = 3 \times 5 \times 5$

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

5	25
5	5
	1

3	75
5	25
5	5
	1

(*e*) and (*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
3	9
3	3
	1

2	20
2	10
5	5
	1

2	32
2	16
2	8
2	4
2	2
	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 $2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 1440$.

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

$12 = 2 \times 2 \times 3$

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

$30 = 2 \times 3 \times 5$

2	12
2	6
3	3
	1

2	16
2	8
2	4
2	2
	1

2	30
3	15
5	5
	1

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

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

(*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
7	7
	1

2	24
2	12
2	6
3	3
	1

2	36
2	18
3	9
3	3
	1

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

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

$= 504$.

(*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

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

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

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

LCM = 2 × 2 × 2 × 2 × 3 × 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

LCM = 2 × 3 × 3 × 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

LCM = 2 × 3 × 3 × 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

LCM = 2 × 2 × 2 × 2 × 2 × 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

LCM = 2 × 5 × 7 × 7 = 490.

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

LCM of 42 and 77,

42 = 2 × 3 × 7

77 = 7 × 11

LCM = 2 × 3 × 7 × 11 = 462 seconds

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

= 7 min (approx)

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

(*a*) Second time:

First time they flash together + 7 min

= 10:45 p.m. + 7 min

or 10:52 p.m

(*b*) Fifth time:

First time they flash together

+ (4 × 462) seconds

[∵ First time + 4 more times = 5 times]

= 10:45 p.m. + (1848 ÷ 60) min

or 11:15 p.m.

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

LCM = 2 × 2 × 2 × 3

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 × 2 × 2 × 3

36 = 2 × 2 × 3 × 3

LCM = 2 × 2 × 2 × 3 × 3

= 72 min

= (60 min + 12 min)

So, at (8:15 a.m. + 60 min + 12 min)

= 8 : 15 am + 1 h + 12 min

= 9:27 am

Thus, at 9:27 a.m. they will ring together.

2	24
2	12
2	6
3	3
	1

2	36
2	18
3	9
3	3
	1

8. To find the required number, first we find the LCM of 20, 25 and 35,

So, LCM = 5 × 5 × 4 × 7 = 700

Thus, the smallest number that, when divided by 20, 25, and 35, leaves a remainder of 5 in each case = 700 + 5 = 705.

5	20,	25,	35
5	4,	5,	7
4	4,	1,	7
7	1,	1,	7
	1,	1,	1

Practice Time 3G

1. (*a*) Given that, HCF = 12,

Product of two numbers = 324.

We know that,

HCF × LCM = Product of two numbers.

Here, 12 × LCM = 324

So, LCM = $\frac{324}{12}$ = 27.

(*b*) Given that, HCF = 4, LCM = 252

We know that,

HCF × LCM = Product of two numbers.

Here, 4 × 252 = Product of two numbers.

So, Product of two numbers = 1008.

(*c*) Given, LCM = 72,

Product of two numbers = 864.

We know that,

HCF × LCM = Product of two numbers.

Here, HCF × 72 = 864.

So, HCF = $\frac{864}{72}$ = 12.

(*d*) Given, HCF = 50, LCM = 300.

We know that,

HCF × LCM = Product of two numbers.

50 × 300 = Product of two numbers.

Product of two numbers = 15000.

2. Given that, Product of numbers = 225, HCF = 9.

We know that,

HCF × LCM = Product of two numbers.

Here, 9 × LCM = 225.

So, LCM = $\frac{225}{9}$ = 25.

Thus, LCM = 25.

3. Given that, HCF = 9,

LCM = 54 and one number = 27.

We know that, HCF × LCM = 1st number × 2nd number.

Here, 9 × 54 = 27 × 2nd number.

So, 2nd number = $\frac{9 \times 54}{27} = \frac{486}{27}$.

2nd number = 18.

Thus, the other number is 18.

4. Given that, Product of two numbers = 450

HCF = 15.

We know that, HCF × LCM = Product of two numbers.

Here, 15 × LCM = 450

So, LCM = $\frac{450}{15}$ = 30

Thus, LCM = 30

5. Given, LCM = 120,

Product of two numbers = 1800.

We know that, HCF × LCM = Product of two numbers.

Here, HCF × 120 = 1800.

So, HCF = $\frac{1800}{120}$ = 15.

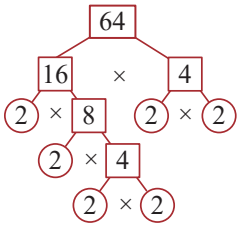
Mental Maths (Page 74)

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 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

LCM = 2 × 2 × 2 × 3 × 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.

$\therefore$ Number to 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

60)2497(13 ← Q
– 240↓
0097
– 60
37 ← R

LCM = 2 × 2 × 3 × 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,

LCM = 2 × 2 × 7 × 9 × 11 = 2772.

$\therefore$ Required LCM = 2772 seconds = $\frac{2772}{60}$ min

= 46 min 12 second.

60)2772(46 ← min
– 240↓
0372
– 360
12 ← sec

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 ÷ 4 = 18.

Thus, he can arrange them in 18 rows to meet the requirement.

4)72(18
– 4↓
32
32
0

3. Number of plants of four different varieties = 36.

Each row having the same type of plants.

$\therefore$ Number of plants will be planted in each row

= 36 ÷ 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 → 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.

Sum of odd places = 5 + 2 + 5 = 12

Sum of even places = 7 + 2 + 3 = 12.

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.

LCM of 40, 50, 60 = 2 × 2 × 2 × 3 × 5 × 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.

Breadth of living room = 3 m 50 cm = 350 cm.

Dimension of the largest square tile that can be fixed on the floor *i.e.*, HCF of 670 and 350 = 10.

350)670(1
– 350
320)350(1
– 320
30)320(10
– 30↓
20)30(1
– 20
10)20(2
– 20
0

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.

3	75,	60,	105
5	25,	20,	35
5	5,	4,	7
2	1,	4,	7
2	1,	2,	7
7	1,	1,	7
	1,	1,	1

$\therefore$ LCM = 3 × 5 × 5 × 2 × 2 × 7

= 2100 cm or 21 m.

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.

$$\begin{array}{r} 30\overline{)48}(1 \\ -30 \\ \hline 18\overline{)30}(1 \\ -18 \\ \hline 12\overline{)18}(1 \\ -12 \\ \hline 6\overline{)12}(2 \\ -12 \\ \hline 0 \end{array}$$

HCF of 30 and 48 = 6

Now, we find the HCF of 6 and 84.

$$\begin{array}{r} 6\overline{)84}(14 \\ -6\downarrow \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$$

∴ HCF of 30, 48 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).

∴ LCM = 2 × 2 × 2 × 2 × 3 × 5

= 240 sec.

$= \frac{240}{60}$ min = 4 min.

2	60,	80,	120
2	30,	40,	60
2	15,	20,	30
2	15,	10,	15
3	15,	5,	15
5	5,	5,	5
	1,	1,	1

If they change simultaneously at 12 noon,

then they will change simultaneously again at

= 12 noon + 4 min.

= 12:04 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.

HCF of 48 and 32 = 16

$$\begin{array}{r} 32\overline{)48}(1 \\ -32 \\ \hline 16\overline{)32}(2 \\ -32 \\ \hline 0 \end{array}$$

Number of boys in each team $= \frac{32}{16} = 2.$

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.

11. Given that, HCF = 44, LCM = 264,

First number = 2 × 44 + 0 = 88.

[∵ Dividend = Divisor]

We know that, HCF × LCM = First number × second number.

Here, 44 × 264 = 88 × 2nd number

So, 2nd number $= \frac{44 \times 264}{88} = 132.$

Thus, second number is 132.

12. (*a*) HCF of 37 and 29

$$\begin{array}{r} 29\overline{)37}(1 \\ -29 \\ \hline 8\overline{)29}(3 \\ -24 \\ \hline 5\overline{)8}(1 \\ -5 \\ \hline 3\overline{)5}(1 \\ -3 \\ \hline 2\overline{)3}(1 \\ -2 \\ \hline 1\overline{)2}(1 \\ -2 \\ \hline 0 \end{array}$$

∴ HCF of 37 and 29 = 1.

LCM of 37 and 29.

29	37,	29
37	37,	1
	1,	1

∴ LCM of 37 and 29 = 29 × 37 = 1073.

HCF × LCM = Ist no. × IInd no.

1 × 1073 = 37 × 29

1073 = 1073.

Hence, verified

(*b*) HCF of 70 and 168

$$\begin{array}{r} 70\overline{)168}(2 \\ -140 \\ \hline 28\overline{)70}(2 \\ -56 \\ \hline 14\overline{)28}(2 \\ -28 \\ \hline 0 \end{array}$$

∴ HCF of 70 and 168 = 14.

LCM of 70 and 168.

2	70, 168
2	35, 84
2	35, 42
3	35, 21
5	35, 7
7	7, 7
	1, 1

$= 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 840$

$\therefore$ LCM of 70 and 168 = 840.

We know that HCF × LCM = 1st number × 2nd number.

$$14 \times 840 = 70 \times 168$$

$$\Rightarrow \quad 11760 = 11760$$

Hence, verified

Challenge Question (Page 77)

1. Let ones digit = 1

Given, ones and hundreds digits are interchanged.

Hundreds digit = 1

Sum of the digits = 5

$\therefore$ 1 + tens digit + 1 = 5

$\therefore$ Tens digit = 5 – 2 = 3

Thus, the required number is 131. (Answer may vary)

2. There are 360 erasers and 456 sharpeners. The greatest number of articles possible in each pile = HCF of 360 and 456.

$360\overline{)456}(1$
-360
$96\overline{)360}(3$
-288
$72\overline{)96}(1$
-72
$24\overline{)72}(3$
-72
0

$\therefore$ HCF of 360 and 456 is 24.

The number of piles formed $= \frac{360}{24} + \frac{456}{24}$

$= 15 + 19 = 34$ 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

$\therefore \frac{3}{4} - \frac{1}{2} = \frac{3-2}{4} = \frac{1}{4}$ 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 Tank (Page 83)

We are looking for two numbers that add up to 15 and multiply to 54. Let's look at the factors of 54:

- 1×54 (Sum = 55)
- 2×27 (Sum = 29)
- 3×18 (Sum = 21)
- 6×9 (Sum = 15) — this is our pair!

Since the fraction is a proper fraction, the smaller number must be the numerator.

So, the required fraction is $\frac{6}{9}$

And the two fractions equivalent to $\frac{6}{9}$ are $\frac{6\times2}{9\times2} = \frac{12}{18}$ and $\frac{6\times3}{9\times3} = \frac{18}{27}$ (Answer may vary)

Think Tank (Page 83)

Yes. A unit fraction is always in its simplest form.

Practice Time 4A

1. $\because$ 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 remainder = 1.

$$\begin{array}{r} 4\overline{)17}(4 \\ -16 \\ \hline 1 \end{array}$$

Therefore, the required mixed fraction = $4\frac{1}{4}$

(*b*) Divide the numerator 19 by the denominator 4.

Here, quotient = 4 and remainder = 3.

$$\begin{array}{r} 4\overline{)19}(4 \\ -16 \\ \hline 3 \end{array}$$

Therefore, the required mixed fraction = $4\frac{3}{4}$.

(*c*) Divide the numerator 29 by the denominator 5.

Here, quotient = 5 and remainder = 4.

$$\begin{array}{r} 5\overline{)29}(5 \\ -25 \\ \hline 4 \end{array}$$

Therefore, the required mixed fraction = $5\frac{4}{5}$.

(*d*) Divide the numerator 26 by the denominator 8.

Here, quotient = 3 and remainder = 2.

$$\begin{array}{r} 8\overline{)26}(3 \\ -24 \\ \hline 2 \end{array}$$

Therefore, the required mixed fraction

$= 3\frac{2}{8} = 3\frac{1}{4}$.

(*e*) Divide the numerator 32 by the denominator 6.

Here, quotient = 5 and remainder = 2.

$$\begin{array}{r} 6\overline{)32}(5 \\ -30 \\ \hline 2 \end{array}$$

Therefore, the required mixed fraction

$= 5\frac{2}{6} = 5\frac{1}{3}$.

7. (*a*) We have,

$\frac{1}{5} = \frac{1\times 2}{5\times 2} = \frac{2}{10}; \frac{1}{5} = \frac{1\times 3}{5\times 3} = \frac{3}{15};$

$\frac{1}{5} = \frac{1\times 4}{5\times 4} = \frac{4}{20}; \frac{1}{5} = \frac{1\times 5}{5\times 5} = \frac{5}{25};$

$\frac{1}{5} = \frac{1\times 6}{5\times 6} = \frac{6}{30}$

Hence, $\frac{2}{10}, \frac{3}{15}, \frac{4}{20}, \frac{5}{25}$ and $\frac{6}{30}$ are first five equivalent fractions of $\frac{1}{5}$.

(*b*) We have,

$\frac{1}{4} = \frac{1\times 2}{4\times 2} = \frac{2}{8}; \frac{1}{4} = \frac{1\times 3}{4\times 3} = \frac{3}{12};$

$\frac{1}{4} = \frac{1\times 4}{4\times 4} = \frac{4}{16}; \frac{1}{4} = \frac{1\times 5}{4\times 5} = \frac{5}{20};$

$\frac{1}{4} = \frac{1\times 6}{4\times 6} = \frac{6}{24}$.

Hence, $\frac{2}{8}, \frac{3}{12}, \frac{4}{16}, \frac{5}{20}$ and $\frac{6}{24}$ are first five equivalent fractions of $\frac{1}{4}$.

(*c*) We have,

$\frac{2}{7} = \frac{2 \times 2}{7 \times 2} = \frac{4}{14}$; $\frac{2}{7} = \frac{2 \times 3}{7 \times 3} = \frac{6}{21}$;

$\frac{2}{7} = \frac{2 \times 4}{7 \times 4} = \frac{8}{28}$; $\frac{2}{7} = \frac{2 \times 5}{7 \times 5} = \frac{10}{35}$;

$\frac{2}{7} = \frac{2 \times 6}{7 \times 6} = \frac{12}{42}$.

Hence, $\frac{4}{14}$, $\frac{6}{21}$, $\frac{8}{28}$, $\frac{10}{35}$ and $\frac{12}{42}$ are first five equivalent fractions of $\frac{2}{7}$.

(*d*) We have,

$\frac{8}{11} = \frac{8 \times 2}{11 \times 2} = \frac{16}{22}$; $\frac{8}{11} = \frac{8 \times 3}{11 \times 3} = \frac{24}{33}$;

$\frac{8}{11} = \frac{8 \times 4}{11 \times 4} = \frac{32}{44}$; $\frac{8}{11} = \frac{8 \times 5}{11 \times 5} = \frac{40}{55}$;

$\frac{8}{11} = \frac{8 \times 6}{11 \times 6} = \frac{48}{66}$.

Hence, $\frac{16}{22}$, $\frac{24}{33}$, $\frac{32}{44}$, $\frac{40}{55}$ and $\frac{48}{66}$ are first five equivalent fractions of $\frac{8}{11}$.

(*e*) We have,

$\frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10}$; $\frac{2}{5} = \frac{2 \times 3}{5 \times 3} = \frac{6}{15}$;

$\frac{2}{5} = \frac{2 \times 4}{5 \times 4} = \frac{8}{20}$; $\frac{2}{5} = \frac{2 \times 5}{5 \times 5} = \frac{10}{25}$;

$\frac{2}{5} = \frac{2 \times 6}{5 \times 6} = \frac{12}{30}$.

Hence, $\frac{4}{10}$, $\frac{6}{15}$, $\frac{8}{20}$, $\frac{10}{25}$ and $\frac{12}{30}$ are first five equivalent fractions of $\frac{2}{5}$.

8. (*a*) $\frac{16}{80} \div \frac{2}{2} = \frac{\boxed{8}}{40} \div \frac{2}{2} = \frac{4}{\boxed{20}}$

(*b*) $\frac{12}{32} \div \frac{4}{4} = \frac{3}{\boxed{8}}$

(*c*) $\frac{3}{11} \times \frac{5}{5} = \frac{\boxed{15}}{55}$

(*d*) $\frac{4}{9} \times \frac{7}{7} = \frac{\boxed{28}}{63}$

(*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*) $\frac{15}{75} \div \frac{3}{3} = \frac{\boxed{5}}{25} \div \frac{5}{5} = \frac{\boxed{1}}{5} \times \frac{3}{3} = \frac{3}{\boxed{15}}$

(*g*) $\frac{36}{60} \div \frac{6}{6} = \frac{\boxed{6}}{10} \times \frac{2}{2} = \frac{12}{\boxed{20}} \div \frac{4}{4} = \frac{3}{\boxed{5}}$

9. (*a*) $\frac{5}{7} \times \frac{4}{4} = \frac{20}{28}$ (*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	4
2	2
	1

2	24
2	12
2	6
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 $= 2 \times 2 \times 2 = 8$.

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
5	5
	1

2	20
2	10
5	5
	1

Clearly, $15 = 3 \times 5$ and $20 = 2 \times 2 \times 5$.

Therefore, HCF of 15 and 20 $= 5$.

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	4
2	2
	1

2	10
5	5
	1

Clearly, $8 = 2 \times 2 \times 2$ and $10 = 2 \times 5$.

Therefore, HCF of 8 and 10 $= 2$.

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
2	6
3	3
	1

3	15
5	5
	1

Clearly, $12 = 2 \times 2 \times 3$ and $15 = 3 \times 5$.

Therefore, HCF of 12 and 15 = 3.

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	8
2	4
2	2
	1

2	34
17	17
	1

Clearly, $16 = 2 \times 2 \times 2 \times 2$ and $34 = 2 \times 17$.

Therefore, HCF of 16 and 34 = 2.

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 (*j*) — (Same as above).

Think Tank (Page 85)

Comparing the numerators of $\frac{2}{9}$ and $\frac{5}{9}$, we have $2 < 5$.

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 $\frac{3}{7}$.

5	5, 7
7	1, 7
	1, 1,

LCM of 5 and 7 = $5 \times 7 = 35$.

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, $28 > 15$, $\frac{28}{35} > \frac{15}{35}$

Thus, $\frac{4}{5} \boxed{>} \frac{3}{7}$

(*b*) Given fractions are $\frac{3}{11}$ and $\frac{3}{9}$.

3	9, 11
3	3, 11
11	1, 11
	1, 1,

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, $27 < 33$, $\frac{27}{99} < \frac{33}{99}$.

Thus, $\frac{3}{11} \boxed{<} \frac{3}{9}$.

(*c*) Given fractions are $\frac{3}{5}$ and $\frac{6}{10}$.

5	5, 10
2	1, 2
	1, 1,

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 $3\frac{3}{5} = \frac{3 \times 5 + 3}{5} = \frac{18}{5}$.

7	7, 5
5	1, 5
	1, 1,

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, $2\frac{4}{7} \boxed{<} 3\frac{3}{5}$.

(*e*) Given mixed fractions are $2\frac{4}{5}$ and $2\frac{4}{13}$.

$2\frac{4}{5} = \frac{2\times5+4}{5} = \frac{10+4}{5} = \frac{14}{5}$,

$2\frac{4}{13} = \frac{2\times13+4}{13} = \frac{30}{13}$.

5	5, 13
13	1, 13
	1, 1,

LCM of 5 and 13 = $5 \times 13 = 65$.

Therefore, $\frac{14}{5} = \frac{14\times13}{5\times13} = \frac{182}{65}$ and

$\frac{30}{13} = \frac{30\times5}{13\times5} = \frac{150}{65}$.

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 $5\frac{1}{4}$.

$5\frac{1}{6} = \frac{5\times6+1}{6} = \frac{31}{6}$ and

$5\frac{1}{4} = \frac{5\times4+1}{4} = \frac{21}{4}$.

2	6, 4
2	3, 2
3	3, 1
	1, 1

LCM of 6 and 4 = $2 \times 2 \times 3 = 12$.

Therefore, $\frac{31}{6} = \frac{31\times2}{6\times2} = \frac{62}{12}$ and

$\frac{21}{4} = \frac{21\times3}{4\times3} = \frac{63}{12}$.

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

2	8, 7
2	4, 7
2	2, 7
7	1, 7
	1, 1

Now, $\frac{3}{8} = \frac{3\times7}{8\times7} = \frac{21}{56}$ and

$\frac{3}{7} = \frac{3\times8}{7\times8} = \frac{24}{56}$.

Clearly, $21 < 24$. So, $\frac{21}{56} < \frac{24}{56}$.

$\therefore \frac{3}{8} < \frac{3}{7}$. Thus $\frac{3}{7}$ is 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.

11	13, 11
13	13, 11
	1, 1

Now, $\frac{2}{13} = \frac{2\times11}{13\times11} = \frac{22}{143}$ and

$\frac{4}{11} = \frac{4\times13}{11\times13} = \frac{52}{143}$.

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	10, 20
2	5, 10
5	5, 5
	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.*, $\frac{10}{20} > \frac{4}{20}$.

Thus, $\frac{5}{10}$ 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.

2	4, 6, 3, 2
2	2, 3, 3, 1
3	1, 3, 3, 1
	1, 1, 1, 1

Then, $\frac{3}{4} = \frac{3 \times 3}{4 \times 3} = \frac{9}{12}$.

$\frac{5}{6} = \frac{5 \times 2}{6 \times 2} = \frac{10}{12}$.

$\frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12}$.

$\frac{1}{2} = \frac{1 \times 6}{2 \times 6} = \frac{6}{12}$.

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

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

2	9, 6, 3, 27
3	9, 3, 3, 27
3	3, 1, 1, 9
3	1, 1, 1, 3
	1, 1, 1, 1

Then, $\frac{7}{9} = \frac{7 \times 6}{9 \times 6} = \frac{42}{54}$.

$\frac{5}{6} = \frac{5 \times 9}{6 \times 9} = \frac{45}{54}$.

$\frac{2}{3} = \frac{2 \times 18}{3 \times 18} = \frac{36}{54}$.

$\frac{17}{27} = \frac{17 \times 2}{27 \times 2} = \frac{34}{54}$.

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

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

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

Then, $\frac{7}{8} = \frac{7 \times 6}{8 \times 6} = \frac{42}{48}$.

$\frac{5}{12} = \frac{5 \times 4}{12 \times 4} = \frac{20}{48}$.

$\frac{15}{16} = \frac{15 \times 3}{16 \times 3} = \frac{45}{48}$.

$\frac{17}{24} = \frac{17 \times 2}{24 \times 2} = \frac{34}{48}$.

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.

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

2	5, 10, 15, 2
3	5, 5, 15, 1
5	5, 5, 5, 1
	1, 1, 1, 1

Then, $\frac{2}{5} = \frac{2 \times 6}{5 \times 6} = \frac{12}{30}$.

$\frac{3}{10} = \frac{3 \times 3}{10 \times 3} = \frac{9}{30}$.

$\frac{7}{15} = \frac{7 \times 2}{15 \times 2} = \frac{14}{30}$.

$\frac{1}{2} = \frac{1 \times 15}{2 \times 15} = \frac{15}{30}$

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*) $\frac{7}{12} + \frac{11}{12} = \frac{7+11}{12} = \frac{18}{12}$.

$\frac{18}{12} = \frac{18 \div 6}{12 \div 6} = \frac{3}{2} = 1\frac{1}{2}$.

$2\overline{)3(1}$
-2
$\overline{1}$

(*c*) $\frac{3}{10} + \frac{7}{20} + \frac{1}{5}$.

Here, LCM of 10, 20 and $5 = 2 \times 2 \times 5 = 20$.

2	10, 20, 5
2	5, 10, 5
5	5, 5, 5
	1, 1, 1

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*) $2\frac{3}{7} + 1\frac{5}{14} = \frac{2 \times 7 + 3}{7} + \frac{1 \times 14 + 5}{14}$

$= \frac{17}{7} + \frac{19}{14}$.

7	7, 14
2	1, 2
	1, 1

Here, LCM of 7 and $14 = 7 \times 2 = 14$.

Therefore, $\frac{17}{7} + \frac{19}{14} = \frac{17 \times 2}{7 \times 2} + \frac{19 \times 1}{14 \times 1}$

$= \frac{34}{14} + \frac{19}{14} = \frac{34+19}{14}$

$= \frac{53}{14} = 3\frac{11}{14}$.

$14\overline{)53(3}$
-42
$\overline{11}$

(*e*) $2 + 1\frac{1}{6} + \frac{1}{8} = 2 + \frac{1 \times 6 + 1}{6} + \frac{1}{8}$

$= \frac{2}{1} + \frac{7}{6} + \frac{1}{8}$

Here, LCM of 6 and 8

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

2	6, 8
2	3, 4
2	3, 2
3	3, 1
	1, 1

Therefore, $\frac{2}{1} + \frac{7}{6} + \frac{1}{8}$

$= \frac{2 \times 24}{1 \times 24} + \frac{7 \times 4}{6 \times 4} + \frac{1 \times 3}{8 \times 3}$

$= \frac{48}{24} + \frac{28}{24} + \frac{3}{24} = \frac{48+28+3}{24}$

$= \frac{79}{24} = 3\frac{7}{24}$.

$24\overline{)79(3}$
-72
$\overline{7}$

(*f*) $2\frac{5}{6} + 1\frac{2}{3} + \frac{1}{4} = \frac{2 \times 6 + 5}{6} + \frac{1 \times 3 + 2}{3} + \frac{1}{4}$

$= \frac{17}{6} + \frac{5}{3} + \frac{1}{4}$.

