

HINTS & SOLUTIONS

CHAPTER 1 : LARGE NUMBERS

Warm Up

- The ones place of the number of cars sold in each city:

Bengaluru: 2, Delhi: 8, Mumbai: 0, Jaipur: 9, Chennai: 8.

The greatest digit in the ones place is 9, which is in the number of cars sold in **Jaipur**.

- The number of cars sold in Mumbai is 4,920.
 - By rearranging the digits 4, 9, 2, 0, the greatest number we can form is **9,420**.
 - By rearranging the digits 4, 9, 2, 0, the smallest number we can form is **2,049**.

- The number of cars sold in Bengaluru is 10,962. To make the number as large as possible, swap the digits 1 and 9.

After swapping: 90,162

Expanded form of 90,162: $90,000 + 100 + 60 + 2$

- To round each city's sales to the nearest thousand:
 Bengaluru: 10,962 $\rightarrow$ 11,000
 Delhi: 6,978 $\rightarrow$ 7,000
 Mumbai: 4,920 $\rightarrow$ 5,000
 Jaipur: 3,589 $\rightarrow$ 4,000
 Chennai: 3,498 $\rightarrow$ 3,000

Exercise 1A

- 80,34,949
 - 40,70,698
 - 66,24,411
 - 63,00,407

	Lakhs		Thousands		Ones		
	TL	L	TTh	Th	H	T	O
a.			3	8	9	6	2
b.		3	5	6	2	4	8
c.		7	2	8	0	4	5
d.	2	6	3	4	2	6	1
e.	7	3	2	6	4	3	1

- 6,85,447; Six lakh eighty-five thousand four hundred forty-seven

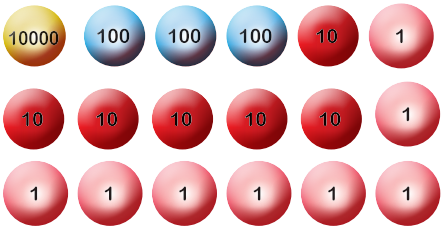
- 98,76,560; Ninety-eight lakh seventy-six thousand five hundred sixty
- 6,00,780; Six lakh seven hundred eighty
- 76,54,321; Seventy-six lakh fifty-four thousand three hundred twenty-one
- 7,00,529; Seven lakh five hundred twenty-nine
- 99,93,427; Ninety-nine lakh ninety-three thousand four hundred twenty-seven

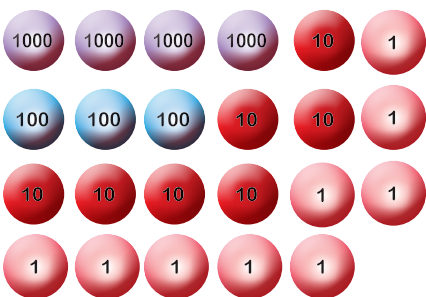
- Given the population of Shimla as per the 2011 census is 8,14,010.

We need to find the number of ones, tens, hundreds, thousands, ten thousands, and lakhs in 8,14,010.

- The number of ones is 8,14,010.
- The number of tens is 81,401.
- The number of hundreds is 8,140.
- The number of thousands is 814.
- The number of ten thousands is 81.
- The number of lakhs is 8.

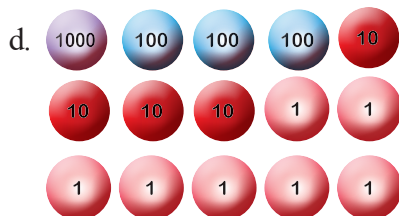
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$$10000 + 1 = 1 \times 10000 + 1 \times 1 = 10,001$$
 - 

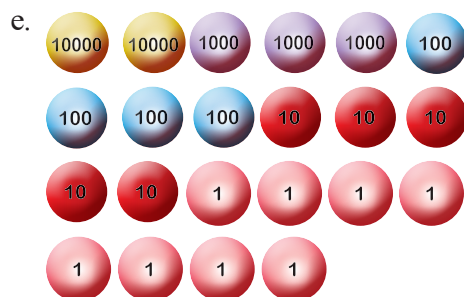
$$10000 + 300 + 60 + 8 = 1 \times 10000 + 3 \times 100 + 6 \times 10 + 8 \times 1 = 10,368$$
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$$4000 + 300 + 70 + 9 = 4 \times 1000 + 3 \times 100 + 7 \times 10 + 9 \times 1 = 4,379$$

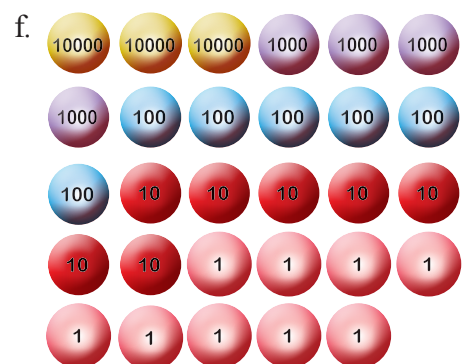




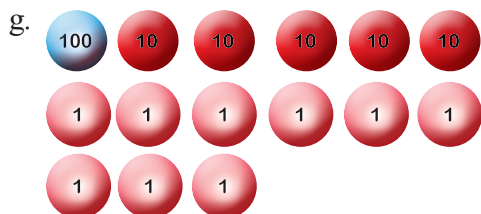
$$1000 + 300 + 40 + 7 = 1 \times 1000 + 3 \times 100 + 4 \times 10 + 7 \times 1 = 1,347$$



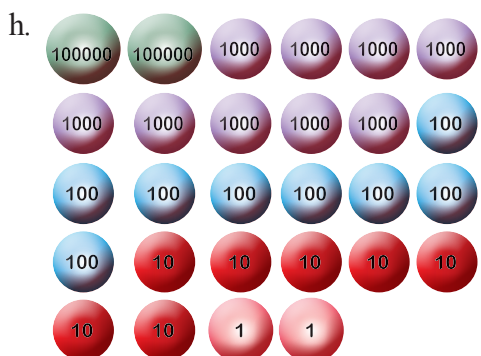
$$20000 + 3000 + 400 + 50 + 8 = 2 \times 10000 + 3 \times 1000 + 4 \times 100 + 5 \times 10 + 8 \times 1 = 23,458$$



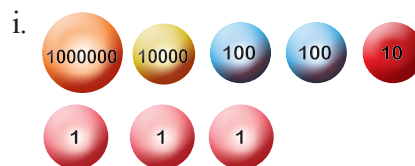
$$30000 + 4000 + 600 + 70 + 9 = 3 \times 10000 + 4 \times 1000 + 6 \times 100 + 7 \times 10 + 9 \times 1 = 34,679$$



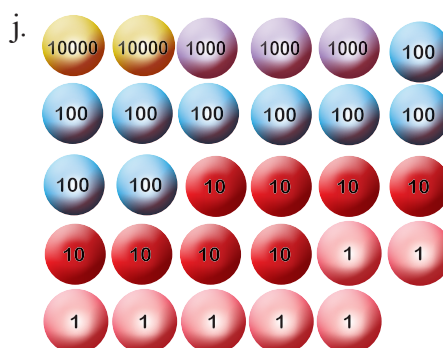
$$100 + 50 + 9 = 1 \times 100 + 5 \times 10 + 9 \times 1 = 159$$



$$200000 + 9000 + 800 + 70 + 2 = 2 \times 100000 + 9 \times 1000 + 8 \times 100 + 7 \times 10 + 2 \times 1 = 2,09,872$$



$$1000000 + 10000 + 200 + 10 + 3 = 1 \times 1000000 + 1 \times 10000 + 2 \times 100 + 1 \times 10 + 3 \times 1 = 10,10,213$$



$$20000 + 3000 + 900 + 80 + 7 = 2 \times 10000 + 3 \times 1000 + 9 \times 100 + 8 \times 10 + 7 \times 1 = 23,987$$

6. a. $358 \rightarrow 469 \rightarrow 580 \rightarrow 691 \rightarrow 802 \rightarrow 913 \rightarrow 1,024$

Pattern: Add 111 to the previous number to get the next number.

b. $4,050 \rightarrow 5,100 \rightarrow 6,150 \rightarrow 7,200 \rightarrow 8,250 \rightarrow 9,300 \rightarrow 10,350$

Pattern: Add 1050 to the previous number to get the next number.

c. $5,504 \rightarrow 6,404 \rightarrow 7,304 \rightarrow 8,204 \rightarrow 9,104 \rightarrow 10,004 \rightarrow 10,904$

Pattern: Add 900 to the previous number to get the next number.

d. $10,105 \rightarrow 10,125 \rightarrow 10,145 \rightarrow 10,165 \rightarrow 10,185 \rightarrow 10,205 \rightarrow 10,225$

Pattern: Add 20 to the previous number to get the next number.

e. $98,335 \rightarrow 98,435 \rightarrow 98,535 \rightarrow 98,635 \rightarrow 98,735 \rightarrow 98,835 \rightarrow 98,935$

Pattern: Add 100 to the previous number to get the next number.

f. $11,789 \rightarrow 11,791 \rightarrow 11,793 \rightarrow 11,795 \rightarrow 11,797 \rightarrow 11,799 \rightarrow 11,801$

Pattern: Add 2 to the previous number to get the next number.



g. $82,350 \rightarrow 83,350 \rightarrow 84,350 \rightarrow 85,350 \rightarrow 86,350 \rightarrow 87,350 \rightarrow 88,350$

Pattern: Add 1000 to the previous number to get the next number.

7. a. Write 8,345 in expanded form: $8345 = 8000 + 300 + 40 + 5$.

Here, the number of tens in 40 is 4, the number of tens in 300 is 30, and the number of tens in 8000 is 800, so the total number of ₹10 notes in ₹8,345 is $800 + 30 + 4 = 834$.

- b. Write 8,345 in expanded form: $8345 = 8000 + 300 + 40 + 5$.

Here, the number of 50s in 300 is 6, and the number of 50s in 8000 is 160, so the total number of ₹50 notes in ₹8,345 is $160 + 6 = 166$.

- c. Same as part (a) : 365

Exercise 1B

1. a. The underlined digit 5 in 19,65,417 is at the thousands place,

So, the place value of 5: 19,65,417

$$5 \times 1000 = 5,000$$

- b. Place value of 2: 8,24,596

$$2 \times 10000 = 20,000$$

- c. Place value of 0: 42,003

$$0 \times 100 = 0$$

- d. Place value of 3: 73,964

$$3 \times 1000 = 3,000$$

- e. Place value of 9: 9,88,777

$$9 \times 100000 = 9,00,000$$

- f. Place Value of 6: 6,48,960

$$6 \times 100000 = 6,00,000$$

2. The first '7' is in the lakhs place, so its place value is 7,00,000.

The second '7' is in the tens place, so its place value is 70.

Difference = $7,00,000 - 70 = 6,99,930$

3. In 96,458, the place value of '6' is 6,000 (thousands place).

In 6,11,389, the place value of '6' is 6,00,000 (lakhs place).

$$\text{Sum} = 6,000 + 6,00,000 = 6,06,000$$

4. a. $8,56,431 = 8,00,000 + 50,000 + 6,000 + 400 + 30 + 1$

$$\text{b. } 78,987 = 70,000 + 8,000 + 900 + 80 + 7$$

$$\text{c. } 76,98,765 = 70,00,000 + 6,00,000 + 90,000 + 8,000 + 700 + 60 + 5$$

$$\text{d. } 6,78,987 = 6,00,000 + 70,000 + 8,000 + 900 + 80 + 7$$

$$\text{e. } 86,25,900 = 80,00,000 + 6,00,000 + 20,000 + 5,000 + 900$$

$$\text{f. } 9,56,002 = 9,00,000 + 50,000 + 6,000 + 2$$

5. a. 70,56,052

$$\text{b. } 80,74,505$$

$$\text{c. } 80,59,303$$

$$\text{d. } 69,08,072$$

$$\text{e. } 34,05,009$$

6. **Smallest number:** To form the smallest number, we should arrange the digits in ascending order, but the number cannot start with 0. So, the smallest number is 3,05,678.

Greatest number: To form the greatest number, we should arrange the digits in descending order. The greatest number is 8,76,530.

7. **Smallest number:** To form the smallest number, we should arrange the digits in ascending order, but the number cannot start with 0. So, the smallest number is 10,35,789.

Greatest number: To form the greatest number, we should arrange the digits in descending order. The greatest number is 98,75,310.

8. a. To form the smallest 7-digit number, start with the smallest non-zero digit.

Start with 2, use 0 for the next three positions, then arrange 3,4,7 in ascending order, so the smallest 7-digit number is 20,00,347.

To form the greatest 7-digit number, place the largest digit, i.e., 7 in the first three positions, then arrange 4,3,2,0 in descending order, so the greatest 7-digit number is 77,74,320.

- b. Same as part (a):

Smallest 7-digit number: 55,55,689 and greatest 7-digit number: 99,99,865.



c. Same as part (a):
Smallest 7-digit number: 20,00,047 and greatest 7-digit number: 77,77,420.

d. Same as part (a):
Smallest 7-digit number: 33,33,359 and greatest 7-digit number: 99,99,953.

9. a. Interchanging the digits 0 and 3 in 10,593, we get 13590, which is between 11000 and 15000.

b. Interchanging the digits 1 and 5 in 10,593, we get 50,193.

Or, interchanging the digits 1 and 9 in 10,593, we get 90,513.

Both, 50,193 and 90,513 are more than 35,000.

10. a. Interchange the digits 5 (ten thousands place) and 4 (thousands place) in 54,687 to get 45,687.

b. Interchange the digits 5 (ten thousands place) and 8 (tens place) in 54,687 to get 84,657.

11. Consider a train that has only sleeper and AC 3-tier coaches. Each sleeper coach and AC 3-tier coach contains 72 berths. The number of trains is 12, and each train has 15 coaches.

To find the total number of berths in one train, we multiply the number of coaches by the number of berths per coach:

15 coaches $\times$ 72 berths per coach = 1,080 berths

Now, to find the total number of berths in 12 trains, we multiply the number of berths in one train by the total number of trains:

12 trains $\times$ 1,080 berths = 12,960 berths

Thus, the total number of berths in 12 trains is 12,960.

Exercise 1C

1. a. Both numbers have 6 digits. So, first we compare the leftmost digits of both numbers. Since $9 > 8$, so $9,05,637 > 8,07,656$.

b. Both numbers have 5 digits. So, first we compare the leftmost digits of the two given numbers.

The leftmost digits are the same. The second digits from the left are also the same.

On comparing the third digits from the left, we find that $5 < 6$.