Here, LCM of 6, 3 and $4 = 2 \times 2 \times 3 = 12$.

Therefore, $\frac{17}{6} + \frac{5}{3} + \frac{1}{4}$

$= \frac{17 \times 2}{6 \times 2} + \frac{5 \times 4}{3 \times 4} + \frac{1 \times 3}{4 \times 3}$

2	6, 3, 4
2	3, 3, 2
3	3, 3, 1
	1, 1, 1

$= \frac{34}{12} + \frac{20}{12} + \frac{3}{12} = \frac{34+20+3}{12} = \frac{57}{12}$

$= \frac{57 \div 3}{12 \div 3} = \frac{19}{4} = 4\frac{3}{4}$.

$4\overline{)19(4}$
-16
$\overline{3}$

(*g*) $2\frac{1}{5} + 3 + 1\frac{4}{9} = \frac{2 \times 5 + 1}{5} + 3 + \frac{1 \times 9 + 4}{9}$

$= \frac{11}{5} + \frac{3}{1} + \frac{13}{9}$.

Here, LCM of 5 and 9

$= 3 \times 3 \times 5 = 45.$

3	5, 9
3	5, 3
5	5, 1
	1, 1

Therefore, $\frac{11}{5} + \frac{3}{1} + \frac{13}{9}$

$$= \frac{11 \times 9}{5 \times 9} + \frac{3 \times 45}{1 \times 45} + \frac{13 \times 5}{9 \times 5}$$

$$= \frac{99}{45} + \frac{135}{45} + \frac{65}{45} = \frac{99 + 135 + 65}{45}$$

$$= \frac{299}{45} = 6\frac{29}{45}.$$

$45\overline{)299}\,(6$
-270
29

(*h*) $3\frac{7}{8} + 5\frac{5}{12} + 2\frac{3}{4}$

$$= \frac{3 \times 8 + 7}{8} + \frac{5 \times 12 + 5}{12} + \frac{2 \times 4 + 3}{4}$$

$$= \frac{31}{8} + \frac{65}{12} + \frac{11}{4}.$$

Here, LCM of 8, 12 and 4 = $2 \times 2 \times 2 \times 3 = 24$.

2	8, 12, 4
2	4, 6, 2
2	2, 3, 1
3	1, 3, 1
	1, 1, 1

Therefore, $\frac{31}{8} + \frac{65}{12} + \frac{11}{4}$

$$= \frac{31 \times 3}{8 \times 3} + \frac{65 \times 2}{12 \times 2} + \frac{11 \times 6}{4 \times 6}$$

$$= \frac{93}{24} + \frac{130}{24} + \frac{66}{24}$$

$$= \frac{93 + 130 + 66}{24}$$

$$= \frac{289}{24} = 12\frac{1}{24}.$$

$24\overline{)289}\,(12$
-24
49
-48
1

(*i*) $4\frac{7}{10} + 6\frac{3}{5} + 3\frac{1}{2}$

$$= \frac{4 \times 10 + 7}{10} + \frac{6 \times 5 + 3}{5} + \frac{3 \times 2 + 1}{2}$$

$$= \frac{47}{10} + \frac{33}{5} + \frac{7}{2}.$$

Here, LCM of 10, 5 and 2
$= 2 \times 5 = 10$.

2	10, 5, 2
5	5, 5, 1
	1, 1, 1

Therefore, $\frac{47}{10} + \frac{33}{5} + \frac{7}{2}$

$$= \frac{47 \times 1}{10 \times 1} + \frac{33 \times 2}{5 \times 2} + \frac{7 \times 5}{2 \times 5}$$

$$= \frac{47}{10} + \frac{66}{10} + \frac{35}{10}$$

$$= \frac{47 + 66 + 35}{10}$$

$$= \frac{148}{10} = \frac{74}{5} = 14\frac{4}{5}.$$

$5\overline{)74}\,(14$
-5
24
-20
4

(*j*) $5\frac{5}{6} + 1\frac{3}{8} + 4\frac{7}{12}$

$$= \frac{5 \times 6 + 5}{6} + \frac{1 \times 8 + 3}{8} + \frac{4 \times 12 + 7}{12}$$

$$= \frac{35}{6} + \frac{11}{8} + \frac{55}{12}.$$

2	6, 8, 12
2	3, 4, 6
2	3, 2, 3
3	3, 1, 3
	1, 1, 1

Here, LCM of 6, 8, 12
$= 2 \times 2 \times 2 \times 3 = 24$.

Therefore, $\frac{35}{6} + \frac{11}{8} + \frac{55}{12}$

$$= \frac{35 \times 4}{6 \times 4} + \frac{11 \times 3}{8 \times 3} + \frac{55 \times 2}{12 \times 2}$$

$$= \frac{140}{24} + \frac{33}{24} + \frac{110}{24}$$

$$= \frac{140 + 33 + 110}{24}$$

$$= \frac{283}{24} = 11\frac{19}{24}.$$

$24\overline{)283}\,(11$
-24
43
-24
19

(*k*) $12\frac{2}{5} + 13\frac{1}{5} + 2$

$$= \frac{12 \times 5 + 2}{5} + \frac{13 \times 5 + 1}{5} + \frac{2}{1}$$

$$= \frac{62}{5} + \frac{66}{5} + \frac{2}{1}.$$

Here, LCM of 1, 5 and 5 = 5.

Therefore, $\frac{62}{5} + \frac{66}{5} + \frac{2}{1} = \frac{62}{5} + \frac{66}{5} + \frac{2 \times 5}{1 \times 5}$

$$= \frac{62}{5} + \frac{66}{5} + \frac{10}{5}$$

$$= \frac{62 + 66 + 10}{5}$$

$$= \frac{138}{5} = 27\frac{3}{5}.$$

$5\overline{)138}\,(27$
-10
38
-35
3

(*l*) $1\frac{11}{14} + 3\frac{8}{21} + 1\frac{1}{7}$

$$= \frac{1 \times 14 + 11}{14} + \frac{3 \times 21 + 8}{21} + \frac{1 \times 7 + 1}{7}$$

$= \frac{25}{14} + \frac{71}{21} + \frac{8}{7}$.

Here, LCM of 14, 21 and 7
$= 3 \times 2 \times 7 = 42$.

3	14, 21, 7
2	14, 7, 7
7	7, 7, 7
	1, 1, 1

Therefore, $\frac{25}{14} + \frac{71}{21} + \frac{8}{7}$.

$= \frac{25 \times 3}{14 \times 3} + \frac{71 \times 2}{21 \times 2} + \frac{8 \times 6}{7 \times 6}$

$= \frac{75}{42} + \frac{142}{42} + \frac{48}{42}$

$= \frac{265}{42} = 6\frac{13}{42}$.

$42\overline{)265}(6$
-252
13

2. (*a*) $\frac{17}{44} - \frac{2}{11}$

2	44, 11
2	22, 11
11	11, 11
	1, 1

Here, LCM of 44 and 11
$= 2 \times 2 \times 11 = 44$.

Therefore, $\frac{17}{44} - \frac{2}{11} = \frac{17}{44} - \frac{2 \times 4}{11 \times 4} = \frac{17}{44} - \frac{8}{44}$

$= \frac{17 - 8}{44} = \frac{9}{44}$.

(*b*) $\frac{17}{32} - \frac{25}{48}$

Here, LCM of 32 and 48
$= 2 \times 2 \times 2 \times 2 \times 2 \times 3 = 96$.

2	32, 48
2	16, 24
2	8, 12
2	4, 6
2	2, 3
3	1, 3
	1, 1

Therefore, $\frac{17}{32} - \frac{25}{48}$

$= \frac{17 \times 3}{32 \times 3} - \frac{25 \times 2}{48 \times 2}$

$= \frac{51}{96} - \frac{50}{96} = \frac{51 - 50}{96} = \frac{1}{96}$.

(*c*) $\frac{3}{4} - \frac{5}{12}$

Here, LCM of 4 and 12 $= 2 \times 2 \times 3 = 12$.

Therefore, $\frac{3}{4} - \frac{5}{12} = \frac{3 \times 3}{4 \times 3} - \frac{5 \times 1}{12 \times 1}$

2	4, 12
2	2, 6
3	1, 3
	1, 1

$= \frac{9}{12} - \frac{5}{12}$

$= \frac{9 - 5}{12} = \frac{4}{12} = \frac{1}{3}$.

(*d*) $3\frac{7}{22} - 2\frac{3}{11} = \frac{3 \times 22 + 7}{22} - \frac{2 \times 11 + 3}{11}$

$= \frac{73}{22} - \frac{25}{11}$.

2	22, 11
11	11, 11
	1, 1

Here, LCM of 22 and 11 $= 2 \times 11 = 22$

Therefore, $\frac{73}{22} - \frac{25}{11} = \frac{73}{22} - \frac{25 \times 2}{11 \times 2} = \frac{73}{22} - \frac{50}{22}$

$= \frac{73 - 50}{22} = \frac{23}{22}$

$22\overline{)23}(1$
-22
1

$= 1\frac{1}{22}$.

(*e*) $18\frac{4}{5} - 7\frac{9}{10} = \frac{18 \times 5 + 4}{5} - \frac{7 \times 10 + 9}{10}$

$= \frac{94}{5} - \frac{79}{10}$.

2	5, 10
5	5, 5
	1, 1

Here, LCM of 5 and 10 $= 2 \times 5 = 10$

Therefore, $\frac{94}{5} - \frac{79}{10} = \frac{94 \times 2}{5 \times 2} - \frac{79 \times 1}{10 \times 1}$

$= \frac{188}{10} - \frac{79}{10}$

$10\overline{)109}(10$
-100
09

$= \frac{188 - 79}{10} = 10\frac{9}{10}$.

(*f*) $8\frac{3}{8} - 3\frac{1}{5} = \frac{8 \times 8 + 3}{8} - \frac{3 \times 5 + 1}{5}$

$= \frac{67}{8} - \frac{16}{5}$.

2	8, 5
2	4, 5
2	2, 5
5	1, 5
	1, 1

Here, LCM of 8 and 5 = $8 \times 5 = 40$.

Therefore, $\frac{67}{8} - \frac{16}{5} = \frac{67 \times 5}{8 \times 5} - \frac{16 \times 8}{5 \times 8}$

$= \frac{335}{40} - \frac{128}{40} = \frac{335 - 128}{40}$

$= \frac{207}{40} = 5\frac{7}{40}$.

$40\overline{)207}(5$
-200
7

(*g*) and (*h*) — Same as above.

3. (*a*) $4\frac{3}{5} - \frac{2}{3} + \frac{3}{10} = \frac{4 \times 5 + 3}{5} - \frac{2}{3} + \frac{3}{10}$

$= \frac{23}{5} - \frac{2}{3} + \frac{3}{10}$.

2	5, 3, 10
3	5, 3, 5
5	5, 1, 5
	1, 1, 1

Here, LCM of 5, 3 and 10
$= 2 \times 3 \times 5 = 30$.

Therefore, $\frac{23}{5}-\frac{2}{3}+\frac{3}{10}$

$=\frac{23\times 6}{5\times 6}-\frac{2\times 10}{3\times 10}+\frac{3\times 3}{10\times 3}$

$=\frac{138}{30}-\frac{20}{30}+\frac{9}{30}=\frac{138-20+9}{30}$

$=\frac{138+9-20}{30}=\frac{147-20}{30}$

$=\frac{127}{30}=4\frac{7}{30}$.

$30\overline{)127}(4$
-120
7

(*b*) $6\frac{3}{4}+\frac{3}{5}-1\frac{5}{6}=\frac{6\times 4+3}{4}+\frac{3}{5}-\frac{1\times 6+5}{6}$

$=\frac{27}{4}+\frac{3}{5}-\frac{11}{6}$.

2	4, 5, 6
2	2, 5, 3
3	1, 5, 3
5	1, 5, 1
	1, 1, 1

Here, LCM of 4, 5, 6
$=2\times 2\times 3\times 5=60$.

Therefore, $\frac{27}{4}+\frac{3}{5}-\frac{11}{6}$

$=\frac{27\times 15}{4\times 15}+\frac{3\times 12}{5\times 12}-\frac{11\times 10}{6\times 10}$

$=\frac{405}{60}+\frac{36}{60}-\frac{110}{60}=\frac{405+36-110}{60}$

$=\frac{441-110}{60}=\frac{331}{60}=5\frac{31}{60}$.

$60\overline{)331}(5$
-300
31

(*c*) $5\frac{7}{8}+2\frac{2}{3}-\frac{11}{12}=\frac{5\times 8+7}{8}+\frac{2\times 3+2}{3}-\frac{11}{12}$

$=\frac{47}{8}+\frac{8}{3}-\frac{11}{12}$.

2	8, 3, 12
2	4, 3, 6
2	2, 3, 3
3	1, 3, 3
	1, 1, 1

Here, LCM of 8, 3 and 12
$=2\times 2\times 2\times 3=24$.

Therefore, $\frac{47}{8}+\frac{8}{3}-\frac{11}{12}$.

$=\frac{47\times 3}{8\times 3}+\frac{8\times 8}{3\times 8}-\frac{11\times 2}{12\times 2}$

$=\frac{141}{24}+\frac{64}{24}-\frac{22}{24}=\frac{141+64-22}{24}$

$=\frac{183}{24}=\frac{183\div 3}{24\div 3}=\frac{61}{8}=7\frac{5}{8}$.

$8\overline{)61}(7$
-56
5

(*d*) $4\frac{7}{21}-1\frac{5}{6}-\frac{3}{4}=\frac{4\times 21+7}{21}-\frac{1\times 6+5}{6}-\frac{3}{4}$

$=\frac{91}{21}-\frac{11}{6}-\frac{3}{4}$.

2	21, 6, 4
2	21, 3, 2
3	21, 3, 1
7	7, 1, 1
	1, 1, 1

Here, LCM of 21, 6 and 4
$=2\times 2\times 3\times 7=84$.

Therefore, $\frac{91\times 4}{21\times 4}-\frac{11\times 14}{6\times 14}-\frac{3\times 21}{4\times 21}$

$=\frac{364}{84}-\frac{154}{84}-\frac{63}{84}=\frac{364-154-63}{84}$

$=\frac{364-(154+63)}{84}=\frac{364-217}{84}$

$=\frac{147}{84}=1\frac{63}{84}$.

$84\overline{)147}(1$
-84
63

(*e*) $7\frac{5}{6}-1\frac{3}{4}-1\frac{1}{2}$

$=\frac{7\times 6+5}{6}-\frac{1\times 4+3}{4}-\frac{1\times 2+1}{2}$

$=\frac{47}{6}-\frac{7}{4}-\frac{3}{2}$

2	6, 4, 2
2	3, 2, 1
3	3, 1, 1
	1, 1, 1

Here, LCM of 6, 4 and 2
$=2\times 2\times 3=12$.

Therefore, $\frac{47\times 2}{6\times 2}-\frac{7\times 3}{4\times 3}-\frac{3\times 6}{2\times 6}$

$=\frac{94}{12}-\frac{21}{12}-\frac{18}{12}=\frac{94-21-18}{12}$

$=\frac{94-(21+18)}{12}=\frac{94-39}{12}$

$=\frac{55}{12}=4\frac{7}{12}$.

$22\overline{)55}(4$
-48
7

(*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

Here, LCM of 3, 5, 2 and 2
$=2\times 3\times 5=30$.

Therefore, $\frac{25\times10}{3\times10}-\frac{13\times6}{5\times6}+\frac{5\times15}{2\times15}-\frac{1\times15}{2\times15}$

$=\frac{250}{30}-\frac{78}{30}+\frac{75}{30}-\frac{15}{30}$

$=\frac{250-78+75-15}{30}$

$=\frac{250+75-(78+15)}{30}=\frac{325-93}{30}$

$=\frac{232}{30}=\frac{232\div2}{30\div2}=\frac{116}{15}=7\frac{11}{15}$

15)116(7
−105
11

4. Weight of an empty basket $=1\frac{4}{5}$ kg

$=\frac{1\times5+4}{5}=\frac{9}{5}$ kg.

Weight of apples $=2\frac{1}{3}$ kg $=\frac{7}{3}$ kg.

Total weight of basket with apples $=\frac{9}{5}+\frac{7}{3}$

Here, LCM of 5 and 3 $=3\times5=15$.

3	5, 3
5	5, 1
	1, 1

Therefore, $\frac{9}{5}+\frac{7}{3}=\frac{9\times3}{5\times3}+\frac{7\times5}{3\times5}$

$=\frac{27}{15}+\frac{35}{15}=\frac{27+35}{15}$

$=\frac{62}{15}=4\frac{2}{15}$ kg.

Thus, the total weight of the basket with apples together is $4\frac{2}{15}$ kg.

15)62(4
−60
2

5. Cloth purchased for him $=1\frac{1}{2}$ m.

Cloth purchased for his younger brother $=1\frac{2}{3}$ m.

Total length of cloth Rohan's father purchased

2	2, 3
3	1, 3
	1, 1

$=1\frac{1}{2}$ m $+1\frac{2}{3}$ m $=\frac{3}{2}$ m $+\frac{5}{3}$ m

$\because$ LCM of 2 and 3 $=2\times3=6$

$\therefore\frac{3\times3}{2\times3}+\frac{5\times2}{3\times2}=\frac{9}{6}+\frac{10}{6}$

$=\frac{9+10}{6}$ m $=\frac{19}{6}$ m $=3\frac{1}{6}$ m.

3)19(6
−18
1

Thus, Rohan's father purchased $3\frac{1}{6}$ 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

$=3\frac{5}{16}$ cm $+4\frac{3}{8}$ cm $=\frac{53}{16}+\frac{35}{8}$ cm.

2	8, 16
2	4, 8
2	2, 4
2	1, 2
	1, 1

LCM of 16 and 8 is 16

$=\frac{53+70}{16}$ cm $=\frac{123}{16}$ cm $=7\frac{11}{16}$ cm.

16)123(7
−112
11

7. Quantity of milk in a vessel $=\frac{4}{8}$ L

Quantity of milk Viban drank from the vessel

$=\frac{1}{12}$ L.

Milk left in the vessel $=\frac{4}{8}$ L $-\frac{1}{12}$ L.

2	8, 12
2	4, 6
2	2, 3
3	1, 3
	1, 1

LCM of 8 and 12 $=2\times2\times2\times3=24$.

$=\frac{12-2}{24}$ L $=\frac{10}{24}$ L $=\frac{5}{12}$ L.

Thus, $\frac{5}{12}$ litres of milk was left in the vessel.

8. Arun jumped: $2\frac{7}{8}$ m.

Varun jumped: $2\frac{7}{8}$ m $-\frac{2}{3}$ m $=\frac{23}{8}$ m $-\frac{2}{3}$ m.

LCM of 8 and 3 $=2\times2\times2\times3=24$

8	8, 3
3	1, 3
	1, 1

$\frac{23}{8}-\frac{2}{3}=\frac{69-16}{24}=\frac{53}{24}=2\frac{5}{24}$ m.

Thus, Varun's jump was $2\frac{5}{24}$ m long.

9. Quantity of sugar used by Riya for pudding

$=1\frac{1}{2}$ 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

$= 1\frac{1}{2}$ kg $+ \frac{3}{4}$ kg $+ \frac{1}{8}$ kg.

$= \frac{3}{2}$ kg $+ \frac{3}{4}$ kg $+ \frac{1}{8}$ kg.

2	2, 4, 8
2	1, 2, 4
2	1, 1, 2
	1, 1 1

LCM of 2, 4 and $8 = 2 \times 2 \times 2 = 8$

$= \frac{12+6+1}{8}$ kg $= \frac{19}{8}$ kg $= 2\frac{3}{8}$ kg.

Thus, $2\frac{3}{8}$ kg sugar was used by Riya in total.

Think Tank (Page 91)

Fraction of pocket money amount Riya spent on a book $= \frac{1}{2}$

Remaining amount of pocket money Riya has $= 1 - \frac{1}{2} = \frac{1}{2}$

Fraction of remaining amount Riya spent on the pen $= \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$

Total fraction of amount of pocket money Riya has spent $= \frac{1}{2} + \frac{1}{6} = \frac{3+1}{6} = \frac{4}{6} = \frac{2}{3}$

So, the fraction of amount of pocket money remaining with Riya $= 1 - \frac{2}{3} = \frac{1}{3}$

Given, $\frac{1}{3}$ of pocket money = ₹80

So, the total pocket money she has in the beginning $= 3 \times 80 =$ ₹240.

Practice Time 4D

1. (*a*) $\frac{3}{8}$ by $5 = \frac{3}{8} \times 5 = \frac{3 \times 5}{8} = \frac{15}{8} = 1\frac{7}{8}$.

$8\overline{)15}(1$, $-\,8$, 7

(*b*) $\frac{4}{7}$ by $5 = \frac{4}{7} \times 5 = \frac{4 \times 5}{7} = \frac{20}{7}$

$= 2\frac{6}{7}$.

$7\overline{)20}(2$, $-\,14$, 6

(*c*) $\frac{20}{25}$ by $5 = \frac{20}{25} \times 5 = \frac{20 \times 5}{25} = \frac{100}{25}$

$= \frac{100 \div 25}{25 \div 25} = \frac{4}{1} = 4$

(*d*) $\frac{7}{20}$ by $12 = \frac{7}{20} \times 12 = \frac{7 \times 12}{20} = \frac{84}{20}$

$= \frac{84 \div 4}{20 \div 4} = \frac{21}{5} = 4\frac{1}{5}$.

$5\overline{)21}(4$, $-\,20$, 1

2. (*a*) $\frac{2}{6}$ of $\frac{3}{5} = \frac{\cancel{2}^{1}}{\cancel{6}_{\cancel{2}_{1}}} \times \frac{\cancel{3}^{1}}{5} = \frac{1 \times 1}{1 \times 5} = \frac{1}{5}$.

(*b*) $\frac{6}{9}$ of $\frac{3}{8} = \frac{\cancel{6}^{3}}{\cancel{9}_{3}} \times \frac{\cancel{3}^{1}}{\cancel{8}_{4}} = \frac{\cancel{3}^{1} \times 1}{\cancel{3}_{1} \times 4} = \frac{1 \times 1}{1 \times 4} = \frac{1}{4}$.

(*c*) $\frac{\cancel{10}^{\cancel{5}^{1}}}{\cancel{15}_{3}} \times \frac{1}{\cancel{6}_{3}} = \frac{1 \times 1}{3 \times 3} = \frac{1}{9}$.

(*d*) $\frac{\cancel{7}^{1}}{\cancel{9}_{3}} \times \frac{\cancel{3}^{1}}{\cancel{28}_{4}} = \frac{1 \times 1}{3 \times 4} = \frac{1}{12}$.

(*e*) $\frac{\cancel{3}^{1}}{\cancel{4}_{2}} \times \frac{5}{\cancel{6}_{2}} \times \frac{\cancel{2}^{1}}{3} = \frac{1 \times 5 \times 1}{2 \times 2 \times 3} = \frac{5}{12}$.

(*f*) $\frac{\cancel{3}^{1}}{5} \times \frac{2}{\cancel{6}_{\cancel{2}_{1}}} \times \frac{\cancel{2}^{1}}{9} = \frac{1 \times 2 \times 1}{5 \times 1 \times 9} = \frac{2}{45}$.

(*g*) $\frac{3}{5} \times \frac{1}{\cancel{4}_{2}} \times \frac{\cancel{6}^{3}}{8} = \frac{3 \times 1 \times 3}{5 \times 2 \times 8} = \frac{9}{80}$.

(*h*) $\frac{\cancel{2}^{1}}{\cancel{4}_{2}} \times \frac{1}{5} \times \frac{7}{9} = \frac{1 \times 1 \times 7}{2 \times 5 \times 9} = \frac{7}{90}$.

3. (*a*) $\frac{5}{8}$ of 48 km $= \frac{5}{\cancel{8}_{1}} \times \cancel{48}^{6}$ km $= \frac{5 \times 6}{1}$ km

$= 30$ km.

(*b*) $\frac{4}{9}$ of 81 kg $= \frac{4}{\cancel{9}_{1}} \times \cancel{81}^{9}$ kg $= \frac{4 \times 9}{1}$ kg

$= 36$ kg.

(*c*) $\frac{5}{7}$ of $\frac{7}{30} = \frac{\cancel{5}^{1}}{\cancel{7}_{1}} \times \frac{\cancel{7}^{1}}{\cancel{30}_{6}} = \frac{1 \times 1}{1 \times 6} = \frac{1}{6}$.

(*d*) $\frac{7}{20}$ of 4 hours $= \frac{7}{\cancel{20}_{5}} \times \cancel{4}^{1}$ hours $= \frac{7}{5}$ hours

$= 1\frac{2}{5}$ hours.

$5\overline{)7}(1$, $-\,5$, 2

4. Quantity of milk Rajat purchases daily = $2\frac{1}{2}$ L

Therefore, quantity of milk he will purchase in a week

$= 7 \times 2\frac{1}{2}$ L $= 7 \times \frac{5}{2}$ L $= \frac{7 \times 5}{2}$ L

$= \frac{35}{2} = 17\frac{1}{2}$ L.

$2\overline{)35}(17$
$-2\downarrow$
15
-14
1

Thus, Rajat will purchase $17\frac{1}{2}$ L of milk in a week.