So, $10,569 < 10,607$.

c. Same as above:
 $76,70,757 < 76,70,954$.

d. Same as above:
 $34,52,402 > 34,32,401$.

e. Same as above:
 $42,00,360 = 42,00,360$.

f. Same as above:
 $7,90,000 > 79,999$.

2. a. Let us arrange the numbers in the place value chart and then arrange them in ascending order accordingly.

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

Hence, the given numbers in ascending order are: 732; 8,63,532; 78,25,216; 86,54,627.

b. Same as part (a):
5,23,176; 20,00,413; 20,50,009; 25,00,496.

c. Same as part (a):
69,545; 6,95,454; 69,54,521; 69,54,530.

d. Same as part (a):
7,54,654; 75,46,321; 75,46,325; 75,46,452.

3. a. Let us arrange the numbers in the place value chart and then arrange them in descending order accordingly.

L	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	2

Hence, the given numbers in descending order are: 9,74,792; 87,976; 76,049; 75,959.

b. Same as part (a):
5,28,781; 4,53,170; 4,52,678; 65,467.

c. Same as part (a):
94,00,045; 79,83,678; 79,83,667; 78,93,569.

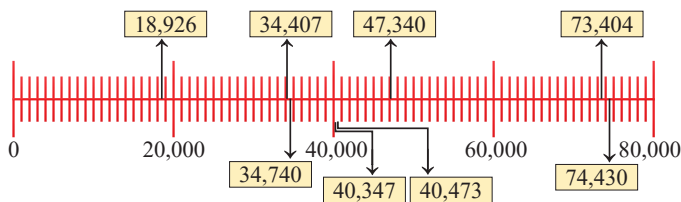
d. Same as part (a):
98,64,542; 98,64,531; 98,64,521; 9,86,421.

4. Arrange the given numbers in ascending order:
18,926; 34,407; 34,740; 40,347; 40,473; 47,340; 73,404; 74,430

The number line is marked from 0 to 80,000, so:
18,926: This is the smallest number and comes before 20,000, so place it just before 20,000.



34,407: Comes after 20,000 but before 40,000.
 34,740: Larger than 34,407, place it after it but before 40,000.
 40,347: Larger than 40,000, place it near the 40,000 mark.
 40,473: Larger than 40,000, place it near the 40,000 mark.
 47,340: Larger than 40,000, place it between 40,000 and 60,000.
 73,404: Place it between 60,000 and 80,000.
 74,430: Largest number, place it just before 80,000.



Exercise 1D

1. a. 85

The digit in the ones place is 5.
 Since 5 is equal to 5, we increase the tens digit by 1.
 Therefore, 85 becomes 90.

b. 347

The digit in the ones place is 7.
 Since 7 is greater than 5, we increase the tens digit by 1.
 Therefore, 347 becomes 350.

c. 965

The digit in the ones place is 5.
 Since 5 is equal to 5, we increase the tens digit by 1.
 Therefore, 965 becomes 970.

d. 3,242

The digit in the ones place is 2.
 Since 2 is less than 5, we leave the tens digit as it is and replace the ones digit with 0.
 Therefore, 3,242 becomes 3,240.

e. 5,052

The digit in the ones place is 2.
 Since 2 is less than 5, we leave the tens digit as it is and replace the ones digit with 0.
 Therefore, 5,052 becomes 5,050.

f. 9,873

The digit in the ones place is 3.
 Since 3 is less than 5, we leave the tens digit as it is and replace the ones digit with 0.
 Therefore, 9,873 becomes 9,870.

g. 78,744

The digit in the ones place is 4.
 Since 4 is less than 5, we leave the tens digit as it is and replace the ones digit with 0.
 Therefore, 78,744 becomes 78,740.

h. 4,08,379

The digit in the ones place is 9.
 Since 9 is greater than 5, we increase the tens digit by 1.
 Therefore, 4,08,379 becomes 4,08,380.

2. a. In 314 the digit in the tens place is 1, which is less than 5.

Thus, 314 becomes 300.

b. In 484 the digit in the tens place is 8, which is greater than 5, so we increase the hundreds digit by 1.

Thus, 484 becomes 500.

c. Same as part (b): 4,700

d. Same as part (b): 9,900

e. Same as part (a): 17,200

f. Same as part (b): 28,800

g. Same as part (a): 1,20,100

h. Same as part (b): 3,18,600

3. a. 8,373

The digit in the hundreds place is 3.
 Since 3 is less than 5, we leave the thousands digit as it is and replace the hundreds, tens, and ones digit with 0.
 Thus, 8,373 becomes 8,000.

b. 9,720

The digit in the hundreds place is 7.
 Since 7 is greater than 5, we increase the thousands digit by 1.
 9,720 becomes 10,000.

c. 2,07,898

The digit in the hundreds place is 8.
 Since 8 is greater than 5, we increase the thousands digit by 1.
 Thus, 2,07,898 becomes 2,08,000.



d. 26,509

The digit in the hundreds place is 5.

Since 5 is equal to 5, we increase the thousands digit by 1.

Thus, 26,509 becomes 27,000.

e. 3,18,942

The digit in the hundreds place is 9.

Since 9 is greater than 5, we increase the thousands digit by 1.

Thus, 3,18,942 becomes 3,19,000.

f. 98,975

The digit in the hundreds place is 9.

Since 9 is greater than 5, we increase the thousands digit by 1.

Thus, 98,975 becomes 99,000.

g. 10,35,609

The digit in the hundreds place is 6.

Since 6 is greater than 5, we increase the thousands digit by 1.

Thus, 10,35,609 becomes 10,36,000.

h. 28,67,366

The digit in the hundreds place is 3.

Since 3 is less than 5, we leave the thousands, digit as it is and replace the hundreds, tens, and ones digits with 0.

Thus, 28,67,366 becomes 28,67,000.

4. Round off each of the following numbers to the nearest:

i. a. 12,670

The digit in the ones place is 0.

Since 0 is less than 5, we leave the tens digit as it is and replace the ones digit with 0.

Thus, 12,670 becomes 12,670 (no change).

b. 17,645

The digit in the ones place is 5.

Since 5 is equal to 5, we increase the tens digit by 1.

Thus, 17,645 becomes 17,650.

c. 15,893

The digit in the ones place is 3.

Since 3 is less than 5, we leave the tens digit as it is and replace the ones digit with 0.

Thus, 15,893 becomes 15,890.

d. 31,982

The digit in the ones place is 2.

Since 2 is less than 5, we leave the tens digit as it is and replace the ones digit with 0.

Thus, 31,982 becomes 31,980.

e. 3,47,125

The digit in the ones place is 5.

Since 5 is equal to 5, we increase the tens digit by 1.

Thus, 3,47,125 becomes 3,47,130.

f. 1,58,356

The digit in the ones place is 6.

Since 6 is greater than 5, we increase the tens digit by 1.

Thus, 1,58,356 becomes 1,58,360.

g. 5,62,780

The digit in the ones place is 0.

Since 0 is less than 5, we leave the tens digit as it is and replace the ones digit with 0.

Thus, 5,62,780 becomes 5,62,780 (no change).

h. 16,70,248

The digit in the ones place is 8.

Since 8 is greater than 5, we increase the tens digit by 1.

Thus, 16,70,248 becomes 16,70,250.

ii. a. 12,670

The digit in the tens place is 7.

Since 7 is greater than 5, we increase the hundreds digit by 1.

Thus, 12,670 becomes 12,700.

b. 17,645

The digit in the tens place is 4.

Since 4 is less than 5, we leave the hundreds digit as it is and replace the tens and ones digits with 0.

Thus, 17,645 becomes 17,600.

c. 15,893

The digit in the tens place is 9.

Since 9 is greater than 5, we increase the hundreds digit by 1.

Thus, 15,893 becomes 15,900.



d. 31,982

The digit in the tens place is 8.

Since 8 is greater than 5, we increase the hundreds digit by 1.

Thus, 31,982 becomes 32,000.

e. 3,47,125

The digit in the tens place is 2.

Since 2 is less than 5, we leave the hundreds digit as it is and replace the tens and ones digit with 0.

Thus, 3,47,125 becomes 3,47,100.

f. 1,58,356

The digit in the tens place is 5.

Since 5 is equal to 5, we increase the hundreds digit by 1.

Thus, 1,58,356 becomes 1,58,400.

g. 5,62,780

The digit in the tens place is 8.

Since 8 is greater than 5, we increase the hundreds digit by 1.

Thus, 5,62,780 becomes 5,62,800.

h. 16,70,248

The digit in the tens place is 4.

Since 4 is less than 5, we leave the hundreds digit as it is and replace the tens and ones digits with 0.

Thus, 16,70,248 becomes 16,70,200.

iii. a. 12,670

The digit in the hundreds place is 6.

Since 6 is greater than 5, we increase the thousands digit by 1.

Thus, 12,670 becomes 13,000.

b. 17,645

The digit in the hundreds place is 6.

Since 6 is greater than 5, we increase the thousands digit by 1.

Thus, 17,645 becomes 18,000.

c. 15,893

The digit in the hundreds place is 8.

Since 8 is greater than 5, we increase the thousands digit by 1.

Thus, 15,893 becomes 16,000.

d. 31,982

The digit in the hundreds place is 9.

Since 9 is greater than 5, we increase the thousands digit by 1.

Thus, 31,982 becomes 32,000.

e. 3,47,125

The digit in the hundreds place is 1.

Since 1 is less than 5, we leave the thousands digit as it is and replace the hundreds, tens, and ones digit with 0.

Thus, 3,47,125 becomes 3,47,000.

f. 1,58,356

The digit in the hundreds place is 3.

Since 3 is less than 5, we leave the thousands digit as it is and replace the hundreds, tens, and ones digit with 0.

Thus, 1,58,356 becomes 1,58,000.

g. 5,62,780

The digit in the hundreds place is 7.

Since 7 is greater than 5, we increase the thousands digit.

Thus, 5,62,780 becomes 5,63,000.

h. 16,70,248

The digit in the hundreds place is 2.

Since 2 is less than 5, we leave the thousands digit as it is and replace the hundreds, tens, and ones digit with 0.

Thus, 16,70,248 becomes 16,70,000.

5.

	Number	Nearest 10	Nearest 100	Nearest 1000
a.	73,248	73,250	73,200	73,000
b.	34,097	34,100	34,100	34,000
c.	1,05,789	1,05,790	1,05,800	1,06,000
d.	27,903	27,900	27,900	28,000
e.	1,28,991	1,28,990	1,29,000	1,29,000

6. Vijay rounded off to the nearest hundred, and Suma rounded off to the nearest thousand. Both got the same result. Let us check the given numbers:

7,126: Nearest hundred = 7,100;

Nearest thousand = 7,000 (Different results)

7,835: Nearest hundred = 7,800;

Nearest thousand = 8,000 (Different results)

7,050: Nearest hundred = 7,100;

Nearest thousand = 7,000 (Different results)



6,999: Nearest hundred = 7,000;

Nearest thousand = 7,000 (Same result)

Therefore, **6,999** is the number they might have used.

7. a. To find two numbers that have the same nearest 10, we round them to the nearest 10.

45: The ones place is 5, so we round up to 50.

46: The ones place is 6, so we round up to 50.

Thus, 45 and 46 both round to 50.

(Answer may vary)

- b. Same as part (a):

99 and 101 (Answer may vary)

- c. Same as part (a):

999 and 1010 (Answer may vary)

8. Note: This is for reference only.

- a. Ship:

Average speed: 30 km/h

Rounding to nearest 10: 30 km/h

- b. Aeroplane:

Average speed: 900 km/h

Rounding to nearest 10: 900 km/h

- c. Scooter:

Average speed: 45 - 50 km/h

Rounding to nearest 10: 50 km/h

- d. Train:

Average speed: 75 - 80 km/h

Rounding to nearest 10: 80 km/h

- e. Rocket:

Average speed: 28,000 km/h

Rounding to nearest 10: 28,000 km/h

- f. Submarine:

Average speed: 40 - 44 km/h

Rounding to nearest 10: 40 km/h

- g. Bus:

Average speed: 45 - 50 km/h

Rounding to nearest 10: 50 km/h

- h. Dog Sled:

Average speed: 25 - 30 km/h

Rounding to nearest 10: 30 km/h

(Answer may vary)

Learning Logs

1. a. There are 4 zeros in 30 thousand. (30,000)
b. There are 5 zeros in 15 lakh. (15,00,000)
c. The place value of 0 is always the same as its face value.
d. The greatest 6-digit number is 9,99,999 and the smallest 6-digit number is 1,00,000.
e. 32,582 rounded off to the nearest 1000 is 33,000. (Since the hundreds digit is 5, we round up.)
2. a. The place value of 7 in 7,56,361 is 7 lakh. — True
b. The smallest 6-digit number formed by the digits 4, 5, 2, 6, 1, 0 is 1,02,456 and not 1,02,465. So, the statement is false.
c. Sixty-four lakh three thousand three is written as 64,03,003 and not as 64,30,003. So, the statement is false.
d. There are 2 places in lakhs period, *i.e.*, lakhs and ten lakh and not 3 places. So, the statement is false.
3. a. 83,70,794: Eighty-three lakh seventy thousand seven hundred ninety-four.
b. 7,57,325: Seven lakh fifty-seven thousand three hundred twenty-five.
c. 87,29,536: Eighty-seven lakh twenty-nine thousand five hundred thirty-six.
d. 2,02,020: Two lakh two thousand twenty.
e. 8,99,977: Eight lakh ninety-nine thousand nine hundred seventy-seven.
f. 80,19,527: Eighty lakh nineteen thousand five hundred twenty-seven.
4. a. Sixty-nine lakh thirty thousand seven hundred nineteen: 69,30,719.
b. Nineteen lakh nine thousand nine hundred ninety: 19,09,990.
c. Six lakh seven thousand one hundred four: 6,07,104.
d. Seven lakh nineteen thousand one hundred sixteen: 7,19,116.



- 5.
- | | | Coloured Digit | Period | Place Value | Face Value |
|----|-----------|----------------|--------|-------------|------------|
| a. | 1,86,549 | 4 | Ones | 40 | 4 |
| b. | 84,16,357 | 4 | Lakhs | 4,00,000 | 4 |
| c. | 98,37,001 | 0 | Ones | 0 | 0 |
6. a. $84,48,484 > 8,48,884$ (Looking at the number of digits)
 b. $99,79,779 > 99,79,977$ (Looking at the hundreds digit)
 c. $2,02,020 > 2,02,002$ (Looking at the tens digit)
 d. $70,99,700 = 70,99,700$ (Both are equal)
7. a. 6,27,909; 6,27,910; 52,79,054; 62,79,056; 63,79,056
 b. 2,13,500; 9,98,756; 9,98,765; 23,14,992; 75,46,786; 75,64,890
8. a. 10,19,923; 10,06,165; 2,63,792; 2,05,479; 1,50,358
 b. 27,89,988; 21,34,560; 3,07,689; 2,96,545; 1,29,657
9. To form the greatest number, arrange the digits in descending order (largest to smallest). To form the smallest number, arrange them in ascending order (smallest to largest).
Note: A number cannot start with 0. If 0 is one of the digits, place it in the second position and use the next smallest non-zero digit first.
- a. Digits: 3, 7, 8, 4, 0, 6
 Smallest Number: 3,04,678
 Greatest Number: 8,76,430
- b. Digits: 8, 0, 5, 1, 3, 9, 6
 Smallest Number: 10,35,689
 Greatest Number: 98,65,310
10. a. To form the smallest 6-digit number we use the six smallest digits (all different digits):
 0, 1, 2, 3, 4, 5.
 We start with the smallest non-zero digit (1) and arrange the other digits in ascending order.
 The smallest 6-digit number is 1,02,345.
- b. To form the greatest 6-digit number we use the six greatest digits (all different digits):
 9, 8, 7, 6, 5, 4.
 We arrange the digits in descending order. The greatest 6-digit number is 9,87,654.

11. To make the smallest or greatest number when you can repeat digits, you should repeat the most extreme values (like 0 or 9) as much as possible.

- a. Smallest 7-digit number using three different digits.

We use the three smallest digits: 0, 1, 2. To obtain the smallest possible value, we start with 1, use as many 0s as possible in between, and end with the next smallest digit.

The smallest 7-digit number is 10,00,002.

- b. Greatest 7-digit number using three different digits.

We use the three largest digits: 9, 8, 7. To obtain the largest possible value, we repeat 9 as many times as possible.

The greatest 7-digit number is 99,99,987.

- 12.

Number	Rounded off to the		
	Nearest 10	Nearest 100	Nearest 1000
a. 5,83,320	5,83,320	5,83,300	5,83,000
b. 16,09,329	16,09,330	16,09,300	16,09,000
c. 2,89,536	2,89,540	2,89,500	2,90,000
d. 4,01,289	4,01,290	4,01,300	4,01,000

Mental Maths

1. Commas are inserted in a number after each **period**.

Thus, **c.** is the correct option.

2. A 7-digit number starts with the **ten lakhs** place in the Indian system (say 10,00,000).

Thus, **c.** is the correct option.

3. The place value and face value are identical for the **ones place**.

Thus, **a.** is the correct option.

4. In the Indian system, 10 lakh written as 10,00,000. There are **6 zeros** in 10 lakh.

Thus, **c.** is the correct option.

Puzzle

First Trip: The boatman takes the sheep across (leaving the lion and the grass together, which is safe). He leaves the sheep on the far shore and returns alone.



Second Trip: The boatman takes the lion across.

The Switch: He leaves the lion on the far shore, but he takes the sheep back with him to the starting shore (to prevent the lion from eating the sheep).

Third Trip: He leaves the sheep at the start and takes the grass across. He leaves the grass with the lion (which is safe).

Final Trip: The boatman returns alone to the starting shore, picks up the sheep, and brings it across for the final time.

HOTS

A number is odd only if it ends in an odd digit (3, 5, 7, or 9). To make the number as large as possible, we want to keep the largest digits at the beginning and use the smallest possible odd digit at the end.

Start with the largest digits in the highest place value:

Lakhs: 9

Ten Thousands: 7

Thousands: 6

Hundreds: 5

Tens: 0

Ones (Units): 3 (to make it odd)

So, the greatest 6-digit number is **9,76,503**.

CHAPTER 2 : MATHEMATICAL OPERATIONS

Warm Up

- Sum of runs by Indian players (Sachin + Virat) and the Australian player (Ricky Ponting):
 $18,426 + 14,255 + 13,704 = 46,385$.
- Sum of runs by the Sri Lankan players (K Sangakkara + S Jayasuriya):
 $14,234 + 13,430 = 27,664$.
- The difference between Sachin Tendulkar's runs and Virat Kohli's runs:
 $18,426 - 14,255 = 4,171$.

So, Virat Kohli needs 4,171 runs to catch up with Tendulkar.

- In centuries: Each century is worth 100 runs.
 $49 \times 100 = 4,900$.
 - In half-centuries: Each half century is worth 50 runs.
 $96 \times 50 = 4,800$.
- Total runs from centuries = 2500.
 Since each century is 100 runs.
 Number of centuries = $2500 \div 100 = 25$.
 - Total runs from half-centuries = 4650. Since each half-century is 50 runs.
 Number of half centuries = $4650 \div 50 = 93$.

Exercise 2A

- $91 + 92 + 93 + 94 + 95 = 465$
 - $87 + 88 + 89 + 90 + 91 + 92 + 93 = 630$
 - $108 + 109 + 110 + 111 + 112 + 113 + 114 + 115 + 116 = 1008$
 - $875 + 876 + 877 + 878 = 3506$
 - $19 + 20 + 21 + 22 + 23 + 24 + 25 + 26 = 180$
- Rule 1: Numbers can be added in any order. Their sum will remain the same.

Rule 2: When 0 is added to a number, the sum is the number itself.

 - $4326 + 26458 = 26458 + 4326$ (Rule 1)
 - $436483 + 71364 = 71364 + 436483$ (Rule 1)
 - $56436 + 0 = 56436$ (Rule 2)
 - $0 + 364834 = 364834$ (Rule 2)
- | | | | | | |
|---|---|---|---|---|---|
| ① | ① | ① | ① | ① | |
| 6 | 7 | 8 | 9 | 8 | 7 |
| + | 8 | 7 | 6 | 5 | 6 |
| 7 | 6 | 6 | 6 | 4 | 3 |
 - | | | | | | |
|---|---|---|---|---|---|
| | ① | ① | ① | | |
| | 7 | 6 | 5 | 4 | 3 |
| + | 9 | 8 | 7 | 6 | 5 |
| 1 | 7 | 5 | 3 | 0 | 8 |
 - Same as above: 955541
 - Same as above: 8659024
 - Same as above: 762694
 - Same as above: 1647505



4. a.

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

b. Same as above: 437989

c. Same as above: 516706

d. Same as above: 1421790

e.

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

f. Same as above: 395131

5. a. **Step 1:** Starting from the rightmost column:

$4 + 2 = 6$. The missing digit is 4.

Step 2: In the next column, $6 + 4 = 10$. We write down 0 and carry over 1 to the next column. The missing digit is 4.

Step 3: In the next column, $1 + 8 + 3 = 12$. We write down 2 and carry over 1 to the next column. The missing digit is 3.

Step 4: In the next column, $1 + 4 + 3 = 8$. The missing digit is 8.

Step 5: In the last column, $5 + 6 = 11$. The missing digit is 6.

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

b. Same as above:

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

c. Same as above:

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

d. Same as above:

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

e. Same as above:

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

f. Same as above:

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

6. a. Bicycles sold in 2024: 57894

Bicycles sold in 2025: 987379

The total number of bicycles sold in these two years = $57894 + 987379 = 1045273$.

b. Total number of boys who took the exam =
 Number of boys passed the exam + Number of boys failed the exam = $72580 + 7400 = 79980$
 Total number of girls who took the exam =
 Number of girls passed the exam + Number of girls failed the exam = $37987 + 2500 = 40487$
 The total number of students who took the board exam = $79980 + 40487 = 1,20,467$.

c. Number of people visited a zoo in January = 97932

Number of people visited a zoo in February = 75307

Number of people visited a zoo in March = 105975

Total Number of people visited a zoo in the three months = $97932 + 75307 + 105975 = 279214$

- d. Number of copies of maths books published = 187930
 Number of copies of science books published = 98790
 Number of copies of English books published = 39750
 Total number of copies of books published by the publishing house = $187930 + 98790 + 39750 = 326470$
- e. Number of letters in the first van = 75603
 Number of letters in the second van = 78300
 Total number of letters in two vans = $75603 + 78300 = 153903$

7. Let us check the sums of different pairs:

$$\begin{aligned} 5205 + 6220 &= 11425 \\ 5205 + 7095 &= 12300 \\ 5205 + 8455 &= 13660 \\ 5205 + 4840 &= 10045 \\ 6220 + 7095 &= 13315 \\ 6220 + 8455 &= 14675 \\ 6220 + 4840 &= 11060 \\ 7095 + 8455 &= 15550 \\ 7095 + 4840 &= 11935 \\ 8455 + 4840 &= 13295 \end{aligned}$$

- a. The pair **5205** and **4840** gives the sum closest to 10,000.
 b. The pair **6220** and **8455** gives the sum closest to 15,000.
 c. The pair **7095** and **4840** gives the sum closest to 12,000.
 d. The pair **8455** and **4840** gives the sum closest to 13,000.
 e. The pair **5205** and **8455** gives the sum closest to 14,000.

8. a. Distance from New Delhi to Jaipur = 310 km
 Distance from Jaipur to Mumbai = 1180 km
 Total distance from New Delhi to Mumbai via Jaipur = 1490 km
 Thus, Aman will cover 1490 km for the entire journey.

Th	H	T	O
	3	1	0
+	1	1	8
	1	4	9

- b. Distance from Hyderabad to Nagpur = 498 km
 Distance from Nagpur to Kolkata = 1120 km
 Total distance from Hyderabad to Kolkata via Nagpur = 1618 km
 Thus, Namita will travel 1618 km
- c. In the given map, Mumbai and Hyderabad are the closest cities to Nagpur.

Th	H	T	O
	4	9	8
+	1	1	2
	1	6	1

Exercise 2B

1. a.

	14			11	
8	~~4~~	14	5	~~1~~	11
9	~~5~~	4	6	~~2~~	1
-	9	6	3	5	4
	8	5	8	2	6

b.

				6	13
5	9	8	9	~~7~~	~~3~~
-	4	7	8	3	4
	1	2	0	6	2

c.

	9	9	10	11	
7	~~10~~	10	~~0~~	~~1~~	13
8	~~0~~	~~0~~	1	~~2~~	~~3~~
-	2	6	7	8	7
	5	3	2	2	4

- d. Same as above: 7244065
 e. Same as above: 1256702
 f. Same as above: 24928

2. a.

TTh	Th	H	T	O
7	12	3	13	
8	~~2~~	~~4~~	~~3~~	6
-	9	3	6	4
	7	3	0	7

b.

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

- c. Same as above: 542763



- d. Same as above: 277165
 e. Same as above: 76484
 f. Same as above: 41636

3. a.

	L	TTh	Th	H	T	O
		6	13	5	14	
	5	2	~~7~~	~~3~~	~~6~~	~~4~~
-	1	1	2	9	1	8
	4	1	4	4	4	6

b.

	L	TTh	Th	H	T	O
	5	10	7	10	8	10
	~~6~~	~~0~~	~~8~~	~~0~~	~~9~~	~~0~~
-	1	8	0	5	0	8
	4	2	7	5	8	2

c.

	L	TTh	Th	H	T	O
		15	13			
	4	~~7~~	~~6~~	~~4~~	~~3~~	6
-	2	3	9	4	8	2
	2	3	6	9	5	4

d.

	L	TTh	Th	H	T	O
	4	~~6~~	~~2~~	16		
	~~5~~	~~7~~	~~3~~	~~6~~	9	4
-	2	9	4	8	3	3
	2	7	8	8	6	1

e.

	L	TTh	Th	H	T	O
	6	~~7~~	~~3~~	6	4	8
-	4	1	7	3	4	2
	2	5	6	3	0	6

f.

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

4. a. $243647 + 2048 - 18364$

We first find the sum of 243647 and 2048 and then find the difference between the sum obtained and 18364 as shown below.

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

	L	TTh	Th	H	T	O
		3	15			
	2	~~4~~	~~5~~	6	9	5
-		1	8	3	6	4
	2	2	7	3	3	1

Thus, $243647 + 2048 - 18364 = 227331$.

- b. $443640 - 21430 - 12683$

Step 1: We first add numbers having - ve sign.

	TTh	Th	H	T	O
		1	1		
	2	1	4	3	0
+	1	2	6	8	3
	3	4	1	1	3

Step 2: Subtract the result obtained from 443640.

	L	TTh	Th	H	T	O
		3	13		3	10
	4	~~4~~	~~3~~	6	~~4~~	~~0~~
-		3	4	1	1	3
	4	0	9	5	2	7

Thus, $443640 - 21430 - 12683 = 409527$.

- c. Same as part (a): 540360
 d. Same as part (b): 435660
 5. a. $126 + 184 = 310$.

Subtraction sentences: $310 - 184 = 126$ and
 $310 - 126 = 184$

- b. $784 - 527 = 257$.

Addition and Subtraction sentences: $257 + 527 = 784$ and $784 - 257 = 527$

6. a. Given, $876 - 436 = 440$.

Then $436 + 440 = 876$ (Using addition sentence)

- b. Given, $2345 + 6789 = 9134$

Then, $9134 - 6789 = 2345$ (Using subtraction sentence)

7. a. To find the other number, we subtract the given number from the total sum.

Sum of two numbers = 956975.

One number

= 99950

Other number

= 956975 – 99950

= 857025

	L	TTh	Th	H	T	O
One number	9	5	6	9	7	5
Other number	–		9	9	9	5
	8	5	7	0	2	5

- b. Compare the number of votes.

Since, 785378 > 637395

Therefore, candidate A got more votes.

Now, difference = 785378 – 637395 = 147983.

Thus, A got 147983 more votes than B.

- c. Since 735890 > 532580, Anil's investment is greater.

	L	TTh	Th	H	T	O
Anil's investment =	7	3	5	8	9	0
Sunil's investment =	–	5	3	2	5	8
Difference =	2	0	3	3	1	0

Thus, Anil invested more by ₹2,03,310.

- d.

	L	TTh	Th	H	T	O
Total number of bags purchased =	8	5	0	7	2	5
Number of bags sold =	–	4	0	8	3	6
Bags left in stock =	4	4	2	3	5	7

So, there are 442357 bags left in the wholesaler's stock.

- e.

	L	TTh	Th	H	T	O
Total number of bricks purchased =	3	5	0	7	7	0
Number of bricks used =	–	2	8	5	0	1
Number of remaining bricks =		6	5	7	6	9

- f.

	L	TTh	Th	H	T	O
Smallest 6-digit number =	1	0	0	0	0	0
Greatest 5-digit number =	–	9	9	9	9	9
Difference =						1

In words: One

- g. Find the sum of 88888 and 33333: 88888 + 33333 = 122221

Subtract 3676 from the sum obtained: 122221 – 3676 = 118545.