5. Work finished by Seema in 1 hour = $\frac{1}{3}$ part.

Therefore, work finished by her in $2\frac{1}{5}$ hours

$= \frac{1}{3} \times 2\frac{1}{5}$ part $= \frac{1}{3} \times \frac{11}{5}$ part $= \frac{11}{15}$ part.

Thus, $\frac{11}{15}$ part of the work she will finish in $2\frac{1}{5}$ hours.

6. Part of pizza Nidhi ate = $\frac{1}{8}$.

Part of pizza Kajal ate = $\frac{1}{8}$.

Part of pizza Sonal ate = $\frac{1}{8}$.

Part of pizza Payal ate = $\frac{1}{8}$.

Part of pizza they eat all together

$= \frac{1}{8}+\frac{1}{8}+\frac{1}{8}+\frac{1}{8} = \frac{1+1+1+1}{8} = \frac{\cancel{4}^{1}}{\cancel{8}_{2}} = \frac{1}{2}$.

Thus, they eat $\frac{1}{2}$ of pizza altogether.

7. Weight of an object on Earth = 6 × weight of the object on Moon.

Given:

Weight of an object on Moon = $5\frac{3}{5}$ kg.

It's weight on Earth = $6 \times 5\frac{3}{5}$ kg $= 6 \times \frac{28}{5}$

$= \frac{168}{5} = 33\frac{3}{5}$.

Thus, the object's weight is $33\frac{3}{5}$ kg on Earth.

$5\overline{)168}(33$
$-15\downarrow$
18
-15
3

Practice Time 4E

1. (*a*) We can write 11 as $\frac{11}{1}$.

So, multiplicative inverse of $\frac{11}{1} = \frac{1}{11}$.

(*b*) Multiplicative inverse of $\frac{3}{7} = \frac{7}{3}$.

(*c*) Multiplicative inverse of $\frac{3}{5} = \frac{5}{3}$.

(*d*) Multiplicative inverse of $\frac{4}{9} = \frac{9}{4}$.

(*e*) Multiplicative inverse of $\frac{14}{19} = \frac{19}{14}$.

(*f*) Multiplicative inverse of $\frac{18}{40}\left(=\frac{9}{20}\right) = \frac{20}{9}$.

(*g*) Multiplicative inverse of $\frac{2}{9} = \frac{9}{2}$.

(*h*) Multiplicative inverse of $\frac{24}{30}\left(=\frac{4}{5}\right) = \frac{5}{4}$.

(*i*) Multiplicative inverse of $\frac{44}{33}\left(=\frac{4}{3}\right) = \frac{3}{4}$.

(*j*) Multiplicative inverse of $\frac{20}{5}\left(\frac{4}{1}\right) = \frac{1}{4}$.

2. (*a*) $\frac{3}{6} \div 6 = \frac{3}{6} \times$ 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*) $\frac{6}{10} \div 12 = \frac{6}{10} \times$ 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*) $\frac{16}{20} \div 8 = \frac{16}{20} \times$ Reciprocal of 8.

$= \frac{\cancel{16}^{2^{1}}}{\cancel{20}_{10}} \times \frac{1}{\cancel{8}_{1}} = \frac{1 \times 1}{10 \times 1} = \frac{1}{10}$.

(*d*) $\frac{8}{9} \div 10 = \frac{8}{9} \times$ Reciprocal of 10

$$= \frac{\cancel{8}^{4}}{9} \times \frac{1}{\cancel{10}_{5}} = \frac{4 \times 1}{9 \times 5} = \frac{4}{45}.$$

(*e*) $3 \div \frac{5}{7} = 3 \times$ Reciprocal of $\frac{5}{7}$

$$= 3 \times \frac{7}{5} = \frac{3 \times 7}{5} = \frac{21}{5} = 4\frac{1}{5}.$$

(*f*) $7 \div \frac{9}{11} = 7 \times$ Reciprocal of $\frac{9}{11}$

$$= 7 \times \frac{11}{9} = \frac{77}{9} = 8\frac{5}{9}.$$

(*g*) $8 \div \frac{4}{9} = 8 \times$ Reciprocal of $\frac{4}{9}$

$$= \cancel{8}^{2} \times \frac{9}{\cancel{4}_{1}} = \frac{2 \times 9}{1} = 18.$$

(*h*) $15 \div \frac{3}{5} = 15 \times$ Reciprocal of $\frac{3}{5}$

$$= \cancel{15}^{5} \times \frac{5}{\cancel{3}_{1}} = \frac{5 \times 5}{1} = 25.$$

3. (*a*) $\frac{3}{7} \div \frac{1}{7} = \frac{3}{7} \times$ Reciprocal of $\frac{1}{7}$

$$= \frac{3}{\cancel{7}_{1}} \times \cancel{7}^{1} = 3 \times 1 = 3.$$

(*b*) $\frac{4}{9} \div \frac{1}{9} = \frac{4}{9} \times$ Reciprocal of $\frac{1}{9}$

$$= \frac{4}{\cancel{9}_{1}} \times \cancel{9}^{1} = 4 \times 1 = 4.$$

(*c*) $\frac{2}{5} \div \frac{3}{5} = \frac{2}{5} \times$ 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*) $\frac{3}{10} \div \frac{6}{10} = \frac{3}{10} \times$ 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*) $\frac{3}{8} \div \frac{2}{15} = \frac{3}{8} \times$ Reciprocal of $\frac{2}{15}$

$$= \frac{3}{8} \times \frac{15}{2} = \frac{3 \times 15}{8 \times 2}$$

$$= \frac{45}{16} = 2\frac{13}{16}.$$

$16\overline{)45}(2$
$-\underline{32}$
$\quad 13$

(*f*) $3\frac{1}{3} \div 2\frac{1}{10} = \frac{3 \times 3 + 1}{3} \div \frac{2 \times 10 + 1}{10}$

$$= \frac{10}{3} \div \frac{21}{10} = \frac{10}{3} \times \text{Reciprocal of } \frac{21}{10}$$

$$= \frac{10}{3} \times \frac{10}{21} = \frac{100}{63} = 1\frac{37}{63}.$$

$63\overline{)100}(1$
$-\underline{63}$
$\quad 37$

(*g*) $5\frac{1}{3} \div 5\frac{1}{5} = \frac{5 \times 3 + 1}{3} \div \frac{5 \times 5 + 1}{5}$

$$= \frac{16}{3} \div \frac{26}{5} = \frac{\cancel{16}^{8}}{3} \times \frac{5}{\cancel{26}_{13}}$$

$$= \frac{40}{39} = 1\frac{1}{39}.$$

$39\overline{)40}(1$
$-\underline{39}$
$\quad 1$

(*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 $\frac{1}{15}$.

So, $8\frac{1}{3} \div 15 = \frac{\cancel{25}^{5}}{3} \times \frac{1}{\cancel{15}_{3}}$ m

$$= \frac{5 \times 1}{3 \times 3} \text{ m} = \frac{5}{9} \text{ m}.$$

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

$$= 3\frac{1}{2} \text{ m} \div 3 = \frac{7}{2} \text{ m} \div 3$$

$$= \frac{7}{2} \text{ m} \times \text{Multiplicative inverse of } 3$$

$$= \frac{7}{2} \text{ m} \times \frac{1}{3} = \frac{7}{6} \text{ m} = 1\frac{1}{6} \text{ m}.$$

$6\overline{)7}(1$
$-\underline{6}$
$\quad 1$

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

$$= ₹680 \div 5\frac{2}{3} \text{ kg} = ₹680 \div \frac{17}{3}$$

$$= ₹680 \times \text{Multiplicative inverse of } \frac{17}{3}$$

$$= \cancel{680}^{40} \times \frac{3}{\cancel{17}_{1}} = ₹40 \times 3 = ₹120.$$

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

$$= 1\frac{3}{5} \text{ kg} \div \frac{1}{5} = \frac{8}{5} \text{ kg} \times \text{Reciprocal of } \frac{1}{5} \text{ kg}$$

$$= \frac{8}{\cancel{5}_{1}} \times \frac{\cancel{5}^{1}}{1} = 8.$$

Thus, 8 chocolate boxes can be made.

Mental Maths (Page 96)

1. The product of a proper fraction and an improper fraction is less 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 × 2nd fraction = 12

$$\text{1st fraction} = \frac{3}{4}$$

$$\therefore \frac{3}{4} \times \text{2nd fraction} = 12$$

$$\Rightarrow \text{2nd fraction} = 12 \div \frac{3}{4}$$

$$= 12 \times \text{Reciprocal of } \frac{3}{4}.$$

$$= \cancel{12}^{4} \times \frac{4}{\cancel{3}_{1}} = 4 \times 4 = 16$$

4. The product of two proper fractions is less than each of the fractions.

Challenge Question (Page 97)

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.

Therefore,

$$\frac{5}{12} \text{ part of the herd} = 25 \text{ deer}$$

$$\Rightarrow \text{Whole herd} = 25 \div \frac{5}{12} = 25 \times \frac{12}{5}$$

$$= 5 \times 12 = 60 \text{ deer}$$

Thus, there were 60 deer in the herd.

2. $$\text{Fraction} = 4\frac{1}{2} \times 6 + \frac{6}{7} = \frac{4 \times 2 + 1}{2} \times 6 + \frac{6}{7}$$

$$= \frac{9}{\cancel{2}_{1}} \times \cancel{6}^{3} + \frac{6}{7} = \frac{27}{1} + \frac{6}{7}$$

$$= \frac{27 \times 7 + 6}{7} = \frac{189 + 6}{7} = \frac{195}{7} = 27\frac{6}{7}.$$

Chapter Assessment

1. Mary earned in May = ₹12460

Mary earned in June = $\frac{5}{7}$ of ₹12460.

$$= \frac{5}{\cancel{7}_{1}} \times \cancel{12460}^{1780}$$

$$= ₹5 \times 1780 = ₹8900.$$

Thus, she earned ₹8900 in June.

2. Pranshu ate $2\frac{1}{2}$ pizza

Sam ate $3\frac{3}{4}$ pizza

∴ Total pizza they ate in 2-week period time

$$= 2\frac{1}{2} + 3\frac{3}{4} = \frac{5}{2} + \frac{15}{4} = \frac{5 \times 2 + 15 \times 1}{4}$$

$$= \frac{10 + 15}{4} = \frac{25}{4} = 6\frac{1}{4}$$

$$\begin{array}{r} 4\overline{)25}(6 \\ -\underline{24} \\ \underline{1} \end{array}$$

Thus, they ate $6\frac{1}{4}$ pizza in that time.

3. Jay sold t-shirts of ₹720 in a day.
Alen sold t-shirts in a day

$= ₹\left(\frac{5}{\cancel{8}_{1}} \times \cancel{720}^{90}\right) = ₹(5 \times 90) = ₹450$

Thus, Alen makes ₹450 in a day.

4. Number of pies Hem ate $= 1\frac{3}{4}$.

Number of pies Sally ate $= 1\frac{3}{4}$

Number of pies Jash ate $= 1\frac{3}{4}$

Number of pies they ate altogether

$= 3 \times 1\frac{3}{4} = 3 \times \frac{7}{4} = \frac{21}{4} = 5\frac{1}{4}$.

$4\overline{)21}(5$
$-\underline{20}$
1

5. Total number of cookies in a packet = 48
Number of cookies he gave to his brother

$= \frac{1}{3}$ of 48

$\therefore \quad = \frac{1}{\cancel{3}} \times \cancel{48}^{16} = 16.$

Thus, his brother gets 16 cookies.

6. Nimit earned in May = ₹18760

Sally made $\frac{7}{8}$ of this amount.

$\therefore$ Amount of money Sally earned

$= ₹\left(\frac{\cancel{7}}{\cancel{8}} \times \cancel{18760}^{2345}\right) = ₹(7 \times 2345) = ₹16415.$

Thus, Sally earned ₹16415.

7. Length of rectangle $= 5\frac{3}{4}$ cm $= \frac{23}{4}$ cm.

Breadth of rectangle = 3 cm
Area of rectangle = length × breadth

$= \frac{23}{4}$ cm $\times$ 3 cm

$= \frac{69}{4}$ cm^2 $= 17\frac{1}{4}$ cm^2.

$4\overline{)69}(17$
$-\underline{4}\downarrow$
29
$-\underline{28}$
1

Thus, area of rectangle is $17\frac{1}{4}$ sq. cm.

8. Number of rectangular paper sheets

$= 3\frac{1}{2} = \frac{7}{2}$.

Each strip of the paper $= \frac{1}{12}$ of the paper.

So, number of sheet Siya cut from the paper

$= \frac{7}{2} \div \frac{1}{12} = \frac{7}{\cancel{2}_{1}} \times \frac{\cancel{12}^{6}}{1} = 42.$

Thus, Siya cuts 42 sheets from the paper.

9. Number of notebooks to put covers = 24.
Number of notebooks on which Samar puts covers on Monday $= \frac{1}{4} \times 24 = 6$.

Number of notebooks on which he puts covers on Tuesday $= \frac{2}{\cancel{3}_{1}} \times \cancel{24}^{8} = 16$.

Total number of notebooks covered on both the days = 6 + 16 = 22.
Remaining notebooks on which he puts covers on Wednesday = 24 – 22 = 2

Fractions $= \frac{2}{24} = \frac{1}{12}$

Thus, $\frac{1}{12}$ of the covers he puts on the notebooks on Wednesday.

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

$= 40\frac{1}{6} - 13\frac{3}{4}$ kg.

$= \frac{241}{6} - \frac{55}{4}$ kg.

$= \frac{482 - 165}{12}$ kg.

$= \frac{317}{12}$ kg. $= 26\frac{5}{12}$ kg.

2	6, 4
2	3, 2
3	3, 1
	1, 1

$\therefore$ LCM 6 and 4
$= 2 \times 2 \times 3 = 12$

$12\overline{)317}(26$
$-\underline{24}\downarrow$
77
$-\underline{72}$
05

Thus, weight of rice in the drum $= 26\frac{5}{12}$ kg.

11. Distance travelled in one day

$= 47\frac{1}{2}$ km $= \frac{95}{2}$ km.

Distance covered by bus $= 29\frac{1}{2}$ km $= \frac{59}{2}$ km.

Distance covered by horse - cart

$= 8\frac{5}{6}$ km $= \frac{53}{6}$ km.

Distance covered on foot $= \frac{95}{2}$ km $- \left(\frac{59}{2} + \frac{53}{6}\right)$ km

$= \frac{95}{2}$ km $- \left(\frac{177+53}{6}\right) = \frac{95}{2}$ km $- \frac{230}{6}$ km

$= \frac{95 \times 3 - 230}{6}$ km

[$\because$ LCM of 2 and 6 = 6]

$= \frac{285-230}{6}$ km $= \frac{55}{6}$ km

$= 9\frac{1}{6}$ km.

$6\overline{)55(9}$
$-\underline{54}$
$\quad 1$

Thus, he travelled $9\frac{1}{6}$ 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.

$= 12 \times 3\frac{7}{9}$ L $= \cancel{12}^{4} \times \frac{34}{\cancel{9}_{3}}$ L

$= \frac{136}{3}$ L $= 45\frac{1}{3}$ L.

Thus, $45\frac{1}{3}$ litres of water is purchased by Ram.

13. Total distance from home to her school

$= 15\frac{3}{5}$ km $= \frac{78}{5}$ km.

She travelled $\frac{2}{5}$ part of total distance. i.e.,

$\frac{2}{5} \times \frac{78}{5}$ km $= \frac{156}{25}$ km

Distance left to travel $= \frac{78}{5} - \frac{156}{25}$ km

$= \frac{78 \times 5 - 156}{25}$ km [$\because$ LCM of 5 and 25 = 25]

$= \frac{390-156}{25}$ km $= \frac{234}{25}$ km

$= 9\frac{9}{25}$ km.

$25\overline{)234(9}$
$-\underline{225}$
$\quad 9$

Maths Fun (Page 99)

$\frac{8}{3}$	×	$\frac{1}{5}$	=	$\frac{8}{15}$
×		×		×
$\frac{7}{4}$	×	$1\frac{7}{21}$	=	$\frac{7}{3}$
=		=		=
$\frac{14}{3}$	×	$\frac{4}{15}$	=	$\frac{56}{45}$

CHAPTER 5 : INTRODUCTION TO DECIMALS

Practice Time 5A

1. (*a*) Fraction form $= \frac{5}{10}$

Decimal form = 0·5

(*b*) Fraction form $= \frac{16}{100}$

Decimal form = 0·16

(*c*) Fraction from $= 1\frac{2}{10}$

Decimal form = 1·2

(*d*) Fraction form $= 1\frac{5}{100}$

Decimal form = 1·05

(*e*) Fraction form $= 2\frac{8}{100}$

Decimal form = 2·08

3.

	Fractions	Decimals		Fractions	Decimals
(*a*)	$\frac{1}{10}$	**0.1**	(*f*)	$\frac{18}{100}$	**0.18**
(*b*)	$\frac{\mathbf{2}}{\mathbf{10}}$	0.2	(*g*)	$\frac{\mathbf{25}}{\mathbf{100}}$	0.25
(*c*)	$1\frac{3}{10}$	**1.3**	(*h*)	$1\frac{51}{100}$	**1.51**
(*d*)	$\frac{\mathbf{24}}{\mathbf{10}}$	2.4	(*i*)	$\frac{\mathbf{243}}{\mathbf{100}}$	2.43
(*e*)	$3\frac{5}{10}$	**3.5**	(*j*)	$5\frac{3}{100}$	**5.03**

Challenge Question (Page 103)

Part of strip shaded by Alizeh = $0.07 = \frac{7}{100}$

Part of strip shaded by Rishi = $\frac{3}{10}$

Since, $\frac{3}{10} > \frac{7}{100}$, so, Rishi shaded more

And, $\frac{3}{10} - \frac{7}{100} = \frac{30-7}{100} = \frac{23}{100} = 0.23$

Hence, Rishi shaded 0.23 or $\left(\frac{23}{100}\right)$ more of the strip.

Challenge Question (Page 106)

The smallest 2-digit decimal number using digits 3, 0, 1 is 10.3

Practice Time 5B

1.

	Hundreds (100)	Tens (10)	Ones (1)	•	Tenths $\left(\frac{1}{10}\right)$	Hundredths $\left(\frac{1}{100}\right)$
(*a*)			0	•	1	3
(*b*)			0	•	0	9
(*c*)			2	•	3	7
(*d*)		1	2	•	4	8
(*e*)	1	0	1	•	7	2

2. (*a*) 0.09 = Zero point zero nine.

(*b*) 7.08 = Seven point zero eight.

(*c*) 13.37 = Thirteen point three seven.

(*d*) 128.72 = One hundred twenty-eight point seven two.

3. (*a*) 7 tenths = $\frac{7}{10} = 0.7$.

(*b*) 35 hundredths = $\frac{35}{100} = 0.35$

(*c*) 5 and 4 tenths = $5\frac{4}{10} = \frac{54}{10} = 5.4$

(*d*) 2 and 3 hundredths = $2\frac{3}{100} = \frac{203}{100} = 2.03$

(*e*) 32 and 8 hundredths = $32\frac{8}{100} = \frac{3208}{100} = 32.08$

(*f*) 3 and 11 hundredths = $3\frac{11}{100} = \frac{311}{100} = 3.11$

4. (*a*)

Ones	•	Tenths
1	•	7

Place Value

7 tenths = $7 \times 0.1 = 0.7$

1 one = $1 \times 1 = 1$

Expanded form = 1 + 0.7

(*b*)

Ones	•	Tenths	Hundredths
2	•	4	3

Place Value

3 hundredths = $3 \times 0.01 = 0.03$

4 tenths = $4 \times 0.1 = 0.4$

2 ones = $2 \times 1 = 2$

Expanded form = 2 + 0.4 + 0.03

(*c*)

Tens	Ones	•	Tenths	Hundredths
1	7	•	0	3

Place Value

3 hundredths = $3 \times 0.01 = 0.03$

0 tenths = 0

7 ones = $7 \times 1 = 7$

1 ten = $1 \times 10 = 10$

Expanded form = 10 + 7 + 0 + 0.03

(*d*)

Hundreds	Tens	Ones	•	Tenths	Hundredths
3	8	3	•	4	3

Place Value

3 hundredths = $3 \times 0.01 = 0.03$

4 tenths = $4 \times 0.1 = 0.4$

3 ones = $3 \times 1 = 3$

8 tens = $8 \times 10 = 80$

3 hundreds = $3 \times 100 = 300$

Expanded form = 300 + 80 + 3 + 0.4 + 0.03

(*e*)

Hundreds	Tens	Ones	•	Tenths	Hundredths
5	4	7	•	7	7

Place Value

7 hundredths = $7 \times 0.01 = 0.07$

7 tenths = $7 \times 0.1 = 0.7$

7 ones = $7 \times 1 = 7$

4 tens = $4 \times 10 = 40$

5 hundreds = $5 \times 100 = 500$

Expanded form = 500 + 40 + 7 + 0.7 + 0.07

5. (*a*) $4 \times 1 + 2 \times 0.1 = 4 + 0.2 = 4.2$

(*b*) 3 ones + 5 hundredths

$= 3 + \frac{5}{100} = 3 + 0.05 = 3.05$

(*c*) 4 tens + 6 ones + 5 tenths + 2 hundredths

$= 4 \times 10 + 6 \times 1 + \frac{5}{10} + \frac{2}{100}$

$= 40 + 6 + 0.5 + 0.02 = 46.52$

(*d*) 200 + 0.4 = 200.4

Practice Time 5C

1. (*a*) $\frac{4}{10} = 0.4$ (*b*) $\frac{37}{10} = 3.7$

(*c*) $\frac{9}{100} = 0.09$ (*d*) $\frac{48}{100} = 0.48$

(*e*) $\frac{98}{100} = 0.98$ (*f*) $\frac{196}{100} = 1.96$

(*g*) $\frac{213}{100} = 2.13$ (*h*) $1\frac{4}{10} = \frac{14}{10} = 1.4$

(*i*) $23\frac{5}{10} = \frac{235}{10} = 23.5$ (*j*) $8\frac{7}{100} = \frac{807}{100} = 8.07$

2. (*a*) $0.6 = \frac{6}{10}$ (*b*) $0.35 = \frac{35}{100}$

(*c*) $1.2 = \frac{12}{10} = 1\frac{2}{10}$ (*d*) $5.1 = \frac{51}{10} = 5\frac{1}{10}$

(*e*) $3.9 = \frac{39}{10} = 3\frac{9}{10}$ (*f*) $3.45 = \frac{345}{100} = 3\frac{45}{100}$

(*g*) $9.03 = \frac{903}{100} = 9\frac{3}{100}$ (*h*) $27.2 = \frac{272}{10} = 27\frac{2}{10}$

(*i*) $26.63 = \frac{2663}{100} = 26\frac{63}{100}$

(*j*) $28.04 = \frac{2804}{100} = 28\frac{4}{100}$

Chapter Assessment

1. (*a*) (*iii*) Two hundredths + six tenths

$= \frac{2}{100} + \frac{6}{10} = 0.02 + 0.6 = 0.62$

(*b*) (*iv*) Place value of 7 in 18.27 = 7 hundredths

$= \frac{7}{100}$

(*c*) (*ii*) $\frac{18764}{100} = 187.64$

(*d*) (*ii*) 10 rupees and 5 paise = 10.05.

(*e*) (*ii*) $6\frac{9}{10} = \frac{69}{10} = 6.9$

2. (*a*) (*iv*) Five tenths + six-hundredths

$\frac{5}{10} + \frac{6}{100} = 0.5 + 0.06 = 0.56$

(*b*) (*iii*) One hundred + six-tenths

$= 100 + \frac{6}{10} = 100 + 0.6 = 100.6$

(*c*) (*ii*) Nineteen point seven eight = 19.78

(*d*) (*i*) Thirteen + four hundredths

$= 13 + \frac{4}{100} = 13 + 0.04 = 13.04$

3. (*a*) 4.7$\underline{3}$ = Three hundredths = $\frac{3}{100} = 0.03$

(*b*) 19.$\underline{6}$9 = 6 tenths = $\frac{6}{10} = 0.6$

(*c*) 72.$\underline{3}$7 = 3 tenths = $\frac{3}{10} = 0.3$

(*d*) $\underline{9}$32.5 = 9 hundreds = 9 × 100 = 900

4. (*a*) Tens place = 6, ones place = 5,
tenths place = 2, hundredths place = 8.
Decimal number = 65.28

(*b*) Tenths place = 7, tens place = 8,
hundredths place = 9, ones place = 4.
Decimal number = 84.79.

(*c*) Ones place = 9, hundreds place = 3,
hundredths place = 5.
Decimal number = 309.05

5. A's score = 9.8 seconds;

B's score = $9\frac{76}{100} = \frac{976}{100} = 9.76$ seconds;

C's score = $9\frac{8}{10} = \frac{98}{10} = 9.8$ seconds;

D's score = $9\frac{7}{10}$ seconds = $\frac{97}{10} = 9.7$ seconds;

E's score = $9\frac{6}{100} = \frac{906}{100} = 9.06$ seconds.

Thus, swimmer (E) is the winner of the competition.

6. 5 tenths = $\frac{5}{10} = 0.5$

Decimal = 0.5 and Fraction = $\frac{5}{10}$

7. Smallest decimal number = 12.42
Largest decimal number = 42.12

8. On dividing 1 m into 10 equal parts,

i.e., $\frac{1}{10} = 0.1$ m or 10 cm

Thus, each equal part is 0.1 m, *i.e.*, 1 tenths.