Thus, the required number is 118545.

8. The total cost of the items the school plans to purchase:

Cost of games and models = 39785

Cost of books = ₹9545

Cost of sports equipment = ₹19548

Total cost of the items = ₹39785 + 9545 + ₹19548 = ₹68878.

Total funds raised = ₹70500

Since the total fund raised (₹70,500) greater than the total cost (₹68,878), the school has sufficient funds.

Remaining funds

= Total fund raised – total cost of the items

= ₹70500 – ₹68878 = ₹1622

- 9.

	TTh	Th	H	T	O
Cost of the ticket from Delhi to Varanasi =		2	6	4	5
Cost of the ticket from Varanasi to Kolkata =		3	2	7	5
Taxi and other local expenses =		1	2	7	5
Cost of gift items for her mother =	+		5	4	8
Total amount spent =		1	2	6	8

Now, Shreya begins her journey with ₹25,000.

Amount left = Total money she started with – total amount spent

= ₹25,000 – ₹12,684 = ₹ 12,316

So, Shreya spends a total of ₹12,684 and have ₹12,316 left with her.

10. a. Height of Mount Everest = 8848 m

Height of Mount Elbrus = 5642 m

Difference = 8848 m – 5642 m = 3206 m

So, Mount Everest is 3206 m higher than Mount Elbrus.

- b. Do it yourself.

- c. Height of Mount Kilimanjaro = 5895 m

Height of Mount Elbrus = 5642 m

Height of Mount Everest = 8848 m

Total height of Mount Kilimanjaro and Mount Elbrus = 5895 m + 5642 m = 11537 m



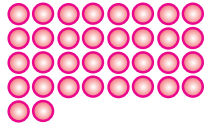
Now, subtract the height of Mount Everest from 11537 = $11537 - 8848 = 2689$ m.

Thus, the combined height of Mount Kilimanjaro and Mount Elbrus is 2689 metres more than the height of Mount Everest.

Exercise 2C

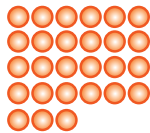
1. a. Arrange the dots into pairs.

Since the dots can be grouped into pairs, the total number of dots is even.

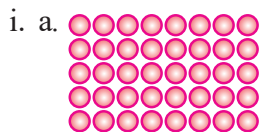


- b. Same as above: Even

- c. Since the dots are not in pairs, the total number of dots is odd.

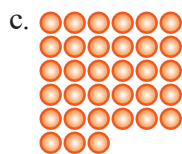


- d. Same as above: Odd



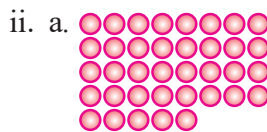
$$34 + 6 = 40 \text{ (even)}$$

- b. Same as above: $26 + 6 = 32$ (even)



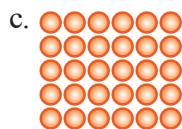
$$27 + 6 = 33 \text{ (odd)}$$

- d. Same as above: $19 + 6 = 25$ (odd)



$$34 + 3 = 37 \text{ (odd)}$$

- b. Same as above: $26 + 3 = 29$ (odd)



$$27 + 3 = 30 \text{ (even)}$$

- d. Same as above: $19 + 3 = 22$ (even)

2. Check the numbers whose ones digit is 0, 2, 4, 6 or 8 and circle them.

- a. 1023: The ones digit is 3, so this is not an even number.
b. 2348: The ones digit is 8, so this is an even number.

- c. Same as part b: even
d. Same as part a: not even
e. Same as part b: even

3. Check the numbers whose ones digit is 1, 3, 5, 7, or 9 and circle them.

- a. 3450: The ones digit is 0, so this is not an odd number.
b. 6893: The ones digit is 3, so this is an odd number.
c. Same as part b: odd
d. Same as part a: not odd
e. Same as part b: odd

4. A palindrome number reads the same forwards and backwards.

101, 111, 121, 131, 141, 151, 161, 171, 181, 191

5. 1001, 1111, 1221, 1331, 1441

6. 23032, 23132, 23232, 23332, 23432, 23532, 23632, 23732, 23832, 23932, 24042, 24142, 24242, 24342, 24442, 24542, 24642, 24742, 24842, 24942

Exercise 2D

1. a.

	TTh	Th	H	T	O
		5	6	4	3
×					8
	4	5	1	4	4

- b.

	TTh	Th	H	T	O
		9	3	0	6
×					7
	6	5	1	4	2

- c.

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

→ $20 + 7$
→ 5678×7
→ 5678×20

- d. Same as part c: 209872

e.

	TTh	Th	H	T	O
			5	7	2
×			1	6	2
		1	1	4	4
	3	4	3	2	0
+	5	7	2	0	0
	9	2	6	6	4

→ $100 + 60 + 2$

→ 572×2

→ 572×60

→ 572×100

f. Same as part e: 70992

g. Same as part e: 661232

h. Same as part e: 2290260

i. Same as part e: 460530

2. a. When a number is multiplied by 10, we put a zero to the right of the number.

$$57 \times 10 = \underline{570}$$

- b. When a number is multiplied by 100, we put two zeros to the right of the number.

$$808 \times 100 = \underline{80800}$$

c. Same as part b: 56400

d. Same as part a: 86430

e. Same as part b: 276300

- f. When a number is multiplied by 1000, we put three zeros to the right of the number.

$$5090 \times 1000 = \underline{5090000}$$

3. a. Numbers can be multiplied in any order; the product will remain the same. $6326 \times 80 = \underline{80} \times 6326$

- b. When a number is multiplied by 0, the product is always 0. $4999 \times \underline{0} = 0$

- c. The product of three numbers does not change when the grouping of the numbers is changed. $(100 \times 20) \times 5 = (\underline{100} \times \underline{5}) \times 20$

- d. When a number is multiplied by 1, the product is the number itself. $1 \times \underline{9134} = 9134$

- e. If the sum or difference of two numbers is multiplied by another number, then the two numbers can be multiplied separately and then added or subtracted. $(500 + 75) \times 16 = \underline{500} \times 16 + 75 \times \underline{16}$

- f. If the sum or difference of two numbers is multiplied by another number, then the two numbers can be multiplied separately and then added or subtracted. $(\underline{708} - \underline{55}) \times \underline{25} = 708 \times 25 - 55 \times 25$

4. a. 28×32 :

×	20	8
30	600	240
2	40	16
	640	256
	896	

- b. 46×78 :

×	40	6
70	2800	420
8	320	48
	12	468
	3588	

- c. 432×23 :

×	400	30	2
20	8000	600	40
3	1200	90	6
	9200	690	46
	9936		

- d. Same as part c: 13020

5. a. 4×18 :

$$\begin{array}{c} 4 \times 18 \\ \text{Double} \downarrow \quad \text{Half} \downarrow \\ \boxed{8} \times \boxed{9} \end{array}$$

$$4 \times 18 = 8 \times 9 = 72$$

- b. 5×36 :

$$\begin{array}{c} 5 \times 36 \\ \text{Double} \downarrow \quad \text{Half} \downarrow \\ \boxed{10} \times \boxed{18} \end{array}$$

$$5 \times 36 = 10 \times 18 = 180$$

- c. 236×50 :

$$\begin{array}{c} 236 \times 50 \\ \text{Half} \downarrow \quad \text{Double} \downarrow \\ \boxed{118} \times \boxed{100} \end{array}$$

$$236 \times 50 = 118 \times 100 = 11800$$

- d. 1124×25 :

$$\begin{array}{c} 1124 \times 25 \\ \text{Half} \downarrow \quad \text{Double} \downarrow \\ \boxed{562} \times \boxed{50} \end{array}$$

$$1124 \times 25 = 562 \times 50 = 28100$$

- e. 16×17 :

$$\begin{array}{c} 16 \times 17 \\ \text{Half} \downarrow \quad \text{Double} \downarrow \\ \boxed{8} \times \boxed{34} \end{array}$$

$$16 \times 17 = 8 \times 34 = 272$$



f. 204×5 :

$$\begin{array}{c} 204 \times 5 \\ \text{Half} \quad \text{Double} \\ \boxed{102} \times \boxed{10} \end{array}$$

$$204 \times 5 = 102 \times 10 = 1020$$

g. 1452×15 :

$$\begin{array}{c} 1452 \times 15 \\ \text{Half} \quad \text{Double} \\ \boxed{726} \times \boxed{30} \end{array}$$

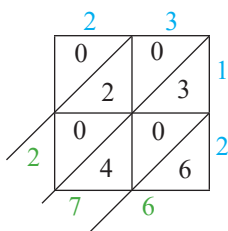
$$1452 \times 15 = 726 \times 30 = 21780$$

h. 25×112 :

$$\begin{array}{c} 25 \times 112 \\ \text{Double} \quad \text{Half} \\ \boxed{50} \times \boxed{56} \end{array}$$

$$25 \times 112 = 50 \times 56 = 2800$$

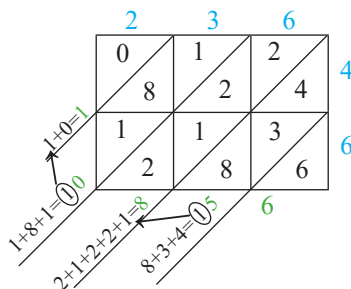
6. a.



$$\text{Thus, } 23 \times 12 = 276$$

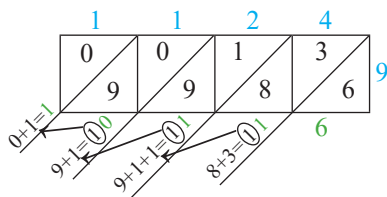
b. Same as above: $39 \times 36 = 1404$

c.



$$\text{Thus, } 236 \times 46 = 10856$$

d.



$$\text{Thus, } 1124 \times 9 = 10116$$

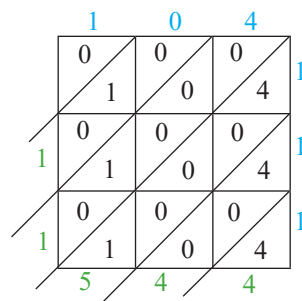
e. Same as part a: $16 \times 18 = 288$

f. Same as part c: $204 \times 58 = 11832$

g. Same as part d.

$$1451 \times 29 = 42079$$

h.



$$\text{Thus, } 104 \times 111 = 11544$$

7. a. $275 \times 4 \times 25 = 275 \times (4 \times 25) = 275 \times 100 = 27500$

b. $2 \times 195 \times 5 = 195 \times (2 \times 5) = 195 \times 10 = 1950$

c. $2430 \times 50 \times 2 = 2430 \times (50 \times 2) = 2430 \times 100 = 243000$

d. $400 \times 25 \times 4 = 400 \times (25 \times 4) = 400 \times 100 = 40000$

e. $4365 \times 20 \times 5 = 4365 \times (20 \times 5) = 4365 \times 100 = 436500$

f. $10 \times 3364 \times 10 = 3364 \times (10 \times 10) = 3364 \times 100 = 336400$

g. $4368 \times 500 \times 2 = 4368 \times (500 \times 2) = 4368 \times 1000 = 4368000$

h. $4 \times 6666 \times 25 = 6666 \times (4 \times 25) = 6666 \times 100 = 666600$

i. $4010 \times 50 \times 2 = 4010 \times (50 \times 2) = 4010 \times 100 = 401000$

8. Given $26 \times 32 = 832$

a. When one number decreases by 1, the product decreases by the value of the other number.

$$\text{So, } 25 \times 32 = 832 - 32 = 800$$

b. When one number increases by 1, the product increases by the value of the other number.

$$27 \times 32 = 832 + 32 = 864$$

c. Same as part a: $832 - 26 = 806$

d. Here, one number is decreased by 3, the product decreases by the value of three times of the other number. $26 \times 29 = 832 - 26 \times 3 = 832 - 78 = 754$

e. Same as part b: $26 \times 33 = 858$

9. a. Cost of a bicycle

$$= ₹4,560$$

Cost of 425 bicycles

$$= 4,560 \times 425$$

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

b. Milk supplied in one day = 1250 litres

Number of days in a leap year = 366

Milk supplied in one leap year

$$= 1250 \times 366 = 457500$$

Thus, total milk supplied in one leap year = 4,57,500 litres.

$$\begin{array}{r} 1250 \\ \times 366 \\ \hline 7500 \\ 75000 \\ 375000 \\ \hline 457500 \end{array}$$

c. Number of toys in one box = 150

Number of boxes = 4500

Total number of toys

$$= 4500 \times 150 = 675000$$

Thus, the number of toys is 6,75,000.

$$\begin{array}{r} 150 \\ \times 4500 \\ \hline 0000 \\ 75000 \\ 225000 \\ \hline 675000 \end{array}$$

d. Cost of one sofa set = ₹2,540

Number of sofa sets = 195

Total cost of 195 sofa sets

$$= 2,540 \times 195 = 4,95,300$$

Thus, the total cost of 195 sofa sets is ₹4,95,300.

e. Number of days in a year = 365

Number of hours in a day = 24

Number of hours in a year = $365 \times 24 = 8,760$

There are 8,760 hours in a year.

f. Milk sold in one day = 1,258 litres

Number of days in December = 31

Milk sold in December

$$= 1,258 \times 31 = 38,998 \text{ litres}$$

Cost of 1 litre of milk = ₹59

Cost of milk sold in December

$$= 38,998 \times 59 = ₹23,00,882$$

k. Same as part j.

l. Same as part j.

2. a.

$$\begin{array}{c} 56 \div 8 \\ \swarrow \quad \searrow \\ 40 + 16 \\ \downarrow \div 8 \quad \downarrow \div 8 \\ 5 + 2 = 7 \end{array}$$

b.

$$\begin{array}{c} 72 \div 9 \\ \swarrow \quad \searrow \\ 90 - 18 \\ \downarrow \div 9 \quad \downarrow \div 9 \\ 10 - 2 = 8 \end{array}$$

c.

$$\begin{array}{c} 96 \div 6 \\ \swarrow \quad \searrow \\ 60 + 36 \\ \downarrow \div 6 \quad \downarrow \div 6 \\ 10 + 6 = 16 \end{array}$$

d.

$$\begin{array}{c} 234 \div 6 \\ \swarrow \quad \searrow \\ 240 - 6 \\ \downarrow \div 6 \quad \downarrow \div 6 \\ 40 - 1 = 39 \end{array}$$

e.

$$\begin{array}{c} 1212 \div 12 \\ \swarrow \quad \searrow \\ 1200 + 12 \\ \downarrow \div 12 \quad \downarrow \div 12 \\ 100 + 1 = 101 \end{array}$$

f.

$$\begin{array}{c} 796 \div 4 \\ \swarrow \quad \searrow \\ 800 - 4 \\ \downarrow \div 4 \quad \downarrow \div 4 \\ 200 - 1 = 199 \end{array}$$

g.

$$\begin{array}{c} 775 \div 25 \\ \swarrow \quad \searrow \\ 750 + 25 \\ \downarrow \div 25 \quad \downarrow \div 25 \\ 30 + 1 = 31 \end{array}$$

h.

$$\begin{array}{c} 9648 \div 48 \\ \swarrow \quad \searrow \\ 9600 + 48 \\ \downarrow \div 48 \quad \downarrow \div 48 \\ 200 + 1 = 201 \end{array}$$

3. a. $767 \div 26$

Here, quotient is $20 + 9 = 29$ and remainder is 13.

$$\begin{array}{r} 20 + 9 \\ 26 \overline{) 767} \\ \underline{-520} \\ 247 \\ \underline{-234} \\ 13 \end{array}$$

Checking:

Dividend = Divisor $\times$ Quotient + Remainder

$$= 26 \times 29 + 13 = 754 + 13 = 767$$

b. Same as above: Quotient = 13 Remainder = 17

c. Same as above: Quotient = 254 Remainder = 0

d. Same as above: Quotient = 334 Remainder = 0

e. Same as above: Quotient = 70 Remainder = 32

f. Same as above: Quotient = 306 Remainder = 13

4. a.

$$\begin{array}{r} 637 \leftarrow \text{Quotient} \\ 9 \overline{) 5736} \\ \underline{-54} \\ 33 \\ \underline{-27} \\ 66 \\ \underline{-63} \\ 3 \leftarrow \text{Remainder} \end{array}$$

Exercise 2E

1. c. Choose any two numbers whose product is 48, such as 2×24 , 3×16 , 4×12 , or 6×8 .

(Answer may vary)

d. Same as above.

e. Same as above.

f. Same as above.

g. Choose any two number whose quotient is 28, like $56 \div 2 = 28$

h. Same as part g.

i. Same as part g.

j. Choose any number that divides 56 exactly. Write the divisor in the circle and the quotient in the square box.



Checking:

$$\text{Quotient} \times \text{Divisor} + \text{Remainder} = \text{Dividend}$$

$$637 \times 9 + 3 = 5736$$

$$5733 + 3 = 5736$$

$$5736 = 5736$$

Therefore, the division is correct.

- b. Same as above : $87648 \div 7$

$$\text{Quotient} = 12521 \text{ and remainder} = 1$$

- c. Same as above : $963368 \div 5$

$$\text{Quotient} = 192673 \text{ and remainder} = 3$$

- d. Same as above : $26436 \div 23$

$$\text{Quotient} = 1149 \text{ and remainder} = 9$$

- e. Same as above : $504009 \div 78$

$$\text{Quotient} = 6461 \text{ and remainder} = 51$$

- f. Same as above : $1834 \div 43$

$$\text{Quotient} = 42 \text{ and remainder} = 28$$

- g. Same as above : $88004 \div 192$

$$\text{Quotient} = 458 \text{ and remainder} = 68$$

- h. Same as above : $55444 \div 222$

$$\text{Quotient} = 249 \text{ and remainder} = 166$$

5. a. Dividend = Quotient $\times$ Divisor + Remainder

Here, Quotient = 75, divisor = 136 and remainder = 31

$$\text{Dividend} = 75 \times 136 + 31 = 10200 + 31 = 10231$$

- b. Dividend = Quotient $\times$ Divisor + Remainder

Here, quotient = 801, divisor = 403 and remainder = 325

$$\text{Dividend} = 801 \times 403 + 325 = 322803 + 325 = 323128$$

6. a. When a number is divided by itself, the quotient is 1.

$$\text{So, } 567 \div 567 = \underline{1}$$

- b. When a number is divided by 1, the quotient is the number itself.

$$\text{So, } 3776 \div \underline{1} = 3776$$

- c. When a number is divided by itself, the quotient is 1.

$$\text{So, } 6574 \div 6574 = 1$$

- d. When 0 is divided by a non-zero number, the quotient is zero.

$$\text{So, } \underline{0} \div 218 = 0$$

- e. We know that division and multiplication are interconnected.

$$\text{So, if } 4032 \div 24 = 168 \text{ then } 24 \times 168 = \underline{4032} \text{ and } 4032 \div 168 = \underline{24}$$

7. Column-A

a. $54363 \div 10 \rightarrow Q = 5436 \text{ and } R = 3$

b. $43033 \div 100 \rightarrow Q = 430 \text{ and } R = 33$

c. $921735 \div 1000 \rightarrow Q = 921 \text{ and } R = 735$

d. $55569 \div 100 \rightarrow Q = 555 \text{ and } R = 69$

e. $4876 \div 10 \rightarrow Q = 487 \text{ and } R = 6$

e. $697770 \div 1000 \rightarrow Q = 697 \text{ and } R = 770$

Thus,

$$a \rightarrow \text{iii}, b \rightarrow \text{i}, c \rightarrow \text{v}, d \rightarrow \text{vi}, e \rightarrow \text{ii}, f \rightarrow \text{iv}$$

8. a. Total amount collected = ₹98,762

$$\text{Number of people} = 437$$

$$\text{Amount each person gets} = 98762 \div 437 = 226$$

Therefore, each person gets ₹226.

- b. Total mangoes = 2,54,016

$$\text{Mangoes per box} = 288$$

$$\text{Number of boxes required} = 254,016 \div 288 = 882$$

Thus, the required number of boxes is 882.

- c. Product of the two numbers = 3,32,878

$$\text{One number} = 826$$

$$\text{Then other number} = 332878 \div 826 = 403$$

Therefore, the other number is 403.

- d. Total cost of smartwatches = ₹2,99,520

$$\text{Number of smartwatches} = 130$$

$$\text{Then, cost of one smartwatch} = 299520 \div 130 = 2304$$

Thus, the cost of one smartwatch is ₹2304.

- e. Total water capacity = 2,85,219 litres

$$\text{Number of tanks} = 387$$

$$\text{Then, capacity of each tank} = 285219 \div 387 = 737$$

9. a. Price per kg of coconut husk = ₹23

$$\text{Total amount earned} = ₹9913$$

$$\text{Quantity of husk sold} = 9913 \div 23 = 431$$

Thus, Susie and Susnitha sold 431 kg of coconut husk.

- b. i. The distance they should cycle every day = $576 \div 12 = 48 \text{ km}$

ii. Distance from Ratnagiri to Goa = 232 km
The distance they should cycle each day to reach Goa in 4 days = $232 \div 4 = 58$ km

c. Since $264 \div 4 = 66$, the long wooden panels are sufficient for 66 bookshelves.

$306 \div 8 = 38$ and remainder 2.

So, the short wooden panels are sufficient for 38 bookshelves.

$2400 \div 16 = 150$.

So, the small clips are sufficient for 150 bookshelves.

$120 \div 4 = 30$

So, large clips are sufficient for 30 bookshelves.

$2800 \div 32 = 87$ and remainder 16.

So, screws are sufficient for 87 bookshelves.

Based on the above data the carpenter can make 30 bookshelves.

Exercise 2F

$$1. 18 + 20 \div 4 = 18 + 5 \quad (\text{Division})$$

$$= 23 \quad (\text{Addition})$$

$$2. 15 \times 10 \div 2 = 15 \times 5 \quad (\text{Division})$$

$$= 75 \quad (\text{Multiplication})$$

$$3. 32 - 8 \times 2 = 32 - 16 \quad (\text{Multiplication})$$

$$= 16 \quad (\text{Subtraction})$$

$$4. 35 \times 48 + 2024 = 1680 + 2024 \quad (\text{Multiplication})$$

$$= 3704 \quad (\text{Addition})$$

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

$$= 1385 \quad (\text{Addition})$$

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

$$= 8 - 3 \quad (\text{Subtraction})$$

$$= 5 \quad (\text{Subtraction})$$

$$7. 37 - 6 \times 4 + 32 \div 4$$

$$= 37 - 6 \times 4 + 8 \quad (\text{Division})$$

$$= 37 - 24 + 8 \quad (\text{Multiplication})$$

$$= 45 - 24 \quad (\text{Addition})$$

$$= 21 \quad (\text{Subtraction})$$

$$8. 8 \times 13 - 4 \times 15 = 104 - 60 \quad (\text{Multiplication})$$

$$= 44 \quad (\text{Subtraction})$$

$$9. 96 \div 16 + 34 \times 10 - 13$$

$$= 6 + 34 \times 10 - 13 \quad (\text{Division})$$

$$= 6 + 340 - 13 \quad (\text{Multiplication})$$

$$= 346 - 13 \quad (\text{Addition})$$

$$= 333 \quad (\text{Subtraction})$$

$$10. 30 - 28 + 36 \div 2 = 30 - 28 + 18 \quad (\text{Division})$$

$$= 48 - 28 \quad (\text{Addition})$$

$$= 20 \quad (\text{Subtraction})$$

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

$$= 3 \times 4 - 5 + 12 \times 5 \quad (\text{Division})$$

$$= 12 - 5 + 60 \quad (\text{Multiplication})$$

$$= 72 - 5 \quad (\text{Addition})$$

$$= 67 \quad (\text{Subtraction})$$

$$12. 70 \div 14 \times 6 - 10 \div 5 + 1$$

$$= 5 \times 6 - 2 + 1 \quad (\text{Division})$$

$$= 30 - 2 + 1 \quad (\text{Multiplication})$$

$$= 31 - 2 \quad (\text{Addition})$$

$$= 29 \quad (\text{Subtraction})$$

Learning Logs

1. a.

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

b.

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

c.

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

d.

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

e.

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

2. a.

⑧	⑫	⑮	⑬		
9	3	6	4	3	6
-	5	6	4	8	3
8	7	9	9	5	3



b.

		13	12	15		
5	3	2	5	10		
6	4	3	6	0	9	
-	2	7	3	6	8	6
	3	6	9	9	2	3

c.

		9	13			
8	10	3	10			
9	0	4	0	3	6	
-	7	3	6	8	3	6
	1	6	7	2	0	0

d.

		16	15	12	17	
3	6	5	2	7	16	
4	7	6	3	8	6	
-	1	9	9	9	9	9
	2	7	6	3	8	7

e.

			9			
		6	10	13		
9	8	7	0	3	6	
-	5	6	4	7	6	4
	4	2	2	2	7	2

f.

		9	9	9	9	
8	10	10	10	10	10	
9	0	0	0	0	0	
-	1	7	3	6	9	8
	7	2	6	3	0	2

3. a. $736436 - 56436 + 27364$

Step 1: Add 736436 and 27364.

		1		1	1	
7	3	6	4	3	6	
+	2	7	3	6	4	
	7	6	3	8	0	0

Step 2: Subtract 56436 from result obtained.

				9		
	5	13	7	10	10	
7	6	3	8	0	0	
-	5	6	4	3	6	
	7	0	7	3	6	4

b. $264836 + 56436 - 99864$

Step 1: Add 264836 and 56436.

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

Step 2: Subtract 99864 from the result obtained.

		11	10			
2	1	0	12	6	12	
3	2	1	2	7	2	
-	9	9	8	6	4	
	2	2	1	4	0	8

c. $884648 - 26436 - 83645$

Step 1: We first add numbers having - ve sign i.e., 26436 and 83645.

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

Step 2: Subtract the result obtained from 884648.

			5	14		
8	8	4	6	4	8	
-	1	1	0	8	1	
	7	7	4	5	6	7

d. $948736 - 56476 + 11645$

Step 1: Add 948736 and 11645

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

Step 2: Subtract 56476 from the result obtained.

		9				
	5	10	13	7	11	
9	6	0	3	8	1	
-	5	6	4	7	6	
	9	0	3	9	0	5

4. a. 4364×234 :

			4	3	6	4		
×				2	3	4		
			1	7	4	5	6	→ (4364 × 4)
		1	3	0	9	2	0	→ (4364 × 30)
+		8	7	2	8	0	0	→ (4364 × 200)
	1	0	2	1	1	7	6	

b. 4040×152 :

			4	0	4	0	
×				1	5	2	
			8	0	8	0	→ (4040 × 2)
	2	0	2	0	0	0	→ (4040 × 50)
+	4	0	4	0	0	0	→ (4040 × 100)
	6	1	4	0	8	0	

c. 64533×86 :

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

→ (64533×6)
→ (64533×80)

5. a. 4364×127 :

×	4000	300	60	4
100	400000	30000	6000	400
20	80000	6000	1200	80
7	28000	2100	420	28
	508000	38100	7620	508
	554228			

b. 5800×111 :

×	5000	800
100	500000	80000
10	50000	8000
1	5000	800
	555000	88800
	643800	

c. 3264×104 :

×	3000	200	60	4
100	300000	20000	6000	400
4	12000	800	240	16
	312000	20800	6240	416
	339456			

6. a. 15×26 :

15×26
 Double Half
 ↓ ↓
30 × 13

$15 \times 26 = 30 \times 13 = 390$

b. 25×12 :

25×12
 Double Half
 ↓ ↓
50 × 6

$25 \times 12 = 50 \times 6 = 300$

c. 28×35 :

28×35
 Half Double
 ↓ ↓
14 × 70

$28 \times 35 = 14 \times 70 = 980$

7. a. 18×23 :

	0	1	2
	2	6	3
	0	2	4
	3	4	

Thus, $18 \times 23 = 414$.

b. 23×25 :

	0	0	2
	4	6	5
	1	1	5
	0	5	

Thus, $23 \times 25 = 575$.

c. 32×45 :

	1	0	4
	2	8	5
	1	1	0
	5	0	

Thus, $32 \times 45 = 1440$.