Mental Maths (Page 110)

1. (*a*) 10 coloured strips are here.

(*b*) (*i*) Fraction of yellow strips = $\frac{5}{10}$

Decimal number for yellow strips = 0.5

(*ii*) Fraction of blue strips = $\frac{2}{10}$

Decimal number for blue strips = 0.2

(*iii*) Fraction of peach strips = $\frac{3}{10}$

Decimal number of peach strips = 0.3

2.

		Ones	•	Tenths	Hundredths	Decimal
(*a*)	9 tenths	0	•	9		0.9
(*b*)	5 and 7 tenths 6 hundredths	5	•	7	6	5.76
(*c*)	1 and 4 hundredths	1	•	0	4	1.04
(*d*)	5 and 47 hundredths	5	•	4	7	5.47

Challenge Question (Page 111)

1. Hundredths digit = greatest one-digit prime number = 7
Ones digit = greatest one-digit composite number = 9
Tens digit = smallest prime number = 2
Tenths digit = double of tens digit = 2 × 2 = 4
Hence, the decimal number is 29.47.

2. Given ones digit = 3
Tenths digit is twice the ones digit = 0.6
Hundredths digit is the smallest even number = 0.02
Thus, the decimal number is = 3 + 0.6 + 0.02 = 3.62

CHAPTER 6: GEOMETRY

Let's Recall

1. Edge of a pencil, edge of a mobile phone, edge of blackboard, edge of a book.
2. Pizza slices, traffic signs, sandwich slices, nachos.
3. Blackboard, top of a table, ruler, playing card.
4. Bangles, coins, whole pizza, dart board.

Think Tank (Page 114)

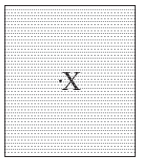
1. Tip of a sharpened pencil: Point
2. The edge of a book: Line segment
3. Floor of a room: Plane

Practice Time 6A

1. (*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.

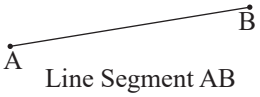
2. (*a*) A point has no length, breadth and thickness.
(*b*) A ray can be extended in one direction.
(*c*) A line can be extended in both directions.
(*d*) A line segment has two end points.
(*e*) Intersecting lines intersect each other at a point.
(*f*) Parallel lines never meet.

3. (*a*)



Point X

(*b*)



Line Segment AB

(*c*)

Line PQ

(*d*)

Ray XY

(*e*)

Straight Line AB Straight Line PQ

4. (*a*) Line AB or $\overleftrightarrow{AB}$ (*b*) Line QP or $\overleftrightarrow{QP}$
(*c*) Line segment ST or $\overline{ST}$
(*d*) Line EF or $\overleftrightarrow{EF}$
(*e*) Intersecting lines AB and CD
(*f*) Parallel lines l and m or l || m
(*g*) Intersecting lines p and q
(*h*) Parallel lines s and t or s || t

5. (*a*) Points: A, P, B, Q
(*b*) Line: l
(*c*) Line segment: AB
(*d*) Rays: $\overrightarrow{PA}$, $\overrightarrow{PB}$ and $\overrightarrow{PQ}$

6.

	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 $\overrightarrow{YZ}$ **8.** Do it yourself.

Practice Time 6B

1. (*b*) and (*d*)
2. (*a*) ∠PQR or ∠RQP (*b*) ∠XYZ or ∠ZYX
(*c*) ∠LMN or ∠NML (*d*) ∠EFG or ∠GFE

3.

	Arms	Vertex	Name of the angle
(*a*)	$\overrightarrow{OP}$, $\overrightarrow{OT}$	O	∠POT or ∠TOP
(*b*)	$\overrightarrow{US}$, $\overrightarrow{UN}$	U	∠SUN or ∠NUS
(*c*)	$\overrightarrow{OT}$, $\overrightarrow{OP}$	O	∠TOP or ∠POT

4. (*a*) ∠AOB, ∠BOC and ∠AOC
(*b*) ∠RPS, ∠RPT, ∠RPQ, ∠SPT, ∠SPQ and ∠TPQ

5. (*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

1. (*a*) 25° (*b*) 60°
(*c*) 140° (*d*) 165°
(*e*) 220° (*f*) 90°

2. (*a*) 65° (*b*) 110°
(*c*) 90° (*d*) 105°

Fast Check (Page 126)

1. Clock 'A' shows an angle less than 90°. So, it is an acute angle.

2. Clock 'B' shows an angle equal to 90°. So, it is a right angle.

3. Clock 'C' shows an angle more than 90°. So, it is an obtuse angle.

4. Clock 'D' shows an angle equal to 180°. So, it is a straight angle.

5. Clock 'E' shows an angle more than 180°. So, it is a reflex angle.

Practice Time 6D

1. (*a*) Acute angle (*b*) Right angle
(*c*) Obtuse angle (*d*) Straight angle

2. (*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

3. (*a*) Complete angle (*b*) Right angle
(*c*) Straight angle (*d*) Reflex angle
(*e*) Acute angle (*f*) Reflex angle
(*g*) Right angle (*h*) Acute angle

4. (*a*) ∠DEF: Acute angle
(*b*) ∠ABC: Straight angle
(*c*) ∠XYZ: Right angle
(*d*) ∠MNO: Reflex angle

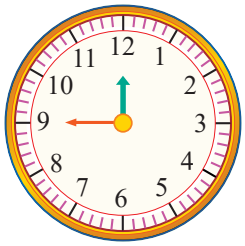
5. (*a*) South (*b*) North (*c*) East (*d*) West (*e*) East (*f*) South (*g*) South

6. (*a*) When the minute hand moves by 15 minutes, it has made a $\frac{1}{4}$ turn of a circle.
(*b*) When the minute hand moves by 30 minutes, it has made a $\frac{1}{2}$ turn of a circle.
(*c*) When the minute hand moves by 45 minutes, it has made a $\frac{3}{4}$ turn of a circle.
(*d*) When the minute hand moves by 60 minutes, it has made a full turn of a circle.

7. When Padma takes a half-turn clockwise, she will face the ice-cream cart. The other way she can face the same place is by turning half-turn anticlockwise.

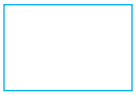
Challenge Question (Page 128)

The hour hand of a clock makes 3 right angles to reach 9 PM if it starts from 12 PM.



Fast Check (Page 130)

	Statement	Shape
1.	All my angles are right angles, but all my sides are not equal.	
2.	All my sides are equal, but all my angles are not.	
3.	My opposite angles are equal, but my sides do not make a right angle.	
4.	Two pairs of sides are equal, but they do not make a right angle.	
5.	All my sides make right angles with each other and are equal.	

6.	My opposite angles are equal and so are my sides.	
7.	My opposite angles are equal and my sides make right angles.	

Think Tank (Page 131)

1. A triangle can have 3 acute angles.
2. A triangle can have only one right angle.
3. A triangle can have only one obtuse angle.

Practice Time 6E

1. (*a*) (*v*) A triangle has 3 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.

2. (*a*) PQ = 3 cm, QR = 6 cm, PR = 4 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*) $\angle XYZ = 60°$, $\angle YZX = 25°$, $\angle ZXY = 95°$ *i.e.*, obtuse-angled triangle
(*e*) $\angle PQR = 90°$, $\angle QRP = 45°$, $\angle RPQ = 45°$ *i.e.*, Right angled triangle.
(*f*) $\angle ABC = 125°$, $\angle BCA = 30°$, $\angle CAB = 25°$ *i.e.*, obtuse-angled triangle

Practice Time 6F

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*) AB = 2 × OP

2. (*a*) The radius of a circle is double the diameter. False.
(*b*) We can draw many diameters on a circle. True
(*c*) A circle can have many centres. False
(*d*) The circumference of a circle depends on its radius. True.

3. (*a*) Radius = 2.5 cm (given)
We have, diameter = 2 × radius
Therefore, diameter = 2 × 2.5 cm = 5 cm
(*b*) Radius = 3 cm (given)
We have, diameter = 2 × radius
Therefore, diameter = 2 × 3 cm = 6 cm
(*c*) Radius = 11 mm (given)
We have, diameter = 2 × radius
Therefore, diameter = 2 × 11 mm = 22 mm
(*d*) Radius = 8 cm (given)
We have, diameter = 2 × radius
Therefore, diameter = 2 × 8 cm = 16 cm

4. (*a*) Diameter = 6 cm (given)

$$\text{We have, radius} = \frac{\text{Diameter}}{2}$$

$$\text{Therefore, radius} = \frac{6}{2}\ \text{cm} = 3\ \text{cm}$$

(*b*) Diameter = 9 cm (given)

$$\text{We have, radius} = \frac{\text{Diameter}}{2}$$

$$\text{Therefore, radius} = \frac{9}{2}\ \text{cm} = 4.5\ \text{cm}$$

(*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

$$\text{We have, radius} = \frac{\text{Diameter}}{2}$$

$$\text{Therefore, radius} = \frac{16}{2}\ \text{mm} = 8\ \text{mm}$$

Maths Connect (Page 134)

(*a*) Right angle (*b*) Acute angle
(*c*) Obtuse angle (*d*) Straight angle
(*e*) Right angle (*f*) Obtuse angle

Mental Maths (Page 135)

$\angle ABC = 45°$, $\angle PQR = 30°$, $\angle STU = 255°$, $\angle RST = 120°$ and $\angle DEF = 90°$.
$30° < 45° < 90° < 120° < 255°$
Ascending order: $\angle PQR < \angle ABC < \angle DEF < \angle RST < \angle STU$

Challenge Question (Page 135)

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 consecutive spokes $= \frac{360°}{48} = \left(\frac{15}{2}\right)^{\circ} = \left(7\frac{1}{2}\right)^{\circ}$ or 7.5°.

Chapter Assessment

1. (*a*) (*iii*) Reflex angle is greater than a straight angle.

(*b*) (*iv*) The minute hand of a clock turns through 360° in one hour.

(*c*) (*iv*) 2 complete angles = 360° × 2 = 720°

$$\frac{720°}{90°} = 8.$$

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 $\overleftrightarrow{BD}$ and $\overleftrightarrow{AC}$.

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 intersecting lines are *a* and *b*; *a* and *c*; *a* and *r*; *a* and *p*, *a* and *q*; *b* and *r*; *b* and *p*; *b* and *q*; *c* and *p*; *c* and *q*; *c* and *r*; *p* and *r*; *q* and *r*.

(*b*) All pairs of parallel lines are $b \parallel c$ and $p \parallel q$.

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: $l \parallel n$

Intersecting lines: *l* and *p*; *n* and *p*

(*b*) Parallel lines: $q \parallel r$, Intersecting lines: *p* and *q*; *r* and *s*; *p* and *s*, *q* and *s*; *p* and *r*

(*c*) Parallel lines: $a \parallel b$, Intersecting lines: *a* and *c*, *b* and *c*.

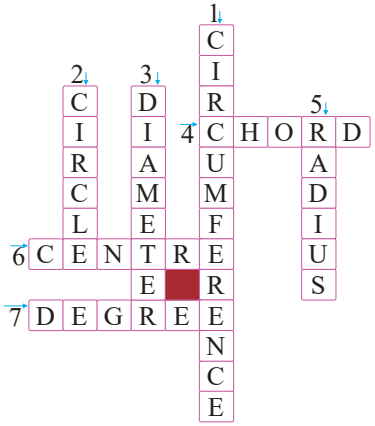
7. (*a*) Three triangles are: ΔPQS, ΔQSR and ΔPQR.

(*b*) Seven angles are: ∠PQR, ∠PQS, ∠SQR, ∠SRQ, ∠PSQ, ∠RPQ, ∠RSQ.

(*c*) Six line segments are: $\overline{PQ}, \overline{QS}, \overline{QR}, \overline{SR}, \overline{PS}, \overline{PR}$

(*d*) ΔPSQ and ΔQSR have ∠S as common.

Maths Fun (Page 137)



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.

10. (*a*) 80 lakh = 8 million.

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 rectangle has equal opposite sides and all the angles are 90º.

4. 11.11 = 10 + 1 + .1 + .01

$= 10 + 1 + \frac{1}{10} + \frac{1}{100}$

Thus, 11.11 × 1.11 = 12.3321.

5. 50 – 48 ÷ 6 × 4 + 5

= 50 – 8 × 4 + 5 (Division: 48 ÷ 6)

= 50 – 32 + 5 (Multiplication: 8 × 4)

= 50 + 5 – 32

= 55 – 32 (Addition: 50 + 5)

= 23 (subtraction: 55 – 32)

C.

1. The number of zeros in 100 million is eight. **True.**

2. 36972 is divisible by 11. **False.**

$$\begin{array}{r} 11\overline{)36972}(3361 \\ -33 \\ \hline 39 \\ -33 \\ \hline 67 \\ -66 \\ \hline 12 \\ -11 \\ \hline 1 \end{array}$$

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 – 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.

2. $2\frac{1}{2} + 1\frac{1}{2} - \frac{2}{3} \times \frac{1}{3} \div 9$

$= \frac{5}{2} + \frac{3}{2} - \frac{2}{3} \times \frac{1}{3} \times \frac{1}{9}$ $\left(\text{Division: } \frac{1}{3} \div 9\right)$

$= \frac{5}{2} + \frac{3}{2} - \frac{2}{3} \times \frac{1}{27}$ $\left(\text{Multiplication:} \frac{1}{3} \times \frac{1}{9}\right)$

$= \frac{5}{2} + \frac{3}{2} - \frac{2}{81}$ $\left(\text{Multiplication:} \frac{2}{3} \times \frac{1}{27}\right)$

$= \frac{5+3}{2} - \frac{2}{81}$ $\left(\text{Addition: } \frac{5}{2} + \frac{3}{2}\right)$

$= \frac{8}{2} - \frac{2}{81} = 4 - \frac{2}{81} = \frac{324 - 2}{81}$

[∵ LCM of 1 and 81 = 81]

$= \frac{322}{81}$ $\left(\text{Subtraction: } 4 - \frac{2}{81}\right)$ $= 3\frac{79}{81}$.

$$\begin{array}{r} 81\overline{)322}(3 \\ -243 \\ \hline 79 \end{array}$$

3. Product = 108, LCM = 36 (Given)

We know that,

HCF × LCM = Product of two numbers.

HCF × 36 = 108

$\text{HCF} = \frac{108}{36} = 3.$

4.

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

5.

$$\begin{array}{r} 3\ 8\ 6 \\ 126\overline{)4\ 8\ 7\ 3\ 0} \\ -\ 3\ 7\ 8 \\ \hline 1\ 0\ 9\ 3 \\ -\ 1\ 0\ 0\ 8 \\ \hline 8\ 5\ 0 \\ -\ 7\ 5\ 6 \\ \hline 9\ 4 \end{array}$$

6. Capacity of 8 water bottles = $12\frac{4}{5}$ L

So, capacity of 1 water bottle = $\frac{64}{5} \div 8 = \frac{64}{5} \times \frac{1}{8}$

$= \frac{8}{5}$ L.

Therefore, capacity of 12 water bottles

$= \frac{8}{5} \times 12 = \frac{96}{5} = 19.2$ L.

7. (*a*) AN is a ray (*b*) LC is a line

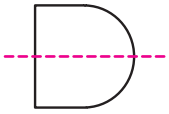
(c) EJ is a ray (*d*) DK is a line segment

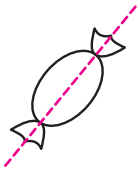
(e) BC is a ray (f) BL is a ray

CHAPTER 7 : SYMMETRY AND PATTERNS

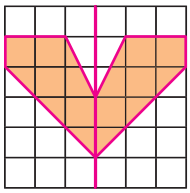
Let's Recall

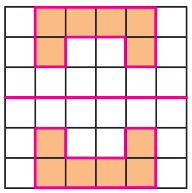
1. (*a*) 

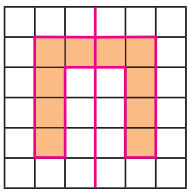
(*b*) 

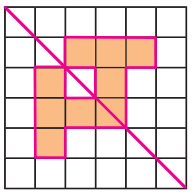
(*c*) 

(*d*) 

2. (*a*) 

(*b*) 

(*c*) 

(*d*) 

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 Tank (Page 142)

When we cut a square along its diagonal, we get an isosceles triangle, and this new isosceles triangle has only one line of symmetry.

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.

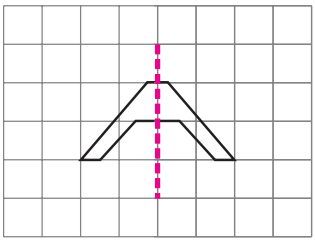
(*e*) A letter 'H' has two lines of symmetry.

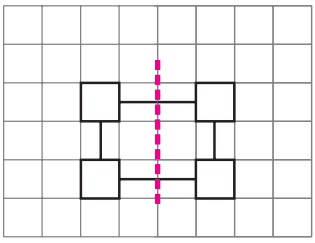
3. (*a*) one (*b*) two

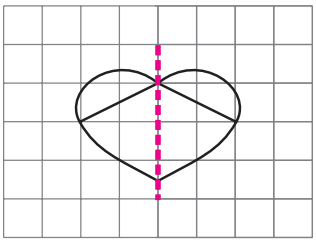
(*c*) five (*d*) six

(*e*) infinite (*f*) two

(*g*) six (*h*) two

4. (*a*) 

(*b*) 

(*c*) 

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 Tank (Page 146)

1. $\frac{1}{4}$ turn $= \frac{1}{4} \times 360° = 90°$. *i.e.*, 11:00

2. $\frac{1}{2}$ turn $= \frac{1}{2} \times 360° = 180°$. *i.e.*, 11:15

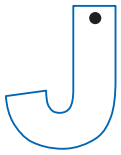
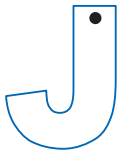
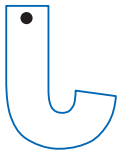
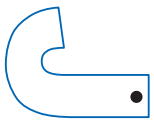
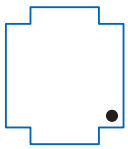
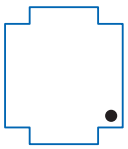
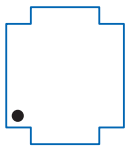
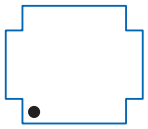
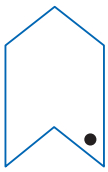
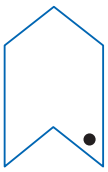
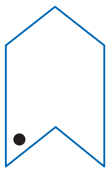
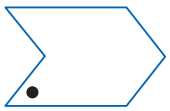
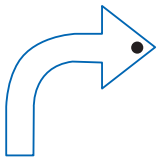
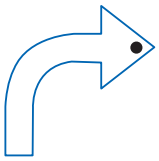
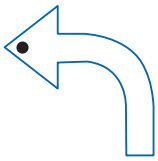
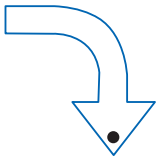
Practice Time 7B

1. (*a*) Flip (*b*) Turn (*c*) Slide

(*d*) Flip, Turn (*e*) Turn (*f*) Flip

2. (*a*) Turn (*b*) Slide (*c*) Flip, Turn.

3.

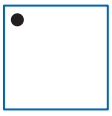
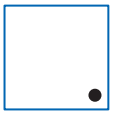
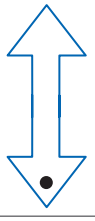
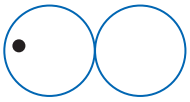
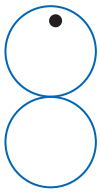
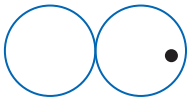
	Shape	Slide	Flip	Turn one-fourth $\left(\frac{1}{4}\right)$
(*a*)				
(*b*)				
(*c*)				
(*d*)				

4. (*b*) and (*c*) **5.** (*a*), (*c*), (*d*)

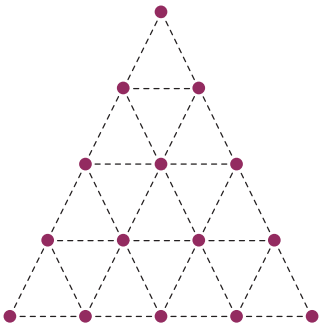
6. (*a*) None (*b*) H, I, N, O, S, X and Z.

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.

8.

	Shape	On $\frac{1}{4}$ turn	On $\frac{1}{2}$ turn
(*a*)			
(*b*)			
(*c*)			
(*d*)			

Fast Check (Page 149)



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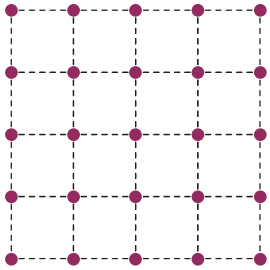
Fast Check (Page 149)



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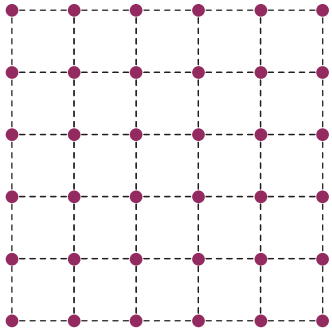

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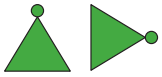
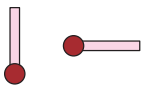
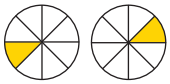
Think Tank (Page 151)

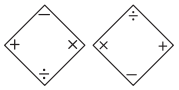
Shapes that provides tessellation are shape 1, 2, 5 and 6.

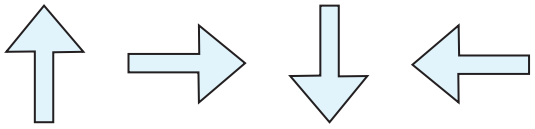
Practice Time 7C

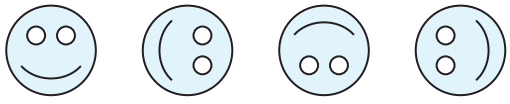
1. (*a*)  Pattern made with $\frac{1}{4}$ turn.

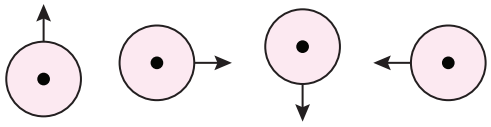
(*b*)  Pattern made with $\frac{1}{4}$ turn.

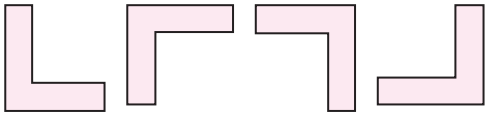
(*c*)  Pattern made with $\frac{1}{2}$ turn.

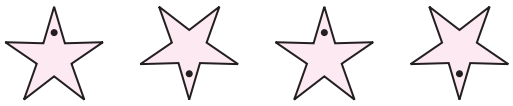
(*d*)  Pattern made with $\frac{1}{2}$ turn.

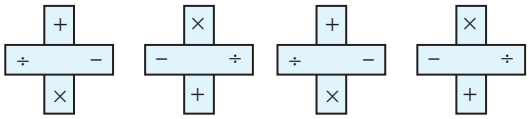
2. (*a*) 

(*b*) 

(*c*) 

(*d*) 

3. (*a*) 

(*b*) 

4. (*a*) $98765 \times 9 + 3 = 888888$.
$987654 \times 9 + 2 = 8888888$.

(*b*) $1 + 3 + 5 + 7 + 9 + 11 = 36 = 6 \times 6$.
$1 + 3 + 5 + 7 + 9 + 11 + 13 = 49 = 7 \times 7$.
$1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 = 64 = 8 \times 8$.

(*c*) $37 \times 12 = 444$; $37 \times 15 = 555$.

(*d*) $77762223 \div 7777 = 9999$.
$7777622223 \div 77777 = 99999$.

(*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.

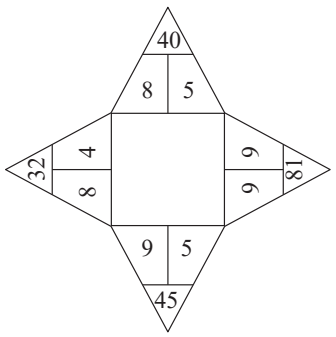
(*c*) 6, 11, 21, 36, 56, 81, 111, 146, 186.

(*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 Maths (Page 152)



$8 \times 5 = 40$
$4 \times 8 = 32$
$9 \times 9 = 81$

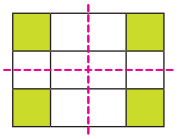
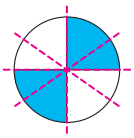
Chapter Assessment

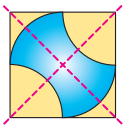
1. (*a*) - (*i*) The number of line (s) of symmetry in digit '3' is 1.

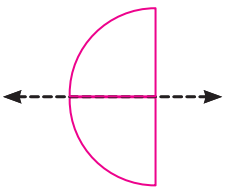
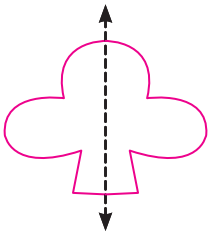
(*b*) - (*iii*) Letter 'Z' does not have any line of symmetry.