8. a. $\begin{array}{r} 3104 \leftarrow \text{Quotient} \\ 8 \overline{) 24836} \\ \underline{-24} \\ 8 \\ \underline{-8} \\ 36 \\ \underline{-32} \\ 4 \leftarrow \text{Remainder} \end{array}$

Checking:

Quotient $\times$ Divisor + Remainder = Dividend

$3104 \times 8 + 4 = 24836$

$24832 + 4 = 24836$

$24836 = 24836$

Thus, the division is correct.

b. $\begin{array}{r} 895 \leftarrow \text{Quotient} \\ 63 \overline{) 56436} \\ \underline{-504} \\ 603 \\ \underline{-567} \\ 366 \\ \underline{-315} \\ 51 \leftarrow \text{Remainder} \end{array}$

Checking:

Quotient $\times$ Divisor + Remainder = Dividend

$895 \times 63 + 51 = 56436$

$56385 + 51 = 56436$

$56436 = 56436$

Thus, the division is correct.



c. Same as above: $94000 \div 36$: Quotient = 2611
Remainder = 4

d. $87306 \div 203$:

$$\begin{array}{r} 430 \text{ ← Quotient} \\ 203 \overline{) 87306} \\ \underline{-812} \\ 610 \\ \underline{-609} \\ 16 \\ \underline{-0} \\ 16 \text{ ← Remainder} \end{array}$$

Checking:

Quotient $\times$ Divisor + Remainder = Dividend

$$430 \times 203 + 16 = 87306$$

$$87290 + 16 = 87306$$

$$87306 = 87306$$

Thus, the division is correct.

e. Same as above: $55000 \div 145$: Quotient = 379
Remainder = 45

f. Same as above: $51000 \div 75$: Quotient = 680
Remainder = 0

9. To find what must be added to 756483 to get 997368, we subtract 756483 from 997368.

$$997368 - 756483 = 240885$$

10. First, find the difference of 726493 and 543640:

$$726493 - 543640 = 182853$$

Now, add this result to 436468:

$$436468 + 182853 = 619321$$

11. Cost of a mobile phone = ₹8,950

Number of mobile phones = 72

So, the cost of 72 mobile phones = $72 \times 8950 = 644400$

Thus, the cost of 72 such mobile phones = ₹644400

12. The greatest 4-digit number is 9999, and the greatest 3-digit number is 999.

To find the product, multiply 9999 by 999:

$$9999 \times 999 = 9989001$$

13. Total distance covered by traveller in 175 days = 43400 km.

Distance covered in one day = $43400 \div 175$
= 248 km

Thus, the traveller covered 248 km per day.

14. Total pages read over three days:

$$36 + 48 + 90 = 174$$

She wants to read an equal number of pages each day during three days.

So, divide 174 by 3 to find the number of pages per day: $174 \div 3 = 58$.

Hence, she should read 58 pages per day.

15. a. $280 + 153 \div 17 - 8 \times 19$

$$\begin{aligned} &= 280 + 9 - 8 \times 19 && \text{(Division)} \\ &= 280 + 9 - 152 && \text{(Multiplication)} \\ &= 289 - 152 && \text{(Addition)} \\ &= 137 && \text{(Subtraction)} \end{aligned}$$

b. $7619 + 832 \times 48 \div 16 - 8$

$$\begin{aligned} &= 7619 + 832 \times 3 - 8 && \text{(Division)} \\ &= 7619 + 2496 - 8 && \text{(Multiplication)} \\ &= 10115 - 8 && \text{(Addition)} \\ &= 10107 && \text{(Subtraction)} \end{aligned}$$

16. Given:

a. $24 \times 44 = 1056$

b. $12 \times 22 = 264$

In a. 24 and 44 are double the numbers 12 and 22 from b. so, the product in a. is four times the product in b.

c. 24×22 : Here, 24 is double of 12 and 22 is the same as in part b. So, the product should be double of 264, which is 528.

$$\text{So, } 24 \times 22 = 528.$$

d. 12×44 : Here, 12 is the same as in b, and 44 is double of 22. The product should be double of 264, which is 528.

e. 6×22 : 6 is half of 12, and 22 is the same as in part b, so the product should be half of 264, which is 132.

f. 6×11 : 6 is half of 12, and 11 is half of 22. The product should be half of 132, which is 66.

Mental Maths

1. 3 lakhs + 16 ten thousands: $3 \times 1,00,000 + 16 \times 10,000 = 3,00,000 + 1,60,000 = 4,60,000$

This is equal to 4 lakhs + 6 ten thousands.

So, the correct answer is

c. 4 lakhs + 6 ten thousands.

2. Smallest 4-digit number = 1000

Smallest 5-digit number = 10000

Smallest 6-digit number = 100000

$$\text{Sum} = 1000 + 10000 + 100000 = 111000$$

So, the correct answer is **d. 111000**

3. $(60 + 40) \times 300 = 100 \times 300 = 30000$

So, the correct answer is **b. 30000**



4. $5364 \times 4 \times 25 = 5364 \times (4 \times 25) = 5364 \times 100 = 536400$

So, the correct answer is **c. 536400**

5. $936 \times 500 \times 0 = 0$ (Any number multiplied by 0 equals 0.)

So, the correct answer is **b. 0**

6. $536400 \div 100 = 5364$

So, the correct answer is **c. 5364**

7. When 493685 is divided by 1000, we can simply look at the last three digits of the number.

The last three digits of 493685 are 685.

So, the remainder when 493685 is divided by 1000 is 685.

Thus, the correct answer is **a. 685**

8. Using DMAS, D stands for division, so division performed first while simplifying a numerical is expression.

So, the correct answer is **d. $\div$**

9. $100 \div 10 + 10 \times 10 = 10 + 10 \times 10$ (Division)
 $= 10 + 100$ (Multiplication)
 $= 110$ (Addition)

So, the correct answer is **c. 110**

10. $63 \div 9 + 12 \times 4 - 5$
 $= 7 + 12 \times 4 - 5$ (Division)
 $= 7 + 48 - 5$ (Multiplication)
 $= 55 - 5$ (Addition)
 $= 50$ (Subtraction)

So, the correct answer is **c. 50**

HOTS

1. a. **Step 1:** Find the divisor: Look at the first subtraction step: $96 - 96 = 0$. We see that a 2-digit divisor multiplied by 3 (the first digit of the quotient) equals 96.
 $96 \div 3 = 32$. So, the divisor is 32.

Step 2: Fill the quotient:

After $96 - 96$, we bring down the 3 and 6. This makes 036.

32 goes into 36 one time. $32 \times 1 = 32$

$36 - 32 = 4$. Bring down the 4, making 44.

32 goes into 44 one time. $32 \times 1 = 32$

$$\begin{array}{r} 3 \square 1 1 \square \\ \square \square \overline{) 963648} \\ - 96 \\ \hline 0 \square \square \\ - \square 2 \\ \hline \square \square \\ - 32 \\ \hline 128 \\ - 128 \\ \hline 0 \end{array}$$

$44 - 32 = 12$. Bring down the 8, making 128.
 $128 \div 32 = 4$. So the last digit of the quotient is 4.

So, the correct division is:

$$\begin{array}{r} 3 \square 1 1 \square \\ \square \square \overline{) 963648} \\ - 96 \\ \hline 0 \square \square \\ - \square 2 \\ \hline \square \square \\ - 32 \\ \hline 128 \\ - 128 \\ \hline 0 \end{array}$$

b. Same as above:

$$\begin{array}{r} 2797 \\ 124 \overline{) 346896} \\ - 248 \\ \hline 988 \\ - 868 \\ \hline 1209 \\ - 1116 \\ \hline 936 \\ - 868 \\ \hline 68 \end{array}$$

2. Ranjana's speed

$$= \frac{600 \text{ words}}{20 \text{ minutes}} = 30 \text{ words per minute}$$

Apurv's speed

$$= \frac{1440 \text{ words}}{45 \text{ minutes}} = 32 \text{ words per minute}$$

Nikhil's speed

$$= \frac{1155 \text{ words}}{35 \text{ minutes}} = 33 \text{ words per minute}$$

Since $30 < 32 < 33$. So, **Nikhil** types the fastest at **33 words per minute**.

3. a. $125 \underline{\quad} 25 + 3 \times 10 = 35$

$$125 \underline{\quad} 25 + 30 = 35$$

$$125 \underline{\quad} 25 = 35 - 30$$

$$125 \underline{\quad} 25 = 5$$

Since $125 \div 25 = 5$, the missing symbol is $\div$.

b. $78 \div 3 \underline{\quad} 16 - 4 = 38$

$$26 \underline{\quad} 16 - 4 = 38$$

$$26 \underline{\quad} 16 = 38 + 4$$

$$26 \underline{\quad} 16 = 42$$

Since $26 + 16 = 42$, the missing symbol is $+$.



c. $20 \quad 5 \times 6 - 30 \div 6 = 45$

$20 \quad 5 \times 6 - 5 = 45$

$20 \quad 30 - 5 = 45$

$20 \quad 30 = 45 + 5$

$20 \quad 30 = 50$

Since, $20 + 30 = 50$, the missing symbol is +.

d. $46 \div 2 \quad 8 \times 2 = 7$

$23 \quad 16 = 7$

Since, $23 - 16 = 7$, the missing symbol is -.

CHAPTER 3 : MULTIPLES AND FACTORS

Warm Up

1. $6 \times 9 = 54$, From the table, the state that has 54 tigers is **Bihar**.

2. 5th multiple of 41: $41 \times 5 = 205$.

From the table, the state that has 205 tigers is **Uttar Pradesh**.

3. From the table, Only 444 and 88 has the same digits, now check the digit sum, 444: $4 + 4 + 4 = 12$ and 88: $8 + 8 = 16$.

The number of tigers in **Maharashtra** is 444, where the digits are the same and their sum is 12.

4. Factors of the following numbers:

785: 1, 5, 157, 785

563: 1, 563

560: 1, 2, 4, 5, 7, 8, 10, 14, 16, 20, 28, 35, 40, 56, 70, 80, 112, 140, 280, 560

444: 1, 2, 3, 4, 6, 12, 37, 74, 111, 148, 222, 444

306: 1, 2, 3, 6, 9, 17, 18, 34, 51, 102, 153, 306

227: 1, 227

205: 1, 5, 41, 205

88: 1, 2, 4, 8, 11, 22, 44, 88

63: 1, 3, 7, 9, 21, 63

54: 1, 2, 3, 6, 9, 18, 27, 54

Only 88 has factors of 1, 2, 4, 8, and 11, so the number of tigers, which is 88, in **Rajasthan**.

5. From the table, only 560 is the multiple of 4, 5 and 7.

So, the number of tigers, which is 560 is in **Uttarakhand**.

6. The 17th multiple of 18 is: $18 \times 17 = 306$

From the table, **Tamil Nadu** has 306 tigers.

Exercise 3A

1. a. First five multiples of 13:

$13 \times 1 = 13$; $13 \times 2 = 26$; $13 \times 3 = 39$;

$13 \times 4 = 52$; $13 \times 5 = 65$

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

- b. First five multiples of 18:

$18 \times 1 = 18$; $18 \times 2 = 36$; $18 \times 3 = 54$;

$18 \times 4 = 72$; $18 \times 5 = 90$

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

- c. First five multiples of 24:

$24 \times 1 = 24$; $24 \times 2 = 48$; $24 \times 3 = 72$;

$24 \times 4 = 96$; $24 \times 5 = 120$

So, the first five multiples of 24 are 24, 48, 72, 96, and 120.

- d. First five multiples of 75:

$75 \times 1 = 75$; $75 \times 2 = 150$; $75 \times 3 = 225$;

$75 \times 4 = 300$; $75 \times 5 = 375$

So, the first five multiples of 75 are 75, 150, 225, 300, and 375.

- e. First five multiples of 115:

$115 \times 1 = 115$; $115 \times 2 = 230$; $115 \times 3 = 345$;

$115 \times 4 = 460$; $115 \times 5 = 575$

So, the first five multiples of 115 are 115, 230, 345, 460, and 575.

2. a. The 8th multiple of 125 is: $125 \times 8 = 1000$

- b. The 10th multiple of 38 is: $38 \times 10 = 380$

- c. The 12th multiple of 100 is: $100 \times 12 = 1200$

- d. The first five even multiples of 3 are: $3 \times 2 = 6$, $3 \times 4 = 12$, $3 \times 6 = 18$, $3 \times 8 = 24$, $3 \times 10 = 30$

- e. The first five odd multiples of 11 are: $11 \times 1 = 11$, $11 \times 3 = 33$, $11 \times 5 = 55$, $11 \times 7 = 77$, $11 \times 9 = 99$

3. a. Multiples of 19: $19 \times 1 = 19$, $19 \times 2 = 38$, $19 \times 3 = 57$, $19 \times 4 = 76$, $19 \times 5 = 95$, $19 \times 6 = 114$, $19 \times 7 = 133$, $19 \times 8 = 152$, $19 \times 9 = 171$, $19 \times 10 = 190$, $19 \times 11 = 209$. Since 209 is greater than 200, so multiple of 19 which are less than 200 are: 19, 38, 57, 76, 95, 114, 133, 152, 171, and 190.

- b. Multiples of 15 between 100 and 220 are:
 $15 \times 7 = 105$, $15 \times 8 = 120$, $15 \times 9 = 135$,
 $15 \times 10 = 150$, $15 \times 11 = 165$, $15 \times 12 = 180$,
 $15 \times 13 = 195$, $15 \times 14 = 210$

- c. Multiples of 17 between 140 and 160 are: $17 \times 9 = 153$

- d. Multiples of 25 that are 2-digit numbers are:
 $25 \times 1 = 25$, $25 \times 2 = 50$, $25 \times 3 = 75$,
 $25 \times 4 = 100$ (not a 2-digit number)
 So, the multiples of 25 that are 2-digit numbers are 25, 50, and 75.

4. a. **No:** If 135 is a multiple of 8, then it should be completely divisible by 8.

By long division:

Here, the remainder is 7 and not 0, so 135 is not completely divisible by 8.

Thus, 138 is not a multiple of 8.

- b. **Yes:** If 240 is a multiple of 16, then it should be completely divisible by 16.

By long division:

Here, the remainder is 0, so 240 is a multiple of 16.

- c. Same as part b: **Yes**, 486 is a multiple of 9.
 d. Same as part b: **Yes**, 2448 is a multiple of 12.

5. a. To find all the factors of 28 using multiplication, we look for pairs of whole numbers that multiply together to equal 28. The multiplication pairs for 28 are 1×28 , 2×14 and 4×7 .

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

- b. Multiplication pairs of 40 are 1×40 , 2×20 , 4×10 , and 5×8 .

So, the factors of 40 are 1, 2, 4, 5, 8, 10, 20, and 40.

- c. Same as above: Factors of 72 are 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

- d. Same as above: Factors of 54 are 1, 2, 3, 6, 9, 18, 27, 54

- e. Same as above: Factors of 120 are 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120

6. To find the factors of a number using division, we divide the number by all numbers starting from 1. If the division results in a number with no remainder, then both the divisor and the quotient are factors.