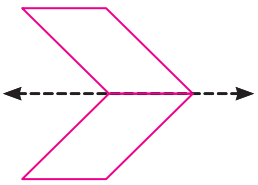
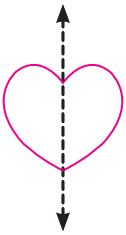
(*c*) - (*iii*) 8, 15, 22, 29, 36, 43.

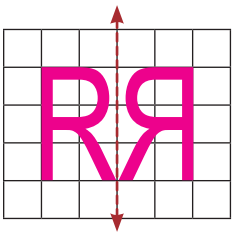
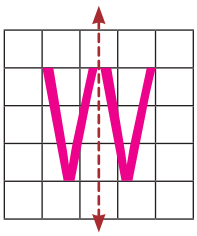
(*d*) - (*ii*)

2. (*a*)  (*b*) 

(*c*) 

3. (*a*)  (*b*) 

(*c*)  (*d*) 

4. (*a*)  (*a*) 

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) ÷ 8 = 1234, (98765 – 5) ÷ 8 = 12345.

(*c*) 6666 × 6666 = 44435556, 66666 × 66666 = 4444355556.

(*d*) 29, 24, 19, 14, 9, 4

(*e*) 15, 30, 45, 60, 75, 90.

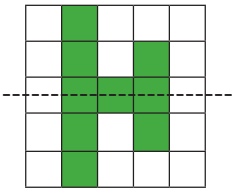
(*f*) 107, 98, 89, 80, 71, 62.

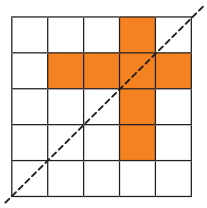
10. (*a*) 11th square number = 121

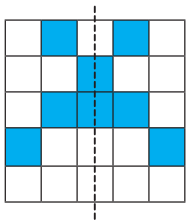
(*b*) 9th triangular number = 45

11. 1 and 36 are both square and triangular numbers.

Challenge Question (Page 156)

1. 

2. 

3. 

CHAPTER 8 : MEASUREMENT

Let's Recall

1. 3 m 5 cm = 3 × 100 cm + 5 cm
= 300 cm + 5 cm = 305 cm

2. 225 kg = (225 × 1000)g = 225000 g

3. 4 L 45 mL = 4 × 1000 mL + 45 mL
= (4000 + 45)mL

$$= 4045 \text{ mL} = \frac{4045}{10} \text{ cL} = 404.5 \text{ cL}$$

4. 32 m 75 cm + 8 m 25 cm = 41 m 00 cm

	m	cm
	① ①	①
	3 2	7 5
+	8	2 5
	4 1	0 0

5. 440 kg 430 g – 275 kg 288 g = 165 kg 142 g

	kg			g		
		⑬			⑫	
	③	④	⑩	③	④	⑩
	~~4~~	~~4~~	~~0~~	~~4~~	~~3~~	~~0~~
–	2	7	5	2	8	8
	1	6	5	1	4	2

6. The amount of milk left
= 11 L 500 mL – 8 L
= 3 L 500 mL = 3500 mL

	L		mL	
	⓪	⑪		
	~~1~~	1	5	0 0
–		8	0	0 0
		3	5	0 0

Practice Time 8A

1. (*a*) 73 km = 73 × 1000 m = 73000 m (∵ 1 km = 1000 m)

(*b*) 182 cm = 182 × 10 mm = 1820 mm (∵ 1 cm = 10 mm)

(*c*) 39 km = 39 × 1000 m = 39000 m
(∵ 1 km = 1000 m)

(*d*) 600 m = $\frac{600}{100}$ hm = 6 hm (∵ 1 hm = 100 m)

(*e*) 54 kg = 54 × 1000 g = 54,000 g
(∵ 1 kg = 1000 g)

(*f*) 45 kg = 45 × 100 dag = 4500 dag
(∵ 1 kg = 100 dag)

(*g*) 3260 g = 3200 g + 60 g = $\frac{3200}{100}$ hg + 60 g
= 32 hg 60 g (∵ 1hg = 100 g)

(*h*) 1465 mL = 1400 mL + 65 mL = $\frac{1400}{100}$ dL + 65 mL = 14 dL 65 mL (∵ 1 dL = 100 mL)

(*i*) 3808 L = 3000 L + 808 L = $\frac{3000}{1000}$ kL + 808 L
= 3 kL 808 L (∵ 1 kL = 1000 L)

2. (*a*) 17 km = 17 × 100 dam = 1700 dam

(*b*) 44 dam = 44 × 10000 mm = 4,40,000 mm

(*c*) 77 dm = 77 × 100 mm = 7700 mm

(*d*) 3000 dam = 3000 × 10 m = 30,000 m

(*e*) 2700 cm = $\frac{2700}{100}$ m = 27 m

(*f*) 25 dag = 25 × 100 dg = 2500 dg

(*g*) 172 dg = 172 × 100 mg = 17,200 mg

(*h*) 86 dag = 86 × 10 g = 860 g

(*i*) 4326 dg = 4300 dg + 26 dg = $\frac{4300}{100}$ dag + 26 dg = 43 dag 26 dg

(*j*) 2114 cg = 2110 cg + 4 cg = $\frac{2110}{10}$ dg + 4 cg
= 211 dg 4 cg

(*k*) 1340 cL = $\frac{1340}{10}$ dL = 134 dL

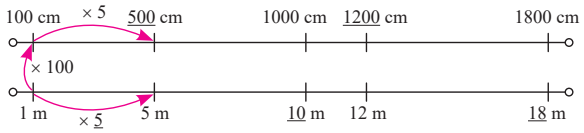
(*l*) 8000 L = $\frac{8000}{1000}$ kL = 8 kL

(*m*) 355 L = 355 × 100 cL = 35,500 cL

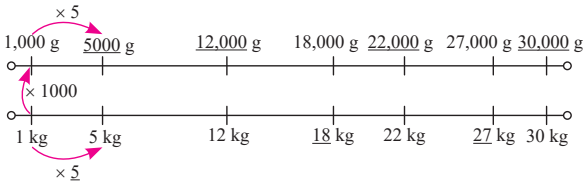
(*n*) 260 cL = $\frac{260}{10}$ dL = 26 dL

(*o*) 326 hL = 326 × 100000 mL = 3,26,00,000 mL

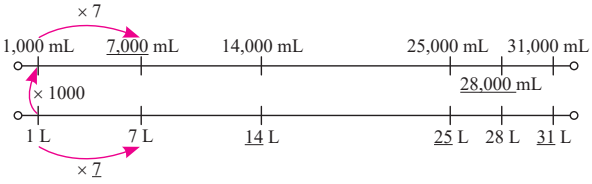
3. (*a*)



(*b*)



(*c*)



Practice Time 8B

1. (*a*)

	m	dm	cm	mm
	②	①	①	
	3	4	5	7
	4	8	7	1
+	2	7	3	4
	1	1	0	6	2

Thus, 3 m 4 dm 5 cm 7 mm + 4 m 8 dm 7 cm 1 mm + 2 m 7 dm 3 cm 4 mm
= 11 m 0 dm 6 cm 2 mm
= 1 dam 1 m 0 dm 6 cm 2 mm

(*b*)

	kg	hg	dag	g
	②	①		
	4	5	7	2
	3	8	2	3
+	5	8	2	3
	1	4	2	1	8

Thus, 4 kg 5 hg 7 dag 2 g + 3 kg 8 hg 2 dag 3 g + 5 kg 8 hg 2 dag 3 g = 14 kg 2 hg 1 dag 8 g

(*c*)

	kL	hL	daL	L
	①	①	①	
	8	3	7	5
	3	6	5	2
+	3	5	6	4
	1	5	5	9	1

Thus, 8 kL 3 hL 7 daL 5 L + 3 kL 6 hL 5 daL 2 L + 3 kL 5 hL 6 daL 4 L
= 15 kL 5 hL 9 daL 1 L

(*d*)

	km		m	
		①	①	
	5	2	4	8
	1	1	5	5
+	3			6
	1	9	3	0	9

Thus, 5 km 248 m + 11 km 55 m + 3 km 6 m = 19 km 309 m

(*e*)

	g		mg	
	①		①	①	
	1	8	2	5	0
	1	0		5	7
+		6	5	8	9
	3	4	8	9	6

Thus, 18 g 250 mg + 10 g 57 mg + 6 g 589 mg = 34 g 896 mg.

(*f*)

	L	mL
		①
	6	2 9 2
+	7	3 8 5
	13	6 7 7

Thus, 6 L 292 mL + 7 L 385 mL = 13 L 677 mL

2. (*a*)

	kL	hL	daL	L
			⑬	
		⑧	~~2~~	⑫
	7	1	~~9~~	~~4~~ ~~2~~
−	1	0	2	6 4
	6	1	6	7 8

Thus, 71 kL 9 hL 4 daL 2 L – 10 kL 2 hL 6 daL 4 L = 61 kL 6 hL 7 daL 8 L

(*b*)

	m	dm	cm	mm
		④	⑭	
	6	~~5~~	~~4~~	9
−	3	4	8	2
	3	0	6	7

Thus, 6 m 5 dm 4 cm 9 mm – 3 m 4 dm 8 cm 2 mm = 3 m 0 dm 6 cm 7 mm

(*c*)

	kg	hg	dag	g
		⑯	⑪	
	④	~~⑥~~	~~①~~	⑯
	~~5~~	~~7~~	~~2~~	~~6~~
−	3	8	5	9
	1	8	6	7

Thus, 5 kg 7 hg 2 dag 6 g – 3 kg 8 hg 5 dag 9 g = 1 kg 8 hg 6 dag 7 g

(*d*)

	m	cm
	② ⑫	
	~~3~~ ~~2~~	7 5
−	1	4 2 5
	1	8 5 0

Thus, 32 m 75 cm – 14 m 25 cm = 18 m 50 cm

(*e*)

	g	mg
	⑩	
	~~1~~ ~~0~~ 9	3 7 9
−	5	5 3 1 2
	5	4 0 6 7

Thus, 109 g 379 mg – 55 g 312 mg = 54 g 67 mg

(*f*)

		⑪
		⑥ ~~①~~ ⑮
		~~7~~ ~~2~~ ~~5~~ mL
−	6	5 6 mL
	0	6 9 mL

= 69 mL

3. The length of one piece of rope = 132 cm

The length of another piece of ribbon = 188 cm

Length of resultant piece of ribbon

= 132 cm + 188 cm = 320 cm

Thus, the length of resultant piece of ribbon is 320 cm

4. Atul weighs = 48 kg 250 g

Siya weighs 8 kg 125 g less than Atul

Weight of Siya

= 48 kg 250 g – 8 kg 125 g

= 40 kg 125 g

Thus, weight of Siya = 40 kg 125 g

	kg	g
		④ ⑩
	4 8	2 ~~5~~ ~~0~~
−	8	1 2 5
	4 0	1 2 5

5. Capacity of one bucket = 18 L 350 mL

Capacity of other bucket

= 16 L 755 mL

Total capacity of both the buckets

= 18 L 350 mL + 16 L 755 mL

= 35 L 105 mL

	L	mL
	① ①	①
	1 8	3 5 0
+	1 6	7 5 5
	3 5	1 0 5

Think Tank (Page 166)

1. Distance travelled by car = 260 km

Time taken by the car to travel 260 km = 4 hours

So, Speed = $\frac{\text{Distance}}{\text{Time}} = \left(\frac{260}{4}\right)$ km/h = 65 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,

Distance = Speed × Time

= 85 × 3 km = 255 km

Thus, the train covered 255 km in 3 hours.

Mental Maths (Page 167)

1. 17 cm + 20 mm

= 17 × 10 mm + 20 mm

= 170 mm + 20 mm = 190 mm

2. 12 km – 600 m = 12000 m – 600 m = 11400 m

= 11000 m + 400 m = $\frac{11000}{1000}$ km + 400 m

= 11 km 400 m

3. 10 kg + 5 g = 10 × 1000 g + 5 g

= 10000 g + 5 g = 10005 g

4. 7400 g – 600 g = 6800 g = 6000 g + 800 g

= 6 kg 800 g

5. 12 L – 70 mL = 12 × 1000 mL – 70 mL

= 12000 mL – 70 mL = 11,930 mL

6. 4 L – 700 mL = 4000 mL – 700 mL = 3300 mL

= 3 L 300 mL

Chapter Assessment

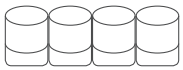
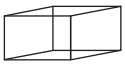
1. (*a*) (*iii*) Approximate quantity of juice in the glass 250 mL

(*b*) (*iii*) My weight in the morning = 46 kg
My weight with the book in my hand = 46 kg 200 g

(*c*) (*iii*) 13 dg = 130 mg is a wrong statement.
Since 1 dg = 100 mg So, 13 dg
= 13 × 100 = 1300 mg
Thus, 13 dg = 130 mg is incorrect.

(*d*) (*iii*)  = 3 L (Given)

 = 6 litres

So,  = 
= (6 × 4) L = 24 L.

2. (*a*) 1 g = 100 cg
5245 cg = 5200 cg + 45 cg
= 52 g + 45 cg = 52 g 45 cg

(*b*) 1 km = 10 hm
6301 hm = 6301 divided by 10 gives 630 km and the remainder is 1 hm.
6301 hm = 630 km and 1 hm.

(*c*) 1 dL = 100 mL
323 dL = 323 × 100 = 32,300 mL.

(*d*) 1 dag = 100 dg
43 dag = 43 × 100 = 4300 dg.

(*e*) 1 dm = 100 mm
729 dm = 729 × 100 = 72,900 mm.

(*f*) 10 hL = 1 kL
9478 hL = 9478 divided by 10 = 947 kL and the remainder is 8 hL.
9478 hL = 947 kL and 8 hL.

3. Tina's books weigh = 3 kg = 3000 g; Her pencil box weighs = 257 g. Her lunch box weighs = 480 g

(*a*) Total weight of these items
= 3000 g + 257 g + 480 g = 3737 g = 3 kg 737 g

	3	0	0	g
		2	5	7 g
+		4	8	0 g
	3	7	3	7 g

(*b*) Least weight among the three items is of pencil box .Weight of Pencil box = 257 g
= 257 × 1000 mg = 2,57,000 mg

4. Venu's weight = 56 kg 890 g
So, Siya's weight = 56 kg 890 kg – 13 kg 782 g
Thus, the weight of Siya is 43 kg 108 g.

5. 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 km 100 m
Distance between both the cars after one hour
= 82 km 100 m – 75 km 250 m = 6 km 850 m

km		m		
	⑪	⑩		
⑦	✗	⓪	⑩	
~~8~~	~~2~~	~~1~~	~~0~~	0
– 7	5	2	5	0
0 6		8	5	0

Thus, distance between both the cars after one hour is 6 km 850 m

6. 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.

CHAPTER 9 : TIME

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 hours = 5:30 p.m.
Arrival time = 2400 hours = 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 p.m. = 2115 hours (∵ 1200 hours + 915 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 hours

Here, 0320 hours < 1200 hours.

Therefore, 0320 hours = 3:20 a.m.

(*b*) 0428 hours

Here, 0428 hours < 1200 hours.

Therefore, 0428 hours = 4:28 a.m.

(*c*) 0937 hours

Here, 0937 hours < 1200 hours.

Therefore, 0937 hours = 9:37 a.m.

(*d*) 1429 hours

Here, 1429 hours > 1200 hours.

Therefore, 1429 hours – 1200 hours = 2:29 p.m.

(*e*) 1330 hours

Here, 1330 hours > 1200 hours.

Therefore, 1330 hours – 1200 hours = 1:30 p.m.

(*f*) 1740 hours

Here, 1740 hours > 1200 hours.

Therefore, 1740 hours – 1200 hours = 5:40 p.m.

(*g*) 1825 hours

Here, 1825 hours > 1200 hours.

Therefore, 1825 hours – 1200 hours = 6:25 p.m.

(*h*) 0000 hours

Here, 0000 hours = 2400 hours.

0000 hours = 2400 hours – 1200 hours.

= 12:00 a.m. (midnight)

(*i*) 2222 hours

Here, 2222 hours > 1200 hours.

Therefore, 2222 hours – 1200 hours = 10:22 p.m.

(*j*) 2138 hours

Here, 2138 hours > 1200 hours.

Therefore, 2138 hours – 1200 hours = 9:38 p.m.

(*k*) 1348 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

(∵ 0140 hours < 1200 hours

∴ 1:40 a.m. = 0140 hours)

(*b*) 4:57 a.m.

4:57 a.m. = 0457 hours

(∵ 0457 hours < 1200 hours

∴ 4:57 a.m. = 0457 hours)

(*c*) 12:06 a.m.

12:06 a.m. = 0006 hours

(∵ 1206 hours > 1200 hours

∴ 1206 hours –1200 hours

= 0006 hours)

(*d*) 6:05 a.m.

6:05 a.m. = 0605 hours

(∵ 0605 hours < 1200 hours

∴ 6:05 a.m. = 0605 hours)

(*e*) 10:24 a.m.

10:24 a.m. = 1024 hours

(∵ 1024 hours < 1200 hours

∴ 10:24 a.m. = 1024 hours)

(*f*) 7:36 p.m.

7:36 p.m. = 1936 hours

(∵ 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

(∵ 1200 hours + 217 hours = 1417 hours)

(*i*) 11:00 p.m.

11:00 p.m. = 2300 hours

(∵ 1200 hours + 1100 hours = 2300 hours)

(*j*) 12:00 midnight

12:00 midnight = 0000 hours or 2400 hours.

(*k*) 3:30 p.m.

3:30 p.m. = 1530 hours

(∵ 1200 hours + 330 hours = 1530 hours)

(*l*) 9:40 p.m.

9:40 p.m. = 2140 hours

(∵ 1200 hours + 940 hours = 2140 hours)

Practice Time 9B

1. (*a*) 9 minutes into seconds

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

[∵ 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

[∵ 1 hour = 60 minutes]

= 180 minutes + 25 minutes + 16 seconds

= 205 minutes + 16 seconds

= (205 × 60) seconds + 16 seconds

[∵ 1 minute = 60 seconds]

= 12300 seconds + 16 seconds

= 12316 seconds.

(*d*) 14 hours into minutes

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*) 9 days into hours

1 day = 24 hours

So, 9 days = (9 × 24) hours = 216 hours.

(*g*) 8 days 19 hours into hours

= 8 days + 19 hours.

= (8 × 24) hours + 19 hours

(∵ 1 day = 24 hours)

= 192 hours + 19 hours

= 211 hours.

2. (*a*) 1318 seconds

Since, 60 seconds = 1 minute

1318 seconds

= (1318 ÷ 60) minutes.

Quotient = 21, Remainder = 58.

$$\begin{array}{r|l} 60 & 1318 \\ -120 & 21 \\ \hline 118 & \\ -\ 60 & \\ \hline 58 & \end{array}$$

Thus, 1318 seconds = 21 minutes 58 seconds.

(*b*) 3165 seconds

Since, 60 seconds = 1 minute

3165 seconds

= (3165 ÷ 60) minutes

Quotient = 52, Remainder = 45

$$\begin{array}{r|l} 60 & 3165 \\ -300 & 52 \\ \hline 165 & \\ -120 & \\ \hline 45 & \end{array}$$

Thus, 3165 seconds = 52 minutes 45 seconds.

3. (*a*) 238 minutes

Since, 60 minutes = 1 hour

238 minutes = (238 ÷ 60) hours

Quotient = 3, Remainder = 58

$$\begin{array}{r|l} 60 & 238 \\ -180 & 3 \\ \hline 58 & \end{array}$$

Thus, 238 minutes = 3 hours 58 minutes.

(*b*) 498 minutes

Since, 60 minutes = 1 hour

498 minutes = (498 ÷ 60) hours

Quotient = 8, Remainder = 18.

$$\begin{array}{r|l} 60 & 498 \\ -480 & 8 \\ \hline 18 & \end{array}$$

Thus, 498 minutes = 8 hours 18 minutes.

(*c*) 1032 minutes

= (1032 ÷ 60) hours

(∵ 60 minutes = 1 hours)

Quotient = 17, Remainder = 12

$$\begin{array}{r|l} 60 & 1032 \\ -60\downarrow & 17 \\ \hline 432 & \\ -420 & \\ \hline 12 & \end{array}$$

Thus, 1032 minutes = 17 hours 12 minutes.

(*d*) 3024 minutes

= (3024 ÷ 60) hours

(∵ 60 minutes = 1 hour)

Quotient = 50, Remainder = 24

$$\begin{array}{r|l} 60 & 3024 \\ -300\downarrow & 50 \\ \hline 24 & \end{array}$$

Thus, 3024 minutes = 50 hours 24 minutes.

4. (*a*) 57 hours

Since, 24 hours = 1 day

57 hours = (57 ÷ 24) days

Quotient = 2, Remainder = 9

$$\begin{array}{r|l} 24 & 57 \\ -48 & 2 \\ \hline 9 & \end{array}$$

Thus, 57 hours = 2 days 9 hours.

(*b*) 537 hours

Since, 24 hours = 1 day

537 hours = (537 ÷ 24) days

Quotient = 22, Remainder = 9

$$\begin{array}{r|l} 24 & 537 \\ -48\downarrow & 22 \\ \hline 57 & \\ -\ 48 & \\ \hline 9 & \end{array}$$

Thus, 537 hours = 22 days 9 hours.

(*c*) 953 hours

953 hours = (953 ÷ 24) days

(∵ 24 hours = 1 day)

Quotient = 39, Remainder = 17

$$\begin{array}{r|l} 24 & 953 \\ -72\downarrow & 39 \\ \hline 233 & \\ -216 & \\ \hline 17 & \end{array}$$

Thus, 953 hours = 39 days 17 hours.

(*d*) 1810 hours

1810 hours = (1810 ÷ 24) days

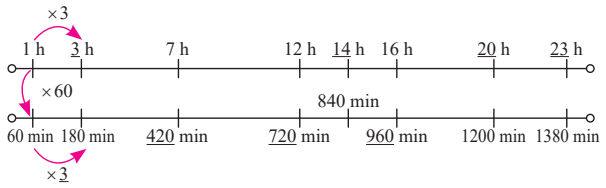
(∵ 24 hours = 1 day)

Quotient = 75, Remainder = 10

$$\begin{array}{r|l} 24 & 1810 \\ -168\downarrow & 75 \\ \hline 130 & \\ -120 & \\ \hline 10 & \end{array}$$

Thus, 1810 hours = 75 days 10 hours.

5.



Practice Time 9C

1. (*a*) - (*ii*)

Step 1. Add months:

= 8 months + 6 months

= 14 months

= 12 months + 2 months

(∵ 12 months = 1 year)

= 1 year + 2 months

Years	Months
(1)	
6	8
+ 8	6
15	**2**

Step 2. Add years:

1 year (carried over) + 6 years + 8 years = 15 years.

Thus, 6 years 8 months + 8 years 6 months = 15 years 2 months

(*b*) - (*i*) Subtract minutes.

∵ 25 minutes < 45 minutes

So, regroup hours and minutes

9 hours 25 minutes

= 8 hours 85 minutes

h	min
(8)	(85)
~~9~~	~~25~~
− 3	45
5	**40**

Now, 8 hours 85 minutes – 3 hours 45 minutes

= 5 hours 40 minutes

2. (*a*) 9 min 28 s and 6 min 16 s

Step 1. Add seconds:

28 seconds + 16 seconds

= 44 seconds.

Step 2. Add minutes:

9 minutes + 6 minutes

= 15 minutes.

min	s
9	28
+ 6	16
15	**44**

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:

32 minutes + 26 minutes

= 58 minutes.

Step 2. Add hours:

9 hours + 6 hours

= 15 hours.

h	min
9	32
+ 6	26
15	**58**

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:

17 hours + 15 hours

= 32 hours

= 24 hours + 8 hours

(∵ 1 day = 24 hours)

= 1 day + 8 hours.

days	h
(1)	
2	17
+ 3	15
6	**8**

Step 2. Add days:

1 day (carried over) + 2 days + 3 days = 6 days.

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:

4 days + 6 days

= 10 days

= 7 days + 3 days

= 1 week + 3 days

(∵ 1 week = 7 days)

Step 2. Add week:

1 week (carried over) + 5 weeks + 4 weeks

= 10 weeks

Weeks	Days
(1)	
5	4
+ 4	6
10	**3**

Thus, 5 weeks 4 days + 4 weeks 6 days = 10 weeks 3 days.

(*e*) 5 years 4 months and 3 years 7 months

Step 1. Add months:

4 months + 7 months

= 11 months

Step 2. Add years:

5 years + 3 years = 8 years

Years	Months
5	4
+ 3	7
8	**11**

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:

∵ 00 s < 48 s

So, regroup minutes and seconds.

∴ 30 minutes = 29 minutes 60 seconds. Now, 60 seconds – 48 seconds = 12 seconds.

min	s
(29)	(60)
~~30~~	~~00~~
− 20	48
9	**12**

Step 2. Subtract minutes:

29 minutes – 20 minutes = 9 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:

40 seconds – 33 seconds

= 7 seconds.

Step 2. Subtract minutes:

18 minutes – 15 minutes

= 3 minutes

	min	s
		(3) (10)
	18	~~4~~ ~~0~~
–	15	3 3
	03	**0 7**

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:

∵ 00 min < 40 min

So, regroup hours and minutes.

24 hours = 23 hours 60 minutes.