- a. Factors of 45:

$$45 \div 1 = 45, \quad 45 \div 3 = 15, \quad 45 \div 5 = 9,$$

$$45 \div 9 = 5, \quad 45 \div 15 = 3, \quad 45 \div 45 = 1$$

So, the factors are 1, 3, 5, 9, 15, 45

- b. Factors of 81:

$$81 \div 1 = 81, \quad 81 \div 3 = 27, \quad 81 \div 9 = 9,$$

$$81 \div 27 = 3, \quad 81 \div 81 = 1$$

So, the factors are 1, 3, 9, 27, 81

- c. Factors of 124:

$$124 \div 1 = 124, \quad 124 \div 2 = 62, \quad 124 \div 4 = 31,$$

$$124 \div 31 = 4, \quad 124 \div 62 = 2, \quad 124 \div 124 = 1$$

So, the factors are 1, 2, 4, 31, 62, 124

- d. Factors of 200:

$$200 \div 1 = 200, \quad 200 \div 2 = 100, \quad 200 \div 4 = 50,$$

$$200 \div 5 = 40, \quad 200 \div 8 = 25, \quad 200 \div 10 = 20,$$

$$200 \div 20 = 10, \quad 200 \div 25 = 8, \quad 200 \div 40 = 5,$$

$$200 \div 50 = 4, \quad 200 \div 100 = 2, \quad 200 \div 200 = 1$$

So, the factors are 1, 2, 4, 5, 8, 10, 20, 25, 40, 50, 100, 200

- e. Factors of 345:

$$345 \div 1 = 345, \quad 345 \div 3 = 115,$$

$$345 \div 5 = 69, \quad 345 \div 15 = 23,$$

$$345 \div 23 = 15, \quad 345 \div 69 = 5,$$

$$345 \div 115 = 3, \quad 345 \div 345 = 1$$

So, the factors are: 1, 3, 5, 15, 23, 69, 115, 345

7. a. The greatest factor of a number is the number itself.

- b. 1 is a factor of every number.

- c. When a number is divided by its factor, the remainder is 0 (zero).

- d. The number 1 has only one factor.

- e. The smallest number which has exactly two factors 1 and the number itself is 2.

8. To check if the smaller number is a factor of the bigger number, we divide the bigger number by the smaller one. If the remainder is 0, it is a factor.



- a. **No:** $124 \div 8 = 15$ with a remainder of 4.
So, 8 is not a factor of 124.
- b. **Yes:** $368 \div 16 = 23$ with a remainder of 0.
So, 16 is a factor of 368.
- c. **Yes:** $360 \div 24 = 15$ with a remainder of 0.
So, 24 is a factor of 360.
- d. **No:** $193 \div 21 = 9$ with a remainder of 4.
So, 21 is not a factor of 193.

Exercise 3B

1. a. A number is a common factor of two numbers if it can divide both without leaving a remainder.
b. 36 is a common multiple of 12 and 4.
c. The common factors of 12 and 18 are 1, 2, 3 and 6.
d. Two numbers can have many common multiples but a limited number of common factors.
e. 5 is a common factor of 20 and 25.
2. a. **True** – Every number is a common multiple of itself and 1, as both are divisible by the number.
b. **False** – 7 is not a common factor of 63 and 50. While 7 divides 63, it does not divide 50.
c. **True** – The number 1 is a common factor of any pair of numbers, as 1 divides all integers.
d. **False** – Common multiples of two numbers are not smaller than both numbers. The least common multiple (LCM) is always greater than or equal to both numbers.
e. **True** – 12 is a common multiple of 3 and 4, as both 3 and 4 divide 12.
3. a. Multiples of 3: 3, 6, 9, 12, **15**, 18, 21, 24, 27, **30**, 33, 36, 39, 42, **45**, 48, ...
Multiples of 5: 5, 10, **15**, 20, 25, **30**, 35, 40, **45**, 50, ...
Therefore, the three common multiples of 3 and 5 are 15, 30, and 45.
b. Multiples of 4: 4, 8, **12**, 16, 20, **24**, 28, 32, **36**, 40, ...
Multiples of 6: 6, **12**, 18, **24**, 30, **36**, 42, ...
Therefore, the three common multiples of 4 and 6 are 12, 24, and 36.
c. Multiples of 6: 6, 12, **18**, 24, 30, **36**, 42, 48, **54**, 60, ...
Multiples of 9: 9, **18**, 27, **36**, 45, **54**, 63, 72, ...

- Therefore, the three common multiples of 6 and 9 are 18, 36, and 54.
- d. Multiples of 8: 8, 16, **24**, 32, 40, **48**, 56, 64, **72**, 80, ...
Multiples of 12: 12, **24**, 36, **48**, 60, **72**, 84, 96, 108, ...
Therefore, the three common multiples of 8 and 12 are 24, 48, and 72.
- e. Multiples of 4: 4, **8**, 12, **16**, 20, **24**, 28, 32, ...
Multiples of 8: **8**, **16**, **24**, 32, 40, ...
Therefore, the three common multiples of 4 and 8 are 8, 16, and 24.
- f. Multiples of 9: 9, 18, 27, **36**, 45, 54, 63, **72**, 81, 90, 99, **108**, 117, 126, 135, ...
Multiples of 12: 12, 24, **36**, 48, 60, **72**, 84, 96, **108**, 120, 132, ...
Therefore, the three common multiples of 9 and 12 are 36, 72, and 108.
- g. Multiples of 2: 2, 4, **6**, 8, 10, **12**, 14, 16, **18**, 20, ...
Multiples of 6: **6**, **12**, **18**, 24, 30, ...
Therefore, the three common multiples of 2 and 6 are 6, 12, and 18.
- h. Multiples of 5: 5, 10, 15, 20, 25, 30, 35, **40**, 45, 50, 55, 60, 65, 70, 75, **80**, 85, 90, 95, 100, 105, 110, 115, **120**, 125, ...
Multiples of 8: 8, 16, 24, 32, **40**, 48, 56, 64, 72, **80**, 88, 96, 104, 112, **120**, 128, ...
Therefore, the three common multiples of 5 and 8 are 40, 80, and 120.
4. a. Since Zara jumps every 6th stone. Therefore, we need to list all the multiples of 6 up to 70.
Multiples of 6: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66
Thus, stepping stones on which Zara jumps are 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66.
b. Since Milo jumps every 7th stone. Therefore, we need to list all the multiples of 7 up to 70.
Multiple of 7: 7, 14, 21, 28, 35, 42, 49, 56, 63, 70
Thus, stepping stones on which Milo jumps are 7, 14, 21, 28, 35, 42, 49, 56, 63, 70.

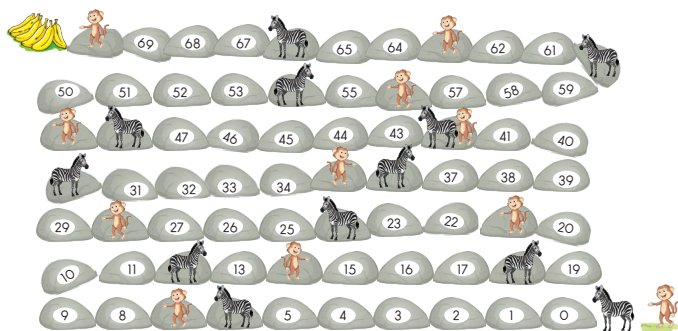
- c. The path ends at stone 70.

Zara's stepping stones: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66.

Milo's stepping stones: 7, 14, 21, 28, 35, 42, 49, 56, 63, 70.

We can see that Milo will reach the bananas because 70 is one of his stepping stones.

However, Zara will not reach the bananas, as 70 is not one of the stepping stones on which it lands.



- d. To find the stepping stones where both Zara and Milo jump, we need to find the common multiples of 6 and 7 within the range up to 70.

Zara's stepping stones: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66.

Milo's stepping stones: 7, 14, 21, 28, 35, 42, 49, 56, 63, 70.

The common stepping stone is 42.

The stepping stones on which both Zara and Milo jump is 42.

- e. From part c, we know that Milo will reach the bananas at stone 70, while Zara will not.

- f. To reach stone 70, Zara needs to take jumps that land her on stone 70.

We need to find a jump size that is a factor of 70.

The factors of 70 are 1, 2, 5, 7, 10, 14, 35, and 70.

So, Zara can take a jump size of 1, 2, 5, 7, 10, 14, 35, or 70 to reach the bananas.

5. To find if a number can be reached by jumps of 6, we check if it is a multiple of 6 (or if it is divisible by 6 without a remainder).

$$12 \div 6 = 2$$

$$24 \div 6 = 4$$

$$30 \div 6 = 5$$

Numbers like 8, 19, 38, and 41 leave remainders when divided by 6, so they cannot be reached.

Thus, 6 is the common factor of the numbers 12, 24, and 30.

6. To find the common factors, we list all the factors of both numbers and identify the ones that appear in both lists.

- a. Factors of 15: 1, 3, 5, 15

Factors of 18: 1, 2, 3, 6, 9, 18

Common Factors: 1, 3

- b. Factors of 6: 1, 2, 3, 6

Factors of 9: 1, 3, 9

Common Factors: 1, 3

- c. Factors of 12: 1, 2, 3, 4, 6, 12

Factors of 15: 1, 3, 5, 15

Common Factors: 1, 3

- d. Factors of 9: 1, 3, 9

Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24

Common Factors: 1, 3

- e. Factors of 15: 1, 3, 5, 15

Factors of 20: 1, 2, 4, 5, 10, 20

Common Factors: 1, 5

- f. Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24

Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36

Common Factors: 1, 2, 3, 4, 6, 12

7. To find when both lights blink together again, we need to find the smallest Common Multiple of 6 and 15.

Multiples of 6: 6, 12, 18, 24, **30**, 36, ...

Multiples of 15: 15, **30**, 45, 60, ...

The smallest common multiple is 30.

Therefore, the street lights will blink together again after 30 seconds.

Exercise 3C

1. To solve these problems, we apply the following divisibility rules:

Test of divisibility by **2**: A number is divisible by 2 if the digit in the ones place is 0, 2, 4, 6 or 8.

Test of divisibility by **3**: A number is divisible by 3 if the sum of its digits is divisible by 3.

Test of divisibility by **5**: A number is divisible by 5 if it has 0 or 5 in its ones place.



Test of divisibility by **10**: A number is divisible by 10, if its last digit (ones digit) is 0.

	Number	Divisible by 2	Divisible by 3	Divisible by 5	Divisible by 10
a.	84	✓(ones digit 4)	✓(Sum of digits 12)	✗(ones digit 4)	✗(ones digit 4)
b.	90	✓(ones digit 0)	✓(Sum of digits 9)	✓(ones digit 0)	✓(ones digit 0)
c.	486	✓(ones digit 6)	✓(Sum of digits 18)	✗(ones digit 6)	✗(ones digit 6)
d.	590	✓(ones digit 0)	✗(Sum of digits 14)	✓(ones digit 0)	✓(ones digit 0)
e.	274	✓(ones digit 4)	✗(Sum of digits 13)	✗(ones digit 4)	✗(ones digit 4)
f.	120	✓(ones digit 0)	✓(Sum of digits 3)	✓(ones digit 0)	✓(ones digit 0)
g.	840	✓(ones digit 0)	✓(Sum of digits 12)	✓(ones digit 0)	✓(ones digit 0)
h.	585	✗(ones digit 5)	✓(Sum of digits 18)	✓(ones digit 5)	✗(ones digit 5)
i.	670	✓(ones digit 0)	✗(Sum of digits 13)	✓(ones digit 0)	✓(ones digit 0)
j.	1420	✓(ones digit 0)	✗(Sum of digits 7)	✓(ones digit 0)	✓(ones digit 0)

2. Rule for divisibility by 2 : A number is divisible by 2 if the digit in the ones place is 0, 2, 4, 6 or 8.

- 62: Divisible by 2, because ones digit is 2.
- 63: Not divisible by 2, because ones digit is 3.
- 723: Not divisible by 2, because ones digit is 3.
- 456: Divisible by 2, because ones digit is 6.
- 1000: Divisible by 2, because ones digit is 0.
- 7040: Divisible by 2, because ones digit is 0.

3. Rule for divisibility by 3: A number is divisible by 3 if the sum of its digits is divisible by 3.

- 52: Not divisible ($5 + 2 = 7$; 7 is not divisible by 3.)
- 63: Divisible ($6 + 3 = 9$; 9 is divisible by 3.)
- 284: Not divisible ($2 + 8 + 4 = 14$; 14 is not divisible by 3.)
- 351: Divisible ($3 + 5 + 1 = 9$; 9 is divisible by 3.)
- 7404: Divisible ($7 + 4 + 0 + 4 = 15$; 15 is divisible by 3.)
- 9363: Divisible ($9 + 3 + 6 + 3 = 21$; 21 is divisible by 3.)

4. Rule for divisibility by 5: A number is divisible by 5, if it has 0 or 5 in its ones place.

- 25: Divisible by 5, because ones digit is 5.
- 302: Not divisible by 5, because ones digit is 2.
- 903: Not divisible by 5, because ones digit is 3.
- 1004: Not divisible by 5, because ones digit is 4.
- 6000: Divisible by 5, because ones digit is 0.
- 7545: Divisible by 5, because ones digit is 5.

5. Rule for divisibility by 10: A number is divisible by 10, if its last digit (ones digit) is 0.

- 60: Divisible by 10, because ones digit is 0.
- 600: Divisible by 10, because ones digit is 0.
- 225: Not divisible by 10, because ones digit is 5.
- 305: Not divisible by 10, because ones digit is 5.
- 700: Divisible by 10, because ones digit is 0.
- 8560: Divisible by 10, because ones digit is 0.

Exercise 3D

- a. Factors of 21: 1, 3, 7, 21

Factors of 35: 1, 5, 7, 35

Common Factors: 1, 7

Thus, the highest common factor (HCF) of 21 and 35 is 7.

- Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24

Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36

Common Factors: 1, 2, 3, 4, 6, 12

Thus, the highest common factor (HCF) of 24 and 36 is 12.

- Factors of 42: 1, 2, 3, 6, 7, 14, 21, 42

Factors of 63: 1, 3, 7, 9, 21, 63

Common Factors: 1, 3, 7, 21

Thus, the highest common factor (HCF) of 42 and 63 is 21.

- Factors of 40: 1, 2, 4, 5, 8, 10, 20, 40

Factors of 75: 1, 3, 5, 15, 25, 75

Common Factors: 1, 5

Thus, the highest common factor (HCF) of 40 and 75 is 5.