Now, 60 minutes – 40 minutes

= 20 minutes.

	h	min
	(23)	(60)
	~~24~~	~~00~~
–	8	40
	15	**20**

Step 2. Subtract hours:

23 hours – 8 hours = 15 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:

20 hours – 12 hours

= 8 hours.

	days	h
		(1) (10)
	4	~~2~~ ~~0~~
–	2	1 2
	2	**0 8**

Step 2. Subtract days:

4 days – 2 days = 2 days.

Thus, 4 days 20 hours – 2 days 12 hours

= 2 days 8 hours.

(*e*) 3 weeks 5 days from 5 weeks 3 days

Step 1. Subtract days:

∵ 3 days < 5 days

So, regroup weeks and days. 5 weeks 3 days = 4 weeks 10 days.

Now, 10 days – 5 days = 5 days.

	Weeks	Days
	(4)	(10)
	~~5~~	~~3~~
–	3	5
	1	**5**

Step 2. Subtract weeks:

4 weeks – 3 weeks = 1 week.

Thus, 5 weeks 3 days – 3 weeks 5 days

= 1 week 5 days.

(*f*) 15 years 9 months from 20 years

Step 1. Subtract months:

∵ 00 months < 9 months

So, regroup years and months.

20 years = 19 years 12 months.

Now, 12 months – 9 months

= 3 months.

	Years	Months
	(19)	(12)
	~~20~~	~~00~~
–	15	9
	4	**3**

Step 2. Subtract years:

19 years – 15 years = 4 years.

Thus, 20 years – 15 years 9 months

= 4 years 3 months.

4. (*a*) 3 h 45 min after 8:30 p.m.?

Step 1. Convert 8:30 p.m. into 24 - hour clock time.

8:30 p.m. = 2030 hours

= 20 hours 30 minutes.

Step 2. Add 3 hours 45 minutes and 20 hours 30 minutes.

30 minutes + 45 minutes = 75 minutes

75 minutes = 60 minutes + 15 minutes

= 1 hour + 15 minutes

Now, 1 hour (carried over) + 20 hours + 3 hours = 24 hours

	h	min
	(1)	
	20	30
+	3	45
	24	**15**

Step 3. Required time

= 24 hours 15 minutes

= 12:15 a.m.

(*b*) 5 h 30 min after 8:40 p.m.?

Step 1. Convert 8:40 p.m. into 24 - hour clock time.

8:40 p.m. = 2040 hours

= 20 hours 40 minutes.

Step 2. Add 5 hours 30 minutes and 20 hours 40 minutes.

40 minutes + 30 minutes = 70 minutes

70 minutes = 60 minutes + 10 minutes

= 1 hour + 10 minutes

Now, 1 hour (carried over) + 20 hours + 5 hours = 26 hours

	h	min
	(1)	
	20	40
+	5	30
	26	**10**

Step 3. Required time

= 26 hours 10 minutes

= 2610 hours

= (2610 – 2400) hours

= 210 hours.

= 2:10 a.m.

5. (*a*) 4 h before 1:30 p.m.?

Step 1. Converting 1:30 p.m. into 24 - hour clock time.

1:30 p.m. = 1330 hours

= 13 hours 30 minutes

Step 2. Subtract 4 hours from 13 hours 30 minutes.

30 minutes – 00 minutes

= 30 minutes and

13 hours – 4 hours = 9 hours.

	h	min
	13	30
–	4	00
	9	**30**

Step 3. Required time = 9 hours 30 minutes
= 9:30 a.m.

(*b*) 7 h 25 min before 3:20 p.m.?

Step 1. Converting 3:20 p.m. into 24 - hour clock time.

3:20 p.m. = 1520 hours
= 15 hours 20 minutes

Step 2. Subtract 7 hours 25 minutes from 15 hours 20 minutes.

Subtract minutes.

∵ 20 min < 25 min

So, regroup hours and minutes.

15 hours 20 minutes
= 14 hours 80 minutes.

	h	min
	(14)	(80)
	~~15~~	~~20~~
–	7	25
	7	**55**

80 minutes – 25 minutes = 55 minutes.

Subtract hours.

14 hours – 7 hours = 7 hours.

Step 3. Required time
= 7 hours 55 minutes = 7:55 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 interval = 7 hours 45 minutes

	h	min
	(14)	(70)
	~~15~~	~~10~~
–	7	25
	7	**45**

7. (*a*) Closing time of the school
= 1:30 p.m. = 1330 hours.
Opening time of the school
= 7:45 a.m. = 0745 hours.
Shaneya's school hours
= 1330 hours – 0745 hours.
= 0545 hours
[∵ 30 min < 45 min, regroup hours and minutes]
= 5 hours 45 minutes

	h	min
	(12)	(90)
	~~13~~	~~30~~
–	07	45
	5	**45**

Thus, her school hours is 5 hours 45 minutes.

(*b*) Closing time of the shop
= 7:00 p.m. = 1900 hours
Opening time of the shop
= 10:30 a.m. = 1030 hours
Time duration of the shop remains open
= 1900 hours – 1030 hours
= 0830 hours = 8 hours 30 minutes.

	h	min
	(18)	(60)
	~~19~~	~~00~~
–	10	30
	8	**30**

(*c*) Departure time of the bus
= 5:30 a.m. = 0530 hours
and arrival time at destination
= 7:45 p.m. = 1945 hours
Time duration of the journey
1945 hours – 0530 hours

	h	min
	19	45
–	05	30
	14	**15**

Thus, time duration of the journey is 14 hours 15 minutes.

(*d*) The express train left Vadodara on
Monday → 4:40 p.m. = 1640 hours.
Duration of the 1st day
= 2400 hours – 1640 hours = 7 hours 20 minutes.
Tuesday → Duration of the 2nd day = 24 hours
Wednesday → Duration of the 3rd day
= 24 hours
Thursday → Duration of the 4th day when the train reached Guwahati.
= 12 hours 30 minutes.

Total duration of the Journey =

	h		min	
	(1)			
		7	2	0
	2	4	0	0
	2	4	0	0
+	1	2	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 years 7 months
His present age
= 52 years 2 months.
Duration of the job
= 52 years 2 months
– 23 years 7 months
= 28 years 7 months

	Years	Months
	(51)	(14)
	~~52~~	~~2~~
–	23	7
	28	**7**

Thus, he has been in the job for 28 years 7 months.

Practice Time 9D

1. (*a*) 37 minutes 12 seconds by 3

	min	s
	37	12
×		3
	111	**36**

Thus, 37 minutes 12 seconds × 3 = 111 minutes 36 seconds or 1 hour 51 minutes 36 seconds.

(*b*) 6 hours 05 minutes by 3

	h	min
	6	05
×		3
	18	**15**

Thus, 6 hours 05 minutes × 3 = 18 hours 15 minutes.

(*c*) 8 hours 03 minutes 18 seconds by 6

Step 1. Multiply 18 seconds by 6.

18 seconds × 6 = 108 seconds. Convert 108 seconds into minutes and seconds.

108 seconds = 60 seconds + 48 seconds = 1 minute + 48 seconds carry 1 minute to the minutes column and write 48 seconds in the seconds column.

	h	min	s
		①	
	8	03	18
×			6
	48	**19**	**48**

Step 2. Multiply 3 minutes by 6 and add carry over 1 minute to the product.

3 minutes × 6 + 1 = 19 minutes.

Write 19 minutes in the minutes column.

Step 3. Multiply 8 hours by 6.

8 hours × 6 = 48 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
×			8
	57	**28**	**24**

Thus, 7 hours 11 minutes 3 seconds × 8 = 57 hours 28 minutes 24 seconds.

(*e*) 2 weeks 5 days by 3

	Weeks	Days
	②	
	2	5
×		3
	8	**1**

∵ 5 days × 3 = 15 days

= 14 days + 1 day = 2 weeks 1 day.

Carry over ② weeks in weeks column.

And 2 weeks (carry over) + 2 weeks × 3 = 8 weeks

Thus, 2 weeks 5 days × 3 = 8 weeks 1 day.

(*f*) 10 weeks 5 days 10 hours by 2

	Weeks	Days	Hours
	①		
	10	5	10
×			2
	21	**3**	**20**

10 hours × 2 = 20 hours

5 days × 2 = 10 days

Since, 1 week = 7 days.

So, 10 days = 7 days + 3 days

= 1 week 3 days.

And 1 week (carry over) + 10 weeks × 2

= 1 + 20 = 21 weeks

Thus, 10 weeks 5 days 10 hours × 2 = 21 weeks 3 days 20 hours.

2. (*a*) 15 minutes 48 seconds ÷ 3

Step 1. Divide 15 minutes by 3.

Write 5 minutes as quotient and 0 minutes as remainder.

$3\overline{)15}\,(5$ → minutes

$-\,15$

0 → minutes

Step 2. Divide 48 seconds by 3.

Write 16 seconds as quotient and 0 seconds as remainder.

$3\overline{)48}\,(16$ → seconds

$-\,3\downarrow$

18

$-\,18$

0 → seconds

Thus, 15 minutes 48 seconds ÷ 3 = 5 minutes 16 seconds.

(*b*) 8 hours 16 minutes ÷ 2

4 hours 8 minutes

2) 8 hours 16 minutes

− 8 hours ↓

0 hours + 16 minutes

− 16 minutes

0 minutes

Thus, 8 hours 16 minutes ÷ 2 = 4 hours 8 minutes.

(*c*) Same as above.

(*d*) 4 days 15 hours 40 minutes ÷ 8.

4 days 15 hours 40 minutes

= 24 × 4 + 15 hours + 40 minutes

[∵ 1 day = 24 hours]

= 96 hours + 15 hours + 40 minutes.

= 111 hours + 40 minutes.

$$\begin{array}{r} 13 \text{ hours} \\ 8\overline{)\,111 \text{ hours}} \\ -\ 104 \text{ hours} \\ \hline 7 \text{ hours} \end{array}$$

= 7 hours + 40 minutes
= 420 minutes + 40 minutes [∵ 1 hour = 60 minutes]

$$\begin{array}{r} 57 \text{ minutes} \\ 8\overline{)\,460 \text{ minutes}} \\ -\ 40\downarrow \text{ minutes} \\ \hline 60 \\ -\ 56 \\ \hline 4 \text{ minutes} \end{array}$$

= 4 × 60 = 240 seconds [∵ 1 min = 60 seconds]

$$\begin{array}{r} 30 \text{ seconds} \\ 8\overline{)\,240 \text{ seconds}} \\ -\ 240 \text{ seconds} \\ \hline 0 \text{ seconds} \end{array}$$

Thus, 4 days 15 hours 40 minutes ÷ 8 = 13 hours 57 minutes 30 seconds.

(*e*) Same as above.

3. Time taken by Suyash to ride 13 km
= 1 hour 56 minutes 47 seconds

So, time taken by him to ride 1 km
= 1 hour 56 minutes 47 seconds ÷ 13

1 hour 56 minutes 47 seconds
= 60 minutes + 56 minutes + 47 seconds
= 116 minutes + 47 seconds.

Now, divide 116 minutes 47 seconds by 13

$$\begin{array}{r} 8 \text{ minutes} \\ 13\overline{)\,116 \text{ minutes}} \\ -\ 104 \text{ minutes} \\ \hline 12 \text{ minutes} \end{array}$$

= 12 × 60 seconds + 47 seconds
= 720 seconds + 47 seconds = 767 seconds

$$\begin{array}{r} 59 \text{ seconds} \\ 13\overline{)\,767 \text{ seconds}} \\ -\ 65\downarrow \\ \hline 117 \\ -\ 117 \\ \hline 0 \end{array}$$

Thus, he takes 8 minutes 59 seconds to ride 1 km at uniform speed.

Mental Maths (Page 183)

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
	①	
	8	45
+	1	30
	10	**15**

Thus, 8:45 + 1:30 = 9:75
= 10:15 p.m.

4. (*d*) Ending time of the movie = 11:20 p.m.
= 1200 hours + 1120 hours = 2320 hours.

Duration of movie with intermission break
= 0215 hours + 10 minutes = 0225 hours

Starting time of the movie
= 2320 hours – 0225 hours = 2055 hours

	h	min
	㉒	㉘
	~~23~~	~~20~~
–	2	25
	20	**55**

Thus, required time
= 2055 hours

Challenge Question (Page 183)

In 1st clock: The real time of the clock is (5: 52 + 1 hour) = 6:52 hours *i.e.*, not a bed time.

In 2nd clock: The real time of the clock is (1:50 + 20 minutes) = 2:10 *i.e.*, not a bed time.

In 3rd clock: The real time of the clock is (10:10 – 10 minutes) = 10:00 *i.e.*, the bed time.

In 4th clock: The real time of the clock is (5:00 – 2 hours) = 3:00 *i.e.*, not the bed time.

Therefore clock 3 is showing the correct bed time among the four clocks.

Chapter Assessment

1. (*a*) - (*iv*) Here, 1730 hours > 1200 hours
Therefore, 1730 hours – 1200 hours = 530 hours
= 5:30 p.m.

(*b*) - (*ii*) 4:45 p.m. = 1645 hours (∵ 1200 hours + 445 hours = 1645 hours)

(*c*) - (*iv*) Scheduled departure time from Ahmedabad = 1730 hours.
Here, 1730 hours > 1200 hours.
Therefore, 1730 hours– 1200 hours = 530 hours
= 5:30 p.m.

The train was $\frac{3}{4}$ of an hour late = $\frac{3}{4} \times 60$ = 45 minutes. [$\because$ 1 hour = 60 minutes]

Thus, required departure time
= 5:30 p.m. + 45 minutes
= 6:15 p.m.

(*d*) - (*iii*) The duration of the train to reach New Delhi = 0855 hours + time interval from 6:15 p.m to 12 mid-night.
= 0855 hours + 2400 – 1815 hours
[$\because$ 1815 < 2400]
= 0855 hours + 545 hours
= 14 hours 40 minutes.

2. Departure time of the train = 9:30 a.m.
Time duration from 9:30 a.m. to mid-night
= 24:00 hours – 9:30 hours = 14:30 hours
= 14 hours 30 minutes
Train reaches its destination at = 6:45 a.m.
= 06:45 hours
Total duration of the journey
= 14 hours 30 minutes + 6 hours 45 minutes
= 21 hours 15 minutes
Thus, duration of the journey is 21 hours 15 minutes.

3. Duration of work for the company from 5 September 2016 to 4 September 2024 = 8 years
From 5 September 2024 to 4 December 2024
= 3 months
From 5 December 2024 to 3 January 2025
= 29 days
Thus, Duration of work for the company
= 8 years 3 months 29 days.

4. Duration from 5th December to 31st December
= 27 days.
Duration from 1st January to 12th January
= 12 days.
Total duration for which her school was closed
= 27 days + 12 days = 39 days.

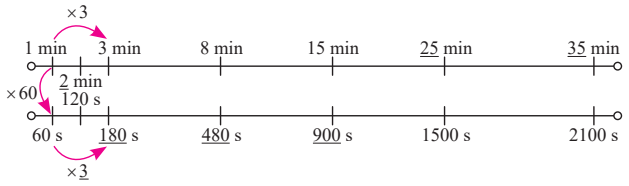
5. Salman was born on 8th April 2006
Sopia was born on 3rd March 2014.
So, number of years from 8th April 2006 to 7th April 2013 = 7 years
And, number of months from 8th April 2013 to 7th February 2014 = 10 months
And, number of days from 8th February 2014 to 3rd March 2014 = 24 days
Thus, Sophia is younger and their age difference is 7 years 10 months 24 days.

6. Duration of advertisement = 18 seconds
Interval between 2 advertisements = $\frac{1}{2}$ hour
Total hours in a day = 24 hours
Total number of times advertisement can be telecast 24 × 2 = 48
Total duration of the advertisement telecast in a day = 48 × 18 seconds = 864 seconds
= $\frac{864}{60}$ minutes = 14 minutes 24 seconds

$60\overline{)864}(14$
-60
264 minutes
-240
24 seconds

Thus, advertisement is telecast on the channel for 14 minutes 24 seconds in a day.

7.



CHAPTER 10 : MONEY

Let's Recall

1. (*a*)
₹ 1 2 4 . 6 7
+ ₹ 2 8 . 6 6
₹ 1 5 3 . 3 3

(*b*)
₹ 5 8 7 . 7 9
– ₹ 2 4 3 . 4 5
₹ 3 4 4 . 3 4

(*c*)
₹ 2 8 8 . 8 8
× ₹ 4 0
0 0 0 0 0
+ 1 1 5 5 5 2 0
₹ 1 1 5 5 5 . 2 0

(*d*)
₹199.99
$9\overline{)1799.91}$
-9
89
-81
89
-81
89
-81
81
-81
0

2. (*a*) Mr Rohan spent money on hotel stay = ₹5800
Money spent on transport = ₹3200
Money Spent on food = ₹2850
Total amount spent on the trip = ₹11850

Discount on the hotel stay = ₹400

Total money spent by him = ₹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
(∵ 1 dozen = 12 units)
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.

5. Cost of 18 books = ₹2250
Cost of 1 book = ₹2250 ÷ 18
= ₹125
So, the cost of 4 books
= ₹125 × 4 = ₹500

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
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
(∵ 1 dozen = 12 units)
Thus, the cost of 1 dozen shirts is ₹1800.

8. Mr. Gupta earns in 9 months = ₹6,30,000
Mr Gupta earns in 1 month
= ₹6,30,000 ÷ 9 = ₹70,000
Mr Gupta earn in 3 years
= ₹70,000 × 36 = ₹25,20,000
(∵ 1 year = 12 months)
Thus, he earns ₹25,20,000 in 3 years.

Think Tank (Page 189)

Given, cost of 3 notebooks = ₹120

$\therefore$ Cost of 1 notebook = $\frac{120}{3}$ = ₹40

$\therefore$ Cost of 2 notebooks = 40 × 2 = ₹80 = Cost of 5 Pens.
Since, cost of 5 pens = ₹80
$\therefore$ Cost of 1 pen = 80 ÷ 5 = ₹16
So cost of 8 pens = 16 × 8 = ₹128

Fast Check (Page 190)

(*a*) CP = ₹85, SP = ₹90
(*b*) CP = ₹55, SP = ₹63
(*c*) CP = ₹150 (per dozen), SP = ₹180 (per dozen)

Challenge Question (Page 192)

Cost price of 20 chairs = 20 × ₹150 + ₹1000
= ₹4000
Selling price of 12 chairs = 12 × ₹300 = ₹3600
Further, selling price of 8 remaining chairs
= 8 × ₹225 = ₹1800
So, selling price of 20 chairs = ₹3600 + ₹1800
= ₹5400
Here, selling price > cost price, so the shopkeeper makes a profit.
And 5400 – 4000 = ₹1400
Hence, the shopkeeper makes a profit of ₹1400.

Think Tank (Page 193)

Cost of 1 dozen bananas = ₹60
Cost of 1 banana = ₹60 ÷ 12 = ₹5
(∵ 1 dozen = 12 units)

SP of 3 bananas = ₹15
SP of 1 banana = ₹5
CP = SP
Thus, the fruit seller earns no profit and no loss.

Practice Time 10B

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.

Challenge Question (Page 194)

Selling price of the bicycle = ₹2700 + ₹150
= ₹2850
∴ Cost price of bicycle = Selling price – profit
= ₹2850 – ₹450 = ₹2400.

Mental Maths (Page 194)

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 + loss
= ₹6724 + ₹500 = ₹7224
Thus, the cost price is ₹7224.

4. We have, CP = ₹9702, SP = ₹10542
Since, SP > CP, there is a profit.
Profit = SP – CP = ₹10542 – ₹9702 = ₹840
Thus, there is a profit and amount is ₹840.

Challenge Question (Page 195)

Cost of 2 dozen eggs = ₹108
Cost of 1 egg = ₹108 ÷ 24 = ₹4.5
(∵ 1 dozen = 12 units)
Number of rotten eggs = 6
Loss = ₹27
Number of remaining eggs = 24 – 6 = 18
∴ SP = ₹108 – ₹27
SP = ₹81
Therefore, SP of 1 egg = ₹(81 ÷ 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 ÷ 6 = ₹4
Required number of eggs = ₹64 ÷ 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.
So, 1 ballpoint pen = $\frac{8}{4}$ = 2 pencils.
So, 6 ballpoint pens = 6 × 2 = 12 pencils.
As, 1 fountain pen = 6 ball point pens = 12 pencils.
So, 4 fountain pens = 12 × 4 = 48 pencils.
Thus, 48 pencils have the same cost as 4 fountain pens.

(*c*) (*ii*) Ronnie earns in a week = ₹840
Ronnie earns in 1 day = ₹$\frac{840}{7}$ = ₹120
(∵ 1 week = 7 days)
He will earn in 36 days = 36 × 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
(Answer may vary)

3. Cost price of 1 egg = ₹6
Cost price of 12 eggs = ₹6 × 12 = ₹72
Selling price of 1 egg = ₹4.50
So, selling price of 12 eggs = ₹4.50 × 12 = ₹54.00
= ₹54
Since, 54 < 72
∴ SP < CP, there is a loss
Loss = ₹72 – ₹54 = ₹18.
Thus, total loss is of ₹18.

4. SP of 1 kg of tomato = ₹20
Loss = ₹5
Since, CP = SP + Loss
CP = ₹20 + ₹5 = ₹25
Thus, the cost price of tomatoes is ₹25.

5. CP of old car = ₹65,000
Cost of turning it into as good as new = ₹5,500
Total CP of car = ₹65,000 + ₹5,500 = ₹70,500
CP of car = ₹70,500
SP 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
Selling price of 1 horse = ₹25000 + ₹7500 = ₹32500
(∵ SP = CP + Profit)
and Profit an 10 horses *i.e.*, on total tansaction
₹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 × 31 = ₹23250
Thus, has he spent ₹23250 on his physiotherapy.

9. Cost of each plate of bhelpuri = ₹45
If she had 10 friends with her. So, in total there are 11 people.
Cost of 11 plates of bhelpuri = ₹45 × 11 = ₹495
Thus, she spent ₹495 on bhelpuri.

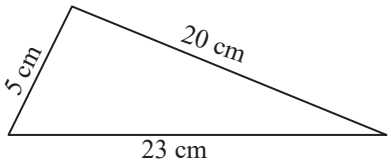
10. Cost price of a teddy-bear bought by Rani = ₹840
Rani bears a loss of ₹60
SP of teddy-bear for Rani = CP of same teddy-bear for Seema
∴ CP = ₹840 – ₹60 = ₹780
Seema sold it to Garima at a Profit of ₹50
∴ SP of teddy-bear for Seema = Cost price of teddy-bear for Garima
= ₹780 + ₹50 = ₹830.
Thus, the cost price of teddy-bear for Garima is ₹830.

11. Total quantity of apples a shopkeeper buys
= 20 kg
Cost of 20 kg apples = ₹1900
∴ Cost of 1 kg apple = $₹\frac{1900}{20}$ = ₹95
8 kg apples were sold at a loss of = ₹15 per kg
∴ Loss on 8 kg of apples = ₹15 × 8 kg = ₹120
Cost of 8 kg apples = ₹95 × 8 kg = ₹760
∴ Selling price of 8 kg Apples
= ₹760 – ₹120 = ₹640
Remaining quantity of apples
= 20 kg – 8 kg = 12 kg
∴ Cost of 12 kg apples = ₹95 × 12 kg = ₹1140
12 kg apples were sold at a profit of ₹20 per kg.
∴ Profit on 12 kg apples = 20 × 12 = ₹240
∴ Selling price of 12 kg apples
= ₹1140 + ₹240 = ₹1380
∴ Total selling price = ₹640 + ₹1380 = ₹2020.
Since; ₹2020 > ₹1900. Hence, there is a profit .
Thus, profit = ₹2020 – ₹1900 = ₹120.

CHAPTER 11 : PERIMETER AND AREA

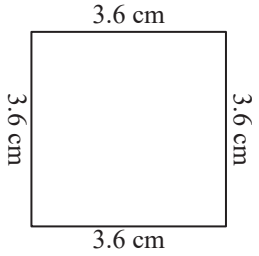
Let's Recall

1. (*a*)



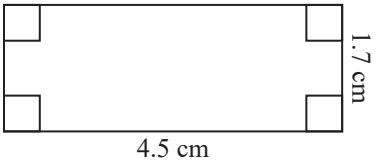
Perimeter = 5 cm + 20 cm + 23 cm = 48 cm

(*b*)



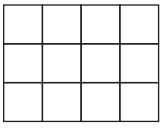
Perimeter = 3.6 cm + 3.6 cm + 3.6 cm + 3.6 cm
= 14.4 cm

(*c*)



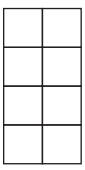
Perimeter of rectangle
= 1.7 cm + 1.7 cm + 4.5 cm + 4.5 cm
= 3.4 cm + 9 cm = 12.4 cm.

2. (*a*)



The given figure is a rectangle. And we know that,
Area of rectangle = length × breadth
Here, length = 4 units, breadth = 3 units
∴ Area = 4 units × 3 units = 12 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
∴ Area = 4 units × 2 units = 8 sq. units

(*c*) 

The given figure is a square. And we know that,

Area of square = side × side

Here, side = 2 units

∴ Area = 2 × 2 units = 4 sq. units

Challenge question (Page 202)

Perimeter = 36 metres, Area = 80 sq. metres

Since, perimeter = 2 (Length + Breadth) = 36

So, length + breadth = 36 ÷ 2 = 18 metres

And, area = length × breadth = 80 sq. metres

Now, we have to find two numbers, whose sum is 18 and product is 80.