2. a. Factors of 15: 1, 3, 5, 15
Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
Common Factors: 1 and 3
Thus, the highest common factor (HCF) of 15 and 24 is **3**.
- b. Factors of 20: 1, 2, 4, 5, 10, 20
Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36
Common Factors: 1, 2 and 4
Thus, the highest common factor (HCF) of 20 and 36 is **4**.
- c. Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30
Factors of 50: 1, 2, 5, 10, 25, 50
Common Factors: 1, 2, 5 and 10
Thus, the highest common factor (HCF) of 30 and 50 is **10**.
- d. Factors of 14: 1, 2, 7, 14
Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36
Common Factors: 1 and 2
Thus, the highest common factor (HCF) of 14 and 36 is **2**.
3. a. **Step 1:** List the factors of the first number, that is, 25.
Factors of 25 are 1, 5, 25.
Step 2: List the factors of the second number, that is, 40.
Factors of 40 are 1, 2, 4, 5, 8, 10, 20, and 40.
Step 3: List the common factors of both the numbers.
Common factors of 25 and 40 are 1 and 5.
Step 4: Select the highest common factor, that is 5.
Thus, the highest common factor (HCF) of 25 and 40 is **5**.
- b. Same as above: HCF of 33 and 77 is **11**.
- c. Same as above: HCF of 35 and 56 is **7**.
- d. Same as above: HCF of 39 and 65 is **13**.
- e. Same as above: HCF of 45 and 72 is **9**.
- f. Same as above: HCF of 63 and 90 is **9**.
- g. **Step 1:** List the factors of the first number, that is, 20.
Factors of 20 are 1, 2, 4, 5, 10, 20.

Step 2: List the factors of the second number, that is, 40.

Factors of 40 are 1, 2, 4, 5, 8, 10, 20, 40.

Step 3: List the factors of the third number, that is 70.

Factors of 70 are 1, 2, 5, 7, 10, 14, 35, 70

Step 4: List the common factors of 20, 40 and 70.

Common factors of 20, 40 and 70 are 1, 2, 5 and 10.

Step 5: Select the highest common factor, that is, 10.

Thus, the highest common factor (HCF) of 20, 40 and 70 is **10**.

h. Same as part g: HCF of 24, 40 and 64 is **8**.

i. Same as part g: HCF of 15, 30 and 75 is **15**.

j. Same as part g: HCF of 28, 42 and 70 is **14**.

k. Same as part g: HCF of 50, 75 and 100 is **25**.

l. Same as part g: HCF of 21, 56 and 35 is **7**.

4. a.
$$\begin{array}{r} 24 \overline{) 30} \quad 1 \\ \underline{- 24} \\ 6 \quad 4 \\ \underline{- 24} \\ 0 \end{array}$$

Thus, the HCF of 24 and 30 is 6.

b. Same as above: HCF of 32 and 80 is **16**.

c. Same as above: HCF of 60 and 90 is **30**.

d. Same as above: HCF of 30 and 34 is **2**.

e. Same as above: HCF of 49 and 56 is **7**.

f. Same as above: HCF of 24 and 78 is **6**.

g. **Step 1.** First find the HCF of any two numbers say 14 and 28.

HCF of 14 and 28 is 14.

Step 2. Now, find the HCF of 14 (HCF of 14 and 28) and 70 (remaining number).

HCF of 14 and 70 is 14.

Thus, the HCF of the given numbers 14, 28 and 70 is **14**.

h. **Step 1.** First find the HCF of any two numbers say 36 and 54.

HCF of 36 and 54 is 18.

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



Step 2. Now, find the HCF of 18 (HCF of 36 and 54) and 72 (remaining number).

$$\begin{array}{r} 18 \overline{) 72} \quad 4 \\ \underline{-72} \\ 0 \end{array}$$

HCF of 18 and 72 is 18.

Thus, the HCF of the given numbers 36, 54 and 72 is **18**.

- i. Same as part h: HCF of 15, 60 and 106 is **1**.
- J. Same as part h: HCF of 28, 70 and 84 is **14**.
- k. Same as part h: HCF of 64, 80 and 112 is **16**.
- l. Same as part h: HCF of 36, 72 and 108 is **36**.

Exercise 3E

1. a. Multiples of 6 are 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, ...

Multiples of 10 are 10, 20, 30, 40, 50, 60, ...

Common multiples of 6 and 10 are 30, 60, ...

Thus, the least/lowest common multiple (LCM) of 6 and 10 is 30.

- b. Multiples of 8 are 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, ...

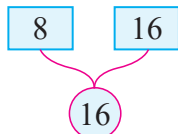
Multiples of 12 are 12, 24, 36, 48, 60, 72, 84, 96, ...

Common multiples of 8 and 12 are 24, 48, 72, ...

Thus, the least/lowest common multiple (LCM) of 8 and 12 is 24.

- c. Same as above: The LCM of 9 and 21 is 63.
- d. Same as above: The LCM of 10 and 16 is 80.
- e. Same as above: The LCM of 18 and 20 is 180.

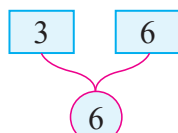
2. a. Multiples of 8 are 8, 16, 24, 32, 40, 48, ...



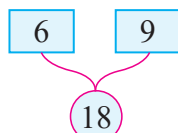
Multiples of 16 are 16, 32, 48, 64, 80, ...

Common multiples of 8 and 16 are 16, 32, ...

Thus, the Least Common Multiple (LCM) of 8 and 16 is 16.

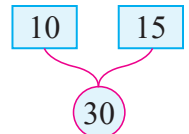


- b. Same as above:



- c. Same as above:

- d. Same as above:



3. a. **Step 1:** Write some multiples of the first number, that is, 8.

Multiples of 8 are 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96, 104, 112, 120, 128, 136, 144, ...

Step 2: Write some multiples of the second number, that is, 9.

Multiples of 9 are 9, 18, 27, 36, 45, 54, 63, 72, 81, 90, 99, 108, 117, 126, 135, 144, 153, ...

Step 3: List the common multiples of both the numbers.

Common multiples of 8 and 9 are 72, 144, ...

Step 4: The smallest common multiple is the required LCM.

Thus, the least/lowest common multiple (LCM) of 8 and 9 is **72**.

- b. Same as above: LCM of 18 and 24 is 72.
- c. Same as above: LCM of 15 and 20 is 60.
- d. Same as above: LCM of 12 and 16 is 48.
- e. Same as above: LCM of 24 and 36 is 72.
- f. Same as above: LCM of 15 and 25 is 75.
- g. **Step 1:** Write some multiples of the first number, that is, 15.

Multiples of 15 are 15, 30, 45, 60, 75, 90, 105, 120, 135, 150

Step 2: Write some multiples of the second number, that is, 20.

Multiples of 20 are 20, 40, 60, 80, 100, 120, 140, 160, 180, 200

Step 3: Write some multiples of the third number, that is, 30.

Multiples of 30 are 30, 60, 90, 120, 150, 180, 210, 240, 270, 300

Step 4: List the common multiples of all the numbers.

Common multiples of 15, 20 and 30 are 60, 120, ...

Step 5: The smallest common multiple is the required LCM.

Thus, the least/lowest common multiple (LCM) of 15, 20 and 30 is **60**.

- h. Same as part g: The LCM of 20, 30 and 50 is **300**.
- i. Same as part g: The LCM of 20, 32 and 40 is **160**.



- j. Same as part g: The LCM of 11, 22 and 33 is **66**.
 k. Same as part g: The LCM of 12, 15 and 40 is **120**.
 l. Same as part g: The LCM of 12, 16 and 20 is **240**.

Exercise 3F

1. We know that: $\text{LCM} \times \text{HCF} = \text{Product of the two numbers}$
 - a. Given: $\text{HCF} = 5$ and product of two numbers = 525
 $\text{LCM} \times 5 = 525$
 $\text{LCM} = 525 \div 5 = 105$
 Thus, the LCM is 105.
 - b. Given: $\text{HCF} = 11$ and $\text{LCM} = 66$
 $\text{LCM} \times \text{HCF} = \text{Product of two numbers}$
 $66 \times 11 = \text{Product of two numbers}$
 $\text{Product of two numbers} = 726$
 Thus, the product of numbers is 726.
 - c. Given: $\text{LCM} = 36$ and Product of two numbers = 324.
 $\text{LCM} \times \text{HCF} = \text{Product of two numbers}$
 $36 \times \text{HCF} = 324$
 $\text{HCF} = 324 \div 36 = 9$
 Thus, the HCF is 9.
 - d. Same as part b:
 The, product of two numbers is 2400.
2. We know that:
 $\text{LCM} \times \text{HCF} = \text{Product of the two numbers}$
 Given:
 Product of two numbers = 160 and $\text{HCF} = 4$
 Using the formula:

$$\text{LCM} = \frac{\text{Product of two numbers}}{\text{HCF}}$$

$$\text{LCM} = \frac{160}{4} = 40$$
 So, the LCM of the two numbers is 40.
3. We know that:
 $\text{LCM} \times \text{HCF} = \text{Product of the two numbers}$
 Given:
 $\text{HCF} = 5$, $\text{LCM} = 150$ and one number = 25
 Here, $5 \times 150 = 25 \times \text{other number}$
 $750 = 25 \times \text{other number}$
 So, other number = $750 \div 25 = 30$
 Thus, the other number is 30.

4. Given that $\text{HCF} = 15$ and product of two numbers = 1350
 Here, $15 \times \text{LCM} = 1350$
 $\text{LCM} = 1350 \div 15 = 90$
 Thus, the LCM is 90.
5. Given that $\text{LCM} = 120$, and the product of two numbers = 1800
 $\text{HCF} \times 120 = 1800$
 $\text{HCF} = 1800 \div 120 = 15$
 Thus, the HCF is 15.

Learning Logs

1. a. 7th multiple of 5: $5 \times 7 = 35$
 Thus, the 7th multiple of 5 is 35.
 b. 9th multiple of 12: $12 \times 9 = 108$
 Thus, the 9th multiple of 12 is 108.
 c. 12th multiple of 9: $9 \times 12 = 108$
 Thus, the 12th multiple of 9 is 108.
2. Multiples of 12: 12, 24, 36, 48, 60, 72, 84, 96, 108, ...
 The multiples of 12 between 50 and 80 are 60 and 72.
3. a. The factors of 26 are 1, 2, 13, 26.
 b. The factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18, 36.
 c. The factors of 90 are 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90.
 d. The factors of 120 are 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120.
4. a. Multiples of 4 are 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, ...
 Multiples of 5 are 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, ...
 Common multiples of 4 and 5 are 20, 40, 60, ...
 Two common multiples of 4 and 5 are 20 and 40.
 b. Same as above: Two common multiples of 9 and 12 are 36 and 72.
 c. Same as above: Two common multiples of 12 and 15 are 60 and 120.



5. a. Factors of 20: 1, 2, 4, 5, 10, and 20.
Factors of 30: 1, 2, 3, 5, 6, 10, 15, and 30.
Common factors of 20 and 30 are 1, 2, 5, and 10.
- b. Same as above:
Common factors of 24 and 36 are 1, 2, 3, 4, 6, and 12.
- c. Same as above:
Common factors of 42 and 54 are 1, 2, 3, and 6.
6. a. The factors of 30 are 1, 2, 3, 5, 6, 10, 15, 30.
The factors of 45 are 1, 3, 5, 9, 15, 45.
The common factors are 1, 3, 5, and 15.
The highest common factor is 15, so the HCF is 15.
We know that, $\text{LCM} \times \text{HCF} = \text{Product of two numbers}$
Here, $\text{LCM} \times 15 = 30 \times 45$
 $\text{LCM} = 1350 \div 15 = 90$.
So, the LCM is 90 and HCF is 15.
- b. Same as above:
LCM and HCF of 12 and 18 are 36 and 6 respectively.
- c. The factors of 21 are 1, 3, 7, 21.
The factors of 28 are 1, 2, 4, 7, 14, 28.
The factors of 35 are 1, 5, 7, 35.
The common factors of 21, 28 and 35 are 1 and 7.
The highest common factor is 7, so the HCF is 7.
Now,
Multiples of 21 are 21, 42, 63, 84, 105, 126, 147, 168, 189, 210, 231, 252, 273, 294, 315, 336, 357, 378, 399, 420, ...
Multiples of 28 are 28, 56, 84, 112, 140, 168, 196, 224, 252, 280, 308, 336, 364, 392, 420, 448, 476, ...
Multiples of 35 are 35, 70, 105, 140, 175, 210, 245, 280, 315, 350, 385, 420, 455, 490, ...
Least Common multiple (LCM) is 420.
Thus, the HCF is 7 and LCM is 420.
7. We know that, $\text{LCM} \times \text{HCF} = \text{Product of two numbers}$
Here, $\text{LCM} = 45$, $\text{HCF} = 3$ and one number = 9
 $45 \times 3 = 9 \times \text{other number}$
Other number = $135 \div 9 = 15$
Thus, the other number is 15.

8. To find the maximum capacity of a container that can measure two different quantities exactly, we need to find the Highest Common Factor (HCF) of the two quantities.
Quantity in Drum 1 = 20 litres
Quantity in Drum 2 = 36 litres
Factors of 20 are: 1, 2, 4, 5, 10 and 20.
Factors of 36 are: 1, 2, 3, 4, 6, 9, 12, 18 and 36.
Common factors of 20 and 36 are: 1, 2, and 4
Therefore, the maximum capacity of the container is 4 litres.
9. We know that, $\text{LCM} \times \text{HCF} = \text{Product of two numbers}$
Here, $\text{HCF} = 2$ and $\text{Product of two numbers} = 56$
 $\text{LCM} \times 2 = 56$
 $\text{LCM} = 56 \div 2 = 28$
Thus, the LCM is 28.
10. We know that, $\text{LCM} \times \text{HCF} = \text{Product of two numbers}$
Here, $\text{LCM} = 168$ and $\text{Product of two numbers} = 1008$
 $168 \times \text{HCF} = 1008$
 $\text{HCF} = 1008 \div 168 = 6$
Thus, the HCF is 6.

Mental Maths

1. Factors of 18 are 1, 2, 3, 6, 9 and 18.
From the above list, 8 is not a factor of 18.
So, the correct answer is **d**.
2. The multiples of 7 are 7, 14, 21, 28, etc.
14 is a multiple of 7.
So, the correct answer is **a**.
3. The factors of 12 are 1, 2, 3, 4, 6, 12.
There are 6 factors of 12.
So, the correct answer is **b**.
4. Multiples of 30: 30, 60, 90, 120, 150, ...
Multiples of 40: 40, 80, 120, 160, ...
Least common multiple (LCM) of 30 and 40 is 120.
So, the correct answer is **a**.
5. The number 1 has only one factor, which is itself.
So, the correct answer is **b**.



6. We know that, $\text{LCM} \times \text{HCF} = \text{Product of two numbers}$.

So, the correct answer is **d**.

7. The factors of 48 are 1, 2, 3, 4, 6, 8, 12, 16, 24, and 48.

The factors of 72 are 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, and 72.

The common factors are 1, 2, 3, 4, 6, 8, 