So, the number are 10 and 8.

Hence the length = 10 metres and breadth = 8 metres.

Practice Time 11A

1. (*a*) length = 8 cm, breadth = 5 cm

Length of rectangle = 8 cm

Breadth of rectangle = 5 cm

Perimeter of rectangle = 2 (length + breadth)
= 2 (8 cm + 5 cm)
= 2 × 13 cm = 26 cm.

Hence, the perimeter of the rectangle is 26 cm.

(*b*) length = 56 cm, breadth = 24 cm

Length of rectangle = 56 cm

Breadth of rectangle = 24 cm

Perimeter of rectangle = 2 (length + breadth)
= 2 (56 cm + 24 cm)
= 2 × 80 cm = 160 cm.

Hence, the perimeter of the rectangle is 160 cm.

(*c*) length = 5 m, breadth = 2 m

Length of rectangle = 5 m

Breadth of rectangle = 2 m

Perimeter of rectangle = 2 (length + breadth)
= 2 (5 m + 2 m)
= 2 ×7 m = 14 m.

Hence, the perimeter of the rectangle is 14 m.

(*d*) length = 8 m, breadth = 250 cm

Length of rectangle = 8 m = 8 × 100 cm
= 800 cm

Breadth of rectangle = 250 cm

Perimeter of rectangle = 2 (length + breadth)
= 2 (800 cm + 250 cm)
= 2 × 1050 cm
= 2100 cm or 21 m

Hence, the perimeter of the rectangle is 2100 cm or 21 m

2. (*a*) 6 cm

Side of square = 6 cm

Perimeter of square = 4 × side = 4 × 6 cm
= 24 cm.

Hence, the perimeter of the square is 24 cm.

(*b*) 7 cm

Side of square = 7 cm

Perimeter of square = 4 × side = 4 × 7 cm
= 28 cm.

Hence, the perimeter of the square is 28 cm.

(*c*) 9 m

Side of square = 9 cm

Perimeter of square = 4 × side = 4 × 9 m
= 36 m.

Hence, the perimeter of the square is 36 m.

(*d*) 11 m

Side of square = 11 m

Perimeter of square = 4 × side = 4 × 11 m
= 44 m.

Hence, the perimeter of the square is 44 m.

3. (*a*) Sides of a triangle are 4 cm, 5 cm and 6 cm

Since, perimeter of the triangle
= Sum of its sides
= 4 cm + 5 cm + 6 cm
= 15 cm.

Hence, the perimeter of the triangle is 15 cm.

(*b*) Sides of a triangle are 4 cm, 5 cm and 5 cm

Since, perimeter of the triangle
= Sum of its sides
= 4 cm + 5 cm + 5 cm
= 14 cm.

Hence, the perimeter of the triangle is 14 cm.

(*c*) Sides of a triangle are 5 cm, 7 cm and 6 cm

Since, perimeter of the triangle
= Sum of its sides
= 5 cm + 7 cm + 6 cm
= 18 cm.

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

= Sum of its sides

= 13 cm + 14 cm + 15 cm

= 42 cm.

Hence, the perimeter of the triangle is 42 cm.

4. (*a*) 6 cm

Side of an equilateral triangle = 6 cm.

perimeter of an equilateral triangle

= 3 × side = 3 × 6 cm = 18 cm

Hence, the perimeter of an equilateral triangle is 18 cm.

(*b*) 5 cm

Side of an equilateral triangle = 5 cm.

Perimeter of an equilateral triangle

= 3 × side = 3 × 5 cm = 15 cm

Hence, the perimeter of an equilateral triangle is 15 cm.

(*c*) 7 cm

Side of an equilateral triangle = 7 cm.

Perimeter of an equilateral triangle

= 3 × side = 3 × 7 cm = 21 cm

Hence, the perimeter of an equilateral triangle is 21 cm.

(*d*) 10 cm

Side of an equilateral triangle = 10 cm.

Perimeter of an equilateral triangle

= 3 × side = 3 × 10 cm = 30 cm

Hence, the perimeter of an equilateral triangle is 30 cm.

5. (*a*) (*i*) We have, length = 4 cm, breadth = 7 cm

Since, perimeter of the rectangle

= 2 (length + breadth)

= 2 (4 cm + 7 cm)

= 2 × 11 cm = 22 cm.

(*ii*) We have, length = 5 cm, breadth = 3 cm

Since, perimeter of the rectangle

= 2 (length + breadth)

= 2 (5 cm + 3 cm)

= 2 × 8 cm

= 16 cm.

(*iii*) We have, length = 7 cm

Perimeter of a rectangle = 24 cm

Since, perimeter of the rectangle

= 2 (length + breadth)

24 cm = 2 (7 cm + breadth)

$\frac{24 \text{ cm}}{2}$ = 7 cm + breadth

12 cm = 7 cm + breadth

Breadth = 12 cm – 7 cm

Breadth = 5 cm

(*iv*) We have, breadth = 12 cm

Perimeter of a rectangle = 60 cm

Since, perimeter of the rectangle

= 2 (length + breadth)

60 cm = 2 (length + 12 cm)

$\frac{60 \text{ cm}}{2}$ = length + 12 cm

30 cm = length + 12 cm

Length = 30 cm – 12 cm

Length = 18 cm

(*v*) We have, length = $9\frac{1}{2}$ cm = $\frac{19}{2}$

Breadth = $5\frac{1}{2}$ cm = $\frac{11}{2}$ cm

Since, perimeter of the rectangle

= 2 (length + breadth) = $2\left(\frac{19}{2} \text{ cm} + \frac{11}{2} \text{ cm}\right)$

= $2\left(\frac{19 \text{ cm} + 11 \text{ cm}}{2}\right)$ = $2 \times \frac{30}{2}$ cm = 30 cm

(*vi*) We have, length = $5\frac{1}{2}$ cm

Perimeter of a rectangle = 21 cm

Since, perimeter of the rectangle

= 2 (length + breadth)

21 cm = 2 ($5\frac{1}{2}$ cm + breadth)

$\frac{21 \text{ cm}}{2}$ = $5\frac{1}{2}$ cm + breadth

So, breadth = $\frac{21}{2}$ cm – $\frac{11}{2}$ cm = $\frac{10}{2}$ cm = 5 cm

(*b*) (*i*) We have, side of a square = 5 cm

Since, perimeter of the square = 4 × side

= 4 × 5 cm

= 20 cm.

(*ii*) We have, side of a square = $12\frac{1}{2} = \frac{25}{2}$ cm

Since, perimeter of the square = 4 × side

$= 4 \times \frac{25}{2}$ cm

$= 50$ cm.

(*iii*) We have, perimeter of a square = 40 cm

Since, perimeter of the square = 4 × side

$40 \text{ cm} = 4 \times \text{side}$

$\text{Side} = \frac{40}{4}$ cm $= 10$ cm.

(*iv*) We have, side of a square = $7\frac{1}{2}$ cm

Since, perimeter of the square = 4 × side

$= 4 \times 7\frac{1}{2}$ cm $= 4 \times \frac{15}{2}$ cm $= 30$ cm.

(*v*) We have, perimeter of a square = 90 m

Since, perimeter of the square = 4 × side

$90 \text{ m} = 4 \times \text{side}$

$\text{Side} = \frac{90}{4}$ m $= 22\frac{1}{2}$ m

(*vi*) Perimeter of a square = 20 m

Since, perimeter of the square = 4 × side

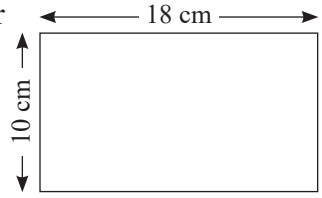
$\therefore \quad 20 \text{ m} = 4 \times \text{side}$

$\text{Side} = \frac{20}{4}$ m

Side = 5 m

6. Length of rectangular cardboard = 18 cm

Breadth of rectangular cardboard = 10 cm



Perimeter of rectangular cardboard

= 2 (length + breadth)

= 2 (18 cm + 10 cm)

= 2 × 28 cm = 56 cm

Hence, perimeter of rectangular cardboard is 56 cm

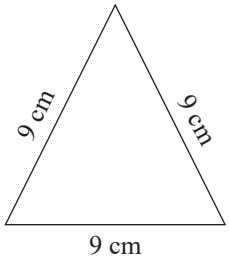
7. Side of an equilateral triangle = 9 cm

Perimeter of an equilateral triangle = 3 × side

= 3 ×9 cm

= 27 cm

Hence, perimeter of an equilateral triangle is 27 cm



8. Perimeter of a triangle = 24 cm

The first side = 6 cm, second side = 7 cm

Since, perimeter of a triangle = Sum of its sides

24 cm = 6 cm + 7 cm + third side

24 cm = 13 cm + third side

Third side = 24 cm – 13 cm

Third side = 11 cm

Hence, length of the third side of the triangle is 11 cm

9. Perimeter of a rectangular garden = 196 m

Breadth = 32 m

Since, perimeter of rectangular garden

= 2 × (length + breadth)

196 = 2 × (length + breadth)

Length + 32 m = $\frac{196}{2}$ m

Length = 98 m – 32 m = 66 m

10. Given equal sides of an isosceles triangle = 8 cm.

Length of third side = 5 cm.

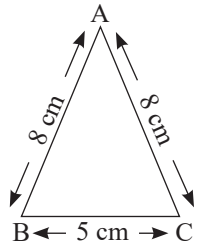
Perimeter of given triangle

= Sum of its sides

= (8 cm + 8 cm + 5 cm)

= 21 cm

Hence, perimeter of an isosceles triangle is 21 cm



11. Side of a square park = 102 m

Since, perimeter of square park

= 4 × side = 4 × 102 m

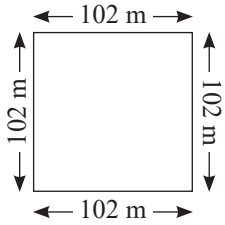
= 408 m

Distance covered in 4 rounds around a square park

= 4 × 408 m

(∵ 1 round = 408 m)

= 1632 m.



12. Since, fence around a square field = Perimeter of the square field = 308 m.

Since, perimeter of a square = 4 × side

$\therefore \quad 308 = 4 \times \text{side}$

$\text{Side} = \frac{308}{4}$

Side = 77 m.

Cost of fencing at the rate of ₹28 per metre.

Cost of fencing = 308 × ₹28 = ₹8624.

Hence, length of each side of the square field is 77 m and cost of fencing is ₹8624.

Think Tank (Page 206)

Given, Area of a square = Perimeter of the square

∵ Area of square = side × side and perimeter of square = 4 × side

Side × Side = 4 × Side

$\therefore \frac{\text{Side} \times \text{Side}}{\text{Side}} = 4$

∴ Side = 4 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

∴ Area of the rectangle = 20 cm × 12 cm

= 240 sq. cm

(*b*) Given: Length of a rectangle = 11 cm

Breadth of the rectangle = 10 cm

Since, area of a rectangle = length × breadth

∴ Area of the rectangle = 11 cm × 10 cm

= 110 sq. cm

(*c*) Given: Length of a rectangle = 132 cm

Breadth of the rectangle = 80 cm

Since, area of a rectangle = length × breadth

∴ Area of the rectangle = 132 cm × 80 cm

= 10560 sq. cm

(*d*) Given: Length of a rectangle = 4 m = 400 cm

Breadth of the rectangle = 180 cm

Since, area of a rectangle = length × breadth

∴ Area of the rectangle = 400 cm × 180 cm

= 72,000 sq. cm

2. (*a*) Side of a square = 4 cm

Since, area of a square = side × side

∴ Area of the square = 4 cm × 4 cm

= 16 sq. cm

(*b*) Side of a square = 64 cm

Since, area of a square = side × side

∴ Area of the square = 64 cm × 64 cm

= 4096 sq. cm

(*c*) Side of a square = 85 cm

Since, area of a square = side × side

∴ Area of the square = 85 cm × 85 cm

= 7225 sq. cm

(*d*) Side of a square = 6 m

Since, area of a square = side × side

∴ Area of the square = 6 m × 6 m

= 36 sq. m

3. (*a*) Given: Length of a rectangle = 9 cm

Breadth of the rectangle = 4 cm

Since, area of a rectangle = length × breadth

∴ Area of the rectangle = 9 cm × 4 cm

= 36 sq. cm

(*b*) Given: Breadth of rectangle = 32 cm

Area of the rectangle = 1600 sq. cm

Since, area of a rectangle = length × breadth

∴ 1600 sq. cm = length × 32 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

∴ 345 sq. cm = length × 15 cm

$\text{Length} = \frac{345}{15}\ \text{cm} = 23\ \text{cm}$

(*d*) Given: Length of a rectangle = 8 cm

Area of the rectangle = 56 sq. cm

Since, area of a rectangle = length × breadth

∴ 56 sq. cm = 8 cm × breadth

$\text{Breadth} = \frac{56}{8} = 7\ \text{cm}$

Breadth = 7 cm

4. (*a*) Area of the shaded part $= \frac{1}{2} \times$ Area of rectangle

$= \frac{1}{2} \times \text{length} \times \text{breadth} = \frac{1}{2} \times 3 \times 2$ units.

= 3 sq. units

(*b*) Area of the shaded part $= \frac{1}{2} \times$ Area of rectangle

$= \frac{1}{2} \times \text{length} \times \text{breadth} = \frac{1}{2} \times 4 \times 3$ units.

= 6 sq. units

(*c*) Area of the shaded part $= \frac{1}{2} \times$ Area of square

$= \frac{1}{2} \times$ side $\times$ side $= \frac{1}{2} \times 3 \times 3$ units

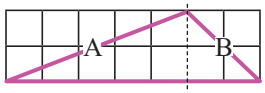
$= \frac{9}{2} = 4\frac{1}{2}$ sq. units.

(*d*) Area of the shaded part $= \frac{1}{2} \times$ Area of rectangle

$= \frac{1}{2} \times$ length $\times$ breadth $= \frac{1}{2} \times 5 \times 3$ units.

$= \frac{15}{2} = 7\frac{1}{2}$ sq. units.

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
= Area of rectangle
= $l \times b$
= 5 units $\times$ 2 units
= 10 sq. units

And, area of triangle in part A $= \frac{10 \text{ sq. units}}{2}$
= 5 sq. units.

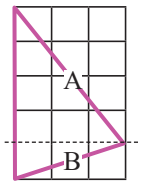
Area of part B = Area of square
= side $\times$ side
= 2 units $\times$ 2 units
= 4 sq. units

And, area of triangle in part B $= \frac{4 \text{ sq. units}}{2}$
= 2 sq. units

∴ Area of triangle in the given figure = Area of triangle in part A + Area of triangle in part B
Area of triangle in the given figure
= 5 sq. units + 2 sq. units
= 7 sq. units

(*b*) Same as above.

(*c*) First, divide the figure into two parts as shown.



∴ Area of part A
= Area of rectangle
= $l \times b$
= 4 units $\times$ 3 units
= 12 sq. units

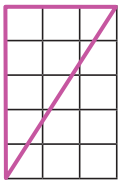
And, area of triangle in part A $= \frac{12 \text{ sq. units}}{2}$
= 6 sq. units

Area of part B = Area of rectangle
= $l \times b$
= 3 units $\times$ 1 units
= 3 sq. units

And, area of triangle $= \frac{3 \text{ sq. units}}{2} = 1.5$ sq. units

Thus, area of given triangle = Area of triangle in part A + Area of triangle in part B
= 6 sq. units + 1.5 sq. units = 7.5 sq. units

(*d*) Area of rectangle
= $l \times b$
= 5 units $\times$ 3 units
= 15 sq. units



And, area of triangle $= \frac{\text{Area of rectangle}}{2}$

$= \frac{15}{2}$ sq. units

$= 7\frac{1}{2}$ sq. units

6. Perimeter of a square = 120 m.
Since, perimeter of a square = 4 $\times$ side
∴ 120 m = 4 $\times$ side

So, side $= \frac{120}{4}$ m = 30 m

Since, Area of square = side $\times$ side
= 30 m $\times$ 30 m
= 900 sq. m

7. Area of a rectangular plot = 2550 sq. m
Length of a rectangular plot = 75 m
Since, area of a rectangle = length $\times$ breadth
∴ 2550 sq. m = 75 $\times$ breadth

So, breadth $= \frac{2550}{75}$ m = 34 m

Thus, breadth of the rectangular plot is 34 m.

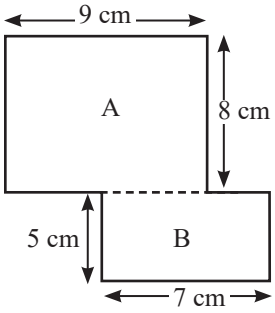
8. Length of a rectangle = 24 m and
Perimeter of the rectangle = 88 m
Since, perimeter of a rectangle = 2 $\times$ (length + breadth)
∴ 88 m = 2 $\times$ (24 m + breadth)

24 m + breadth $= \frac{88}{2}$ m

24 m + breadth = 44 m

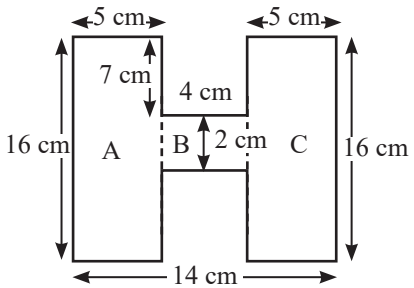
Breadth = (44 – 24) m
= 20 m.
Since, area of a rectangle = length × breadth
= 24 m × 20 m
= 480 sq. m

9. (*a*)



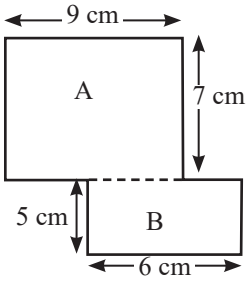
Area of rectangle A = 9 cm × 8 cm = 72 sq. cm
Area of rectangle B = 5 cm × 7 cm = 35 sq. cm
Thus, the area of the given shape
= Area of rectangle A + Area of rectangle B
= 72 sq. cm + 35 sq. cm = 107 sq. cm

(*b*)



Area of part A = length × breadth
= (16 × 5) sq. cm = 80 sq. cm
Area of part B = length × breadth
= (4 × 2) sq. cm = 8 sq. cm
Area of part C = length × breadth
= (16 × 5) sq. cm = 80 sq. cm
Total area = (80 + 8 + 80) sq. cm
= 168 sq. cm

(*c*)



Area of figure A = 9 cm × 7 cm = 63 sq. cm
Area of figure B = 5 cm × 6 cm = 30 sq. cm
Thus, the area of the given shape
= Area of rectangle A + Area of rectangle B.
= 63 sq. cm + 30 sq. cm
= 93 sq. cm

10. Length of a rectangular hall = 65 m
And, breadth of the rectangular hall = 45 m
Since, area of a rectangle = length × breadth
Area of the rectangular hall = 65 m × 45 m = 2925 sq. m
Cost of flooring of 1 sq. m = ₹30
Cost of flooring of 2925 sq. m = = 2925 sq. m × ₹30 = ₹87750
Hence, the cost of flooring is ₹87750.

11. Area of rectangular room = 5 m × 4 m = 20 sq. m
Area of square carpet = 3 m × 3 m = 9 sq. m
So, the area of floor that is not covered by the carpet = 20 – 9 = 11 sq. m

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) = sq. units
= 151 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

$$= m + n + \frac{1}{2}p = \left(23 + 9 + \frac{6}{2}\right) \text{sq. units}$$

= (23 + 9 + 3) = sq. units
= 35 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

$= m + n + \frac{1}{2} p = \left(42 + 14 + \frac{0}{2}\right)$ sq. units

$= 56$ 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

$= m + n + \frac{1}{2} p = \left(120 + 16 + \frac{0}{2}\right)$ sq. units

$= 136$ sq. units

5. and **6.** Same as above.

Mental Maths (Page 211)

Area of part A $= 3 \times 3 = 9$ sq. units

Area of part B $= 3 \times 2 = 6$ sq. units

Area of part C $= 5 \times 3 = 15$ sq. units

Area of part D $= 6 \times 3 = 18$ sq. units

Area of part E $= \frac{1}{2} (3 \times 5) + \frac{1}{2} (3 \times 5)$

$= 15$ sq. units

Area of part F $= \frac{1}{2} \times 3 \times 5$

$= 7\frac{1}{2}$ sq. units

Area of part G $= \frac{1}{2} \times 3 \times 4$

$= 6$ sq. units

Area of part H $= \frac{1}{2} \times 3 \times 4 + \frac{1}{2} \times 2 \times 3$

$= 9$ sq. units

Area of part I $= \frac{1}{2} \times 2 \times 3 + \frac{1}{2} \times 4 \times 3$

$= 9$ sq. units

Area of part J $= \frac{1}{2} \times 4 \times 3$

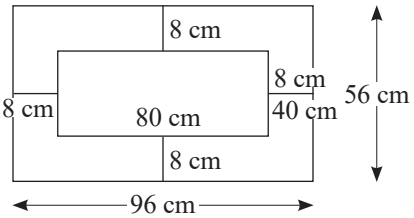
$= 6$ sq. units

Area of part K $= \frac{1}{2} \times 5 \times 3$

$= 7\frac{1}{2}$ sq. units

Area (in sq. units)	15	$7\frac{1}{2}$	18	9	6
Shapes	C, E	F, K	D	A, H, I	B, G, J

Challenge Question (Page 211)



Length of the table $= (80 + 8 + 8)$ cm

$= 96$ cm

Width of the table $= (40 + 8 + 8)$ cm

$= 56$ cm

Area of the table = length × breadth

$= (96 \text{ cm} \times 56 \text{ cm}) = 5376$ sq. cm

Area of the table cloth $= l \times b$

$= (80 \times 40)$ sq. cm $= 3200$ sq. cm

Area of the table not covered by the cloth

$= 5376$ sq. cm $- 3200$ sq. cm $= 2176$ sq. cm

Maths Connect (Page 212)

1. Perimeter of the building = 2 (length + breadth)

$= 2 (209 \text{ m} + 75 \text{ m})$

$= 2 \times 284 \text{ m} = 568 \text{ m}$

2. Area of the roof of the building = length × breadth

$= 209 \text{ m} \times 75 \text{ m}$

$= 15675$ sq. m

3. Area of the front door = length × breadth

$= 6 \text{ m} \times 2 \text{ m}$

$= 12$ sq. m

4. Area of the window = side × side

$= 1 \text{ m} \times 1 \text{ m}$

$= 1$ sq. m

5. Area of the compound = length × breadth

$= 310 \text{ m} \times 100 \text{ m}$

$= 31000$ sq. m

Chapter Assessment

1. (*a*) - (*iii*) Given, area of square = 100 sq. units

Since, area of square = side × side

$\therefore$ 100 sq. units = side × side

or Side × Side = 100 sq. units.

Side × Side = 10 × 10 sq. units

on comparing , we get

Side = 10

We have, Perimeter of square = 4 × side

$= 4 \times 10$ units

$= 40$ units

(*b*) - (*iv*) Perimeter of each square = 4 units (given)

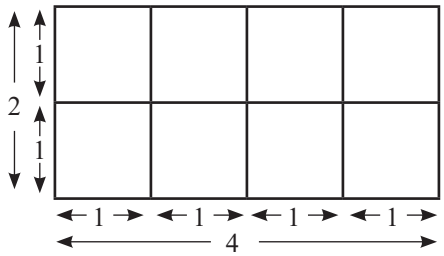
And we know that, perimeter of a square = 4 × side

$\therefore$ 4 unit = 4 × side

$$\text{Side} = \frac{4}{4} \text{ units}$$

$\therefore$ Side = 1 units.

Now, length of rectangle formed with eight squares = 4 units (given)



$\therefore$ Breadth = 2 units.

And we know that, perimeter of a rectangle = 2 × (l + b)

$\therefore$ Perimeter of the new rectangle = 2 × (4 + 2)

= 2 × 6

= 12 units

(*c*) - (*ii*) Given, length – breadth = 8 cm and perimeter = 64 cm

So, length = breadth + 8 cm — (*i*)

Perimeter of the rectangle = 64 cm

Perimeter of rectangle = 2 (length + breadth)

64 cm = 2 (B + 8 cm + B)

64 cm = 2 (2B + 8 cm)

$$2B + 8 = \frac{64}{2} \text{ cm}$$

= 32 cm

$\therefore$ 2B = 32 cm – 8 cm = 24 cm

$$B = \frac{24}{2} \text{ cm} = 12 \text{ cm}$$

from (*i*), L = B + 8 cm

L = 12 cm + 8 cm = 20 cm

Hence, dimensions of rectangle = L = 20 cm and B = 12 cm.

(*d*) - (*i*) 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

2. Side of a square carpet = 40 cm

Area of square carpet = 40 cm × 40 cm

= 1600 sq. cm

[$\because$ Area of square = side × side]

Area of room = 16 m × 10 m

[$\because$ Area of rectangle = length × breadth]

= 1600 cm × 1000 cm

[$\because$ 1 m = 100 cm]

$$\text{Number of square carpets} = \frac{1600000}{1600} = 1000$$

3. Length of a rectangular park = 140 m

Breadth of the rectangular park = 80 m

Perimeter of the park = 2 (l + b) = 2 (140 + 80) m

= 2 × 220 m = 440 m.

Wire required to fence the park in three rounds

= 3 × 440 m = 1320 m

Cost of 1 m wire = ₹2

$\therefore$ Cost of fencing the park = 1320 m × ₹2

= ₹2640

4. Length of the garden = 340 m

Breadth of the garden = 80 m

$\therefore$ Area of the garden = 340 m × 80 m

= 27200 sq. m

Side of square flower bed = 8 m

$\therefore$ Area of square flower bed = 8 m × 8 m

= 64 sq. m

$\therefore$ Required Number of flower beds

$$= \frac{27200}{64} = 425$$

Hence, 425 flower beds can be formed.

5. Length of the wall = 4 m

Breadth of the wall = 6 m

Area of the wall = 4 m × 6 m = 24 sq. m

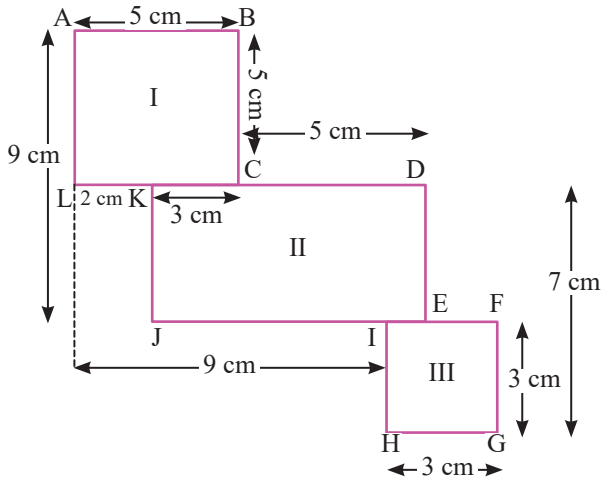
Area of 4 walls = (24 × 4) sq. m = 96 sq. m

Cost of painting per sq. m is ₹10

$\therefore$ Cost of painting 4 walls = ₹10 × 96 = ₹960

Thus, cost of the painting is ₹960.

6.



Perimeter of given figure = sum of all the sides

∴ 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 cm.

Now, Area of 1st square = side × side

= 5 cm × 5 cm = 25 sq. cm

Area of rectangle = length × breadth

= 8 cm × 4 cm = 32 sq. cm

Area of 2nd square = side × side

= 3 cm × 3 cm = 9 sq. cm

∴ Area of the given figure = Area of 1st square + Area of rectangle + Area of 2nd square.

= (25 + 32 + 9) sq. cm

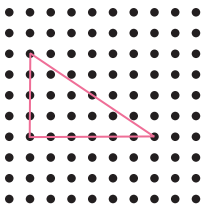
= 66 sq. cm

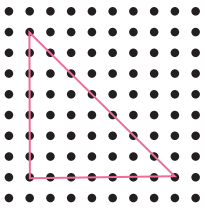
Hence, Perimeter = 48 cm and Area = 66 sq. cm

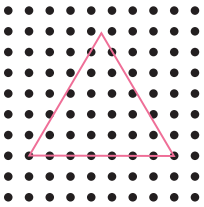
CHAPTER 12 : VISUALISATION OF 3D OBJECTS AND MAPS

Let's Recall

1. (*b*) and (*c*) can be folded to form a cuboid

2. (*a*) 

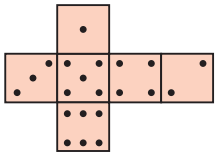
(*b*) 

(*c*) 

Practice Time 12A

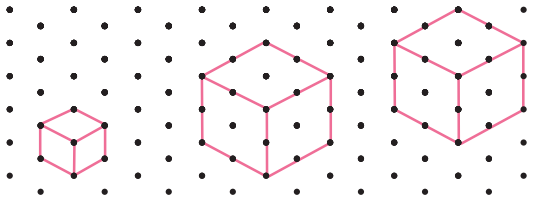
1. (*a*), (*c*) and (*d*) are nets of a cube

2. (*a*) - (*iii*) (*b*) - (*iv*) (*c*) - (*i*)
(*d*) - (*ii*) (*e*) - (*v*)

3. 

4. If in a dice, the number 1 is on top, the number 6 is on the bottom as (1 + 6 = 7) *i.e.*; Sum of dots on opposite faces of a dice is 7.

If the number 2 is facing you then number 5 is on the back, (as 2 + 5 = 7).

5. 

(*i*) (*ii*) (*iii*)

Practice Time 12B

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 in 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 km 500 m.

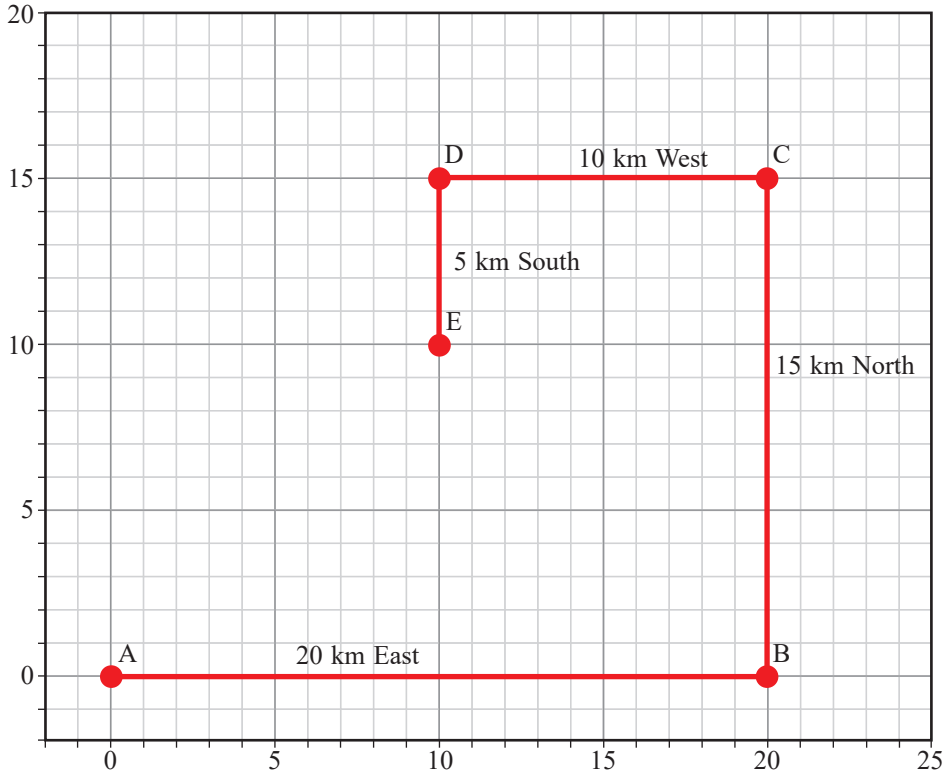
(*c*) Zoya covered the longest distance *i.e.*, 4 km to reach the school.

(*d*) Maya's house is farthest from the park *i.e.*, 2 km + 5 km = 7 km

3. Do it yourself.

4. (*a*) – (*iii*), (*b*) – (*i*), (*c*) – (*iv*), (*d*) – (*ii*)

Challenge Question (Page 226)



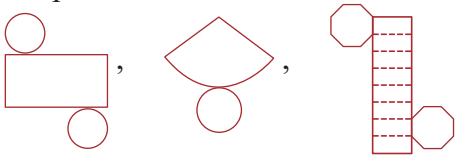
Total Distance = 20 + 15 + 10 + 5 = 50 km

Thus, the family covers a total distance of 50 km.

Chapter Assessment

1. Option (*iii*) can be folded to make cubes.

2. Shapes



3. (*a*) Valsad is the southern most town of Gujarat.

(*b*) Mehsana is to the immediate east of Patan.

(*c*) Kachchh is in the westernmost of Gujarat.

(*d*) South-east direction.

4. (*a*) The shortest distance between house A-55 and A-53 is of 5 cm or 750 m. (∵ 1 cm = 150 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 = 3 cm + 3 cm + 2 cm = 8 cm or 1200 m or 1 km 200 m.

5. (*a*) (*i*) (5, 6) Apple (*ii*) (1, 4) Mango
(*iii*) (3, 7) papaya (*iv*) (7, 4) Chery
(*v*) (3, 5) Potato (*vi*) (4, 3) Brinjal

(*b*) (*i*) Pumpkin : (8, 7) (*ii*) Mango : (1, 4)
(*iii*) Coconut : (0, 6) (*iv*) Avocado : (8, 5)
(*v*) Carrot : (3, 1) (*vi*) Lemon : (9, 2)

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 like 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 the number of students
   $= 25$ students $- 20$ students
   $= 5$ students.
6. Total number of students in class V $= 24 \times 5 = 120$ students .
   Thus, 120 students are there in class V.

Think Tank (Page 234)

1. There are 5 students who like red colour.
2. There are 2 students who like yellow colour.
3. White colour is the least preferred colour.
4. Blue is the most preferred colour.

Practice Time 13A

1.

Fruits	Tally marks	Number of students
Mango	𝍸 |	6
Banana	𝍸 |||	**8**
Apple	||||	4
Papaya	𝍸 ||||	**9**
Orange	𝍸 𝍸	**10**
Grapes	𝍸 𝍸 𝍸 |	16

2. (*a*) Dancing and watching TV are liked by the most students.
   (*b*) Reading is liked by the least number of students.
   (*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 $= 5$.
   ∴ Their difference $= 9 - 5 = 4$.

3.

Car colour	Tally marks	Number
Red	𝍸 ||	7
Green	𝍸 |||	8
White	𝍸 𝍸	10
Blue	𝍸	5
Yellow	𝍸 |	6
Silver	||	2
Black	||	2
		Total = 40

   (*a*) Priya counts 10 white cars.
   (*b*) Priya counts 8 green cars.
   (*c*) The most popular car colur 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

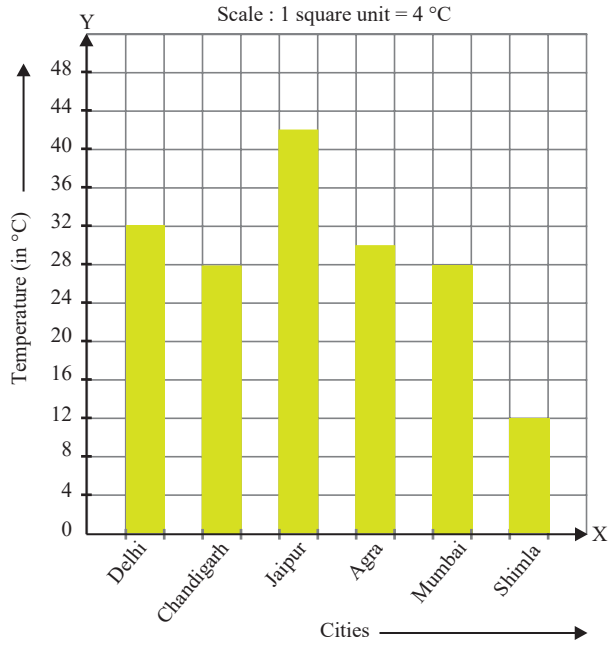
Practice Time 13B

1. (*a*) Graph represents the sales of TV sets by a dealer in a particular week.
   (*b*) Scale : 1 square unit $= 2$ TV sets
   (*c*) 16 TV sets were sold on Wednesday.
   (*d*) The least sales of TV sets were on Friday and Saturday.
   (*e*) The highest sales of TV sets was on Sunday.
   (*f*) Total sales 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.

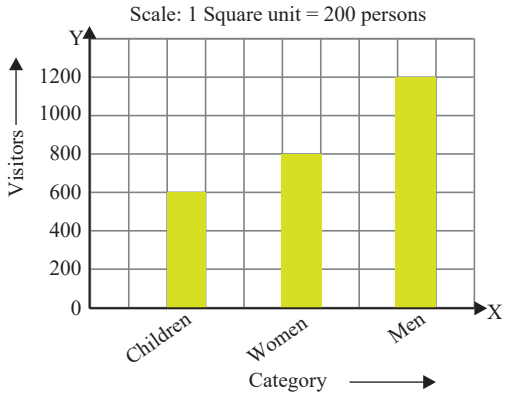
(*c*) Total money spent in a month
= ₹4000 + ₹5000 + ₹6000 + ₹3000 + ₹2000
= ₹20000.

(*d*) Maximum money is spent on education.

3.



4.



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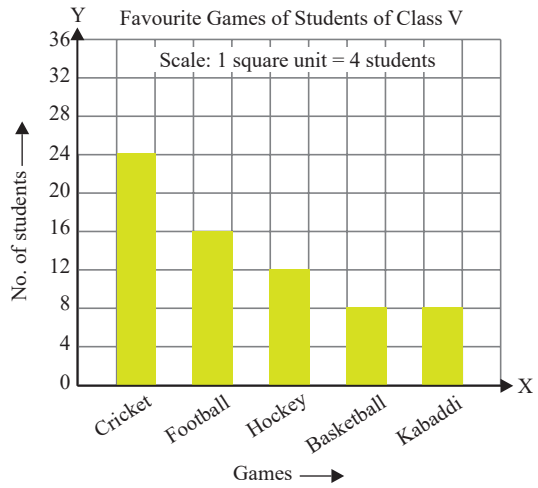


Practice Time 13C

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 of $\frac{1}{4}$ of students.

2. First find the total number of students
$= 10 + 6 + 6 + 3 + 5 = 30$

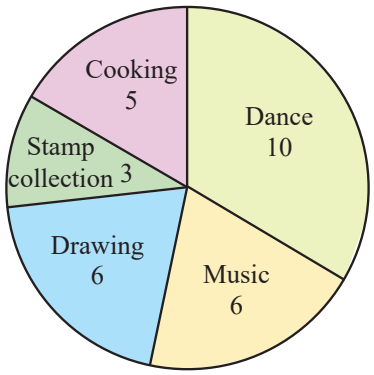
Fraction of children whose hobby is to dance
$= \frac{10}{30} = \frac{1}{3}$

Fraction of children whose hobby is to listen 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 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 $= \frac{8}{24}$.

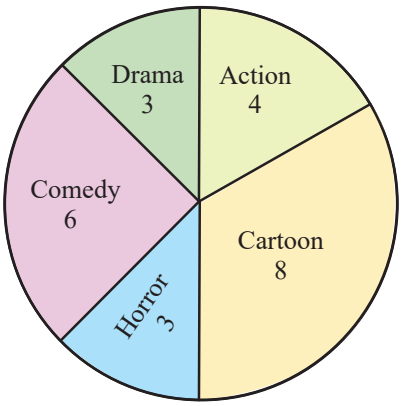
∴ Fraction of students who like to watch horror movies $= \frac{3}{24}$.

$\therefore$ Fraction of students who like to watch comedy movies $= \frac{6}{24}$.

$\therefore$ 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.



Challenge Question (Page 242)

1. Total number of children = 100

Sum of fractions showing liking of fruits except orange

$$= \frac{1}{5} + \frac{3}{10} + \frac{1}{4} + \frac{1}{10}$$

2	5, 10, 4, 10
2	5, 5, 2, 5
5	5, 5, 1, 5
	1, 1, 1, 1

LCM of 5, 10, 4 and 10

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

$$= \frac{4 + 6 + 5 + 2}{20} = \frac{17}{20}$$

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.

2. Since, $\frac{1}{4}$ part of circle = 80

So, the total circle $= 80 \times 4 = 320$

So, number of students who travel by bus

$$= 320 \times \frac{1}{2} = 160$$

Hence, 160 students travel by bus.

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 $= \frac{1200}{8}$ kg

$= 150$ kg

Sale of oranges in a day $= \frac{1200}{8}$ kg $= 150$ kg.

$\therefore$ The difference between the sales of grapes and oranges $= 150$ kg $- 150$ kg $= 0$ kg.

(*c*) - (*ii*) Total fruit were sold in a day = 1000 kg.

$\therefore$ The quantity of apples sold in that day $= \frac{1000}{4}$ kg $= 250$ 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.

3.

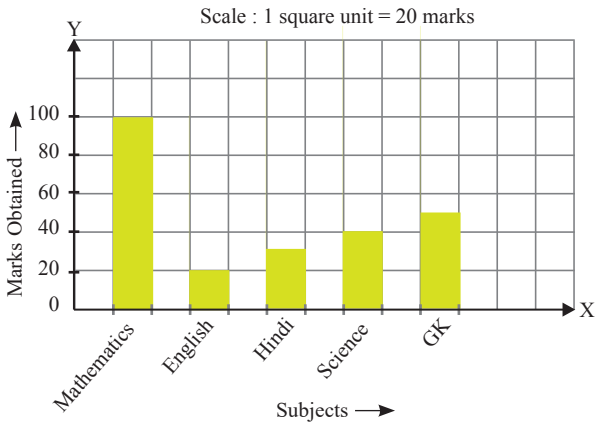
Weight (in kg)	Tally marks	Number
26	||	2
28	||||	4
30	||	2
32	||||	4
36	||	2
40	|||	3
42	|||	3
		Total = 20

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

Fraction of school activity = $\frac{6h}{24h} = \frac{1}{4}$

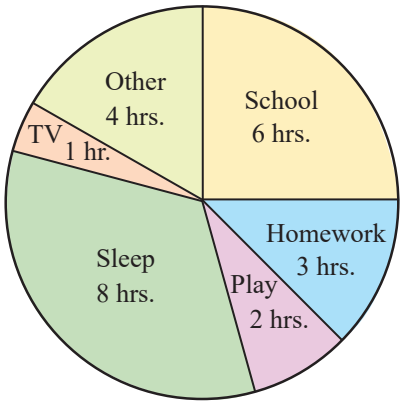
Fraction of homework activity = $\frac{3h}{24h} = \frac{1}{8}$

Fraction of play activity = $\frac{2h}{24h} = \frac{1}{12}$

Fraction of sleep activity = $\frac{8h}{24h} = \frac{1}{3}$

Fraction of watching TV activity = $\frac{1h}{24h} = \frac{1}{24}$

Fraction of others activity = $\frac{4h}{24h} = \frac{1}{6}$



MODEL TEST PAPER - 2

A.

1. (*a*) The number of lines of symmetry in an isosceles triangle is 1.

2. (*c*) Convert 2:20 p.m. into 24 hour clock.
= 1420 hours
= 14 hours 20 minutes
Subtract 3:30 hours from 14 hours 20 minutes
Required time = 10:50 hours
= 10:50 a.m.

	h	min
	(13)	(80)
	~~14~~	: ~~20~~
−	3	: 30
	10	**: 50**

3. (*c*) 6432 m = 6000 m + 432 m
$\frac{6000}{1000}$ km + 432 m = 6 km 432 m.

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 represent 7 × 6 = 42 cars.

6. (*b*) The cost of 2 dozen eggs = ₹120
∵ 2 dozen = 24 eggs
∴ The cost of 1 egg = $\frac{₹120}{24}$ = ₹5
The cost of 8 eggs = ₹5 × 8
= ₹40
Hence, the cost of 8 eggs is ₹40.

7. (*d*) Side of equilateral triangle = 12 cm (given)
Since, perimeter of an equilateral triangle
= 3 × side
∴ Perimeter of the equilateral triangle
= 3 × 12 cm
= 36 cm

8. (*c*) Side of a square = 20 cm (given)
Since, area of square = side × side
∴ Area of square = 20 cm × 20 cm
= 400 sq. cm

9. (*a*) 8 = ||||| |||

10. (*c*) The next number = 0, 2, 6, 12, 20, 30, 42.

B.

1. 37 cm + 20 mm = (37 × 10) mm + 20 mm
(∵ 1 cm = 10 mm)
∴ 370 mm + 20 mm = 390 mm.

2. 15 hm = 15 × 10000 cm (∵ 1 hm = 10,000 cm)
= 1,50,000 cm

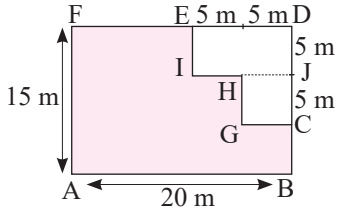
3. If CP is greater than SP, then there is a loss.

4. Area of rectangle = 10 cm × 12 cm = 120 sq. 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] m
= (45 + 10 + 15) m = 70 m
Now, Area of rectangle = $l \times b$

Given: $l = 20$ m and $b = 15$ m

$\therefore$ Area of shaded region

= Area of rectangle ABDF

– Area of rectangle DEIJ

– Area of square CGHJ

Area of shaded region

$= (l \times b) - (l \times b) - (\text{side} \times \text{side})$

$= (20 \times 15)\text{ m} - (10 \times 5)\text{ m} - (5 \times 5)\text{ m}$

$= 300\text{ m} - 50\text{ m} - 25\text{ m}$

$= 225$ sq. m

2. Cost of air cooler = ₹7,500

Transportation charges = ₹100

Total cost of air cooler = ₹7500 + ₹100 = ₹7600

Loss = ₹180.

$\therefore$ Selling of price the air cooler = ₹7600 – ₹180

= ₹7420

3. Number of days of vacations in December

= 15 December to 31 December = 17 days

and number of days of vacations from 1 January to 14 January = 14 days

Number of days her school was closed

= 17 days + 14 days = 31 days

4. First find the total number of hours Geetika spent in a day = 6 h + 1 h + 2 h + 9 h + 1 h + 5 h = 24 h

$\therefore$ Fraction of hours she spent in school = $\frac{6}{24}$ h

Fraction of hours she spent in doing her homework = $\frac{1}{24}$ h

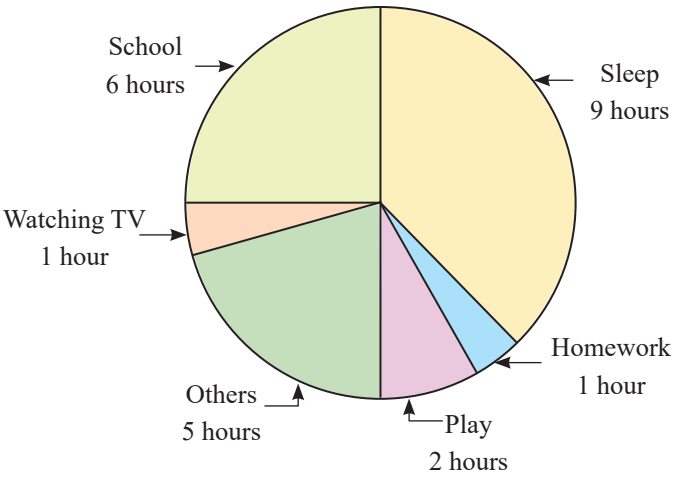
Fraction of hours she spent playing = $\frac{2}{24}$ h

Fraction of hours she spent sleeping = $\frac{9}{24}$ h

Fraction of hours she spent watching TV = $\frac{1}{24}$ h

Fraction of hours she spent in others activity = $\frac{5}{24}$ 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 given circle graph.



5. Area of room = 16 m × 10 m = 160 sq. m

Area of square carpet = 200 cm × 200 cm

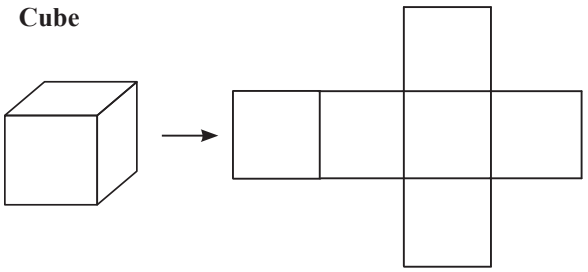
= 40000 sq. m = 4 sq. m

Number of square carpets = $\frac{160 \text{ sq. m}}{4 \text{ sq. m}}$ = 40 carpet

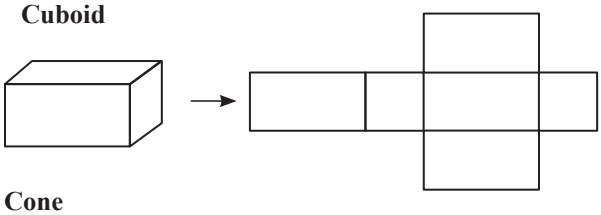
6.

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

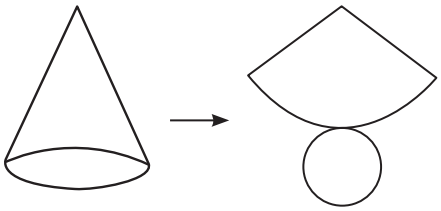
7. (*a*) **Cube**



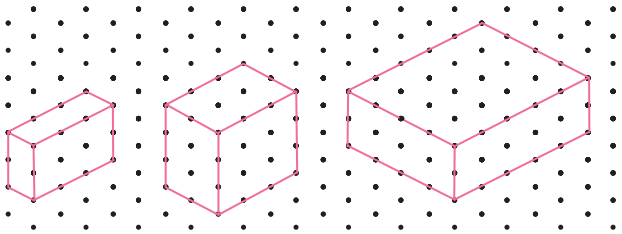
(*b*) **Cuboid**



(*c*) **Cone**



8.



(*a*) (*b*) (*c*)

9. (*a*) Needs $\frac{1}{4}$ turn to come back to its original shape.

(*b*) Needs $\frac{1}{2}$ turn to come back to its original shape.

(*c*) Needs $\frac{1}{4}$ turn to come back to its original shape.

(*d*) Needs $\frac{1}{2}$ turn to come back to its original shape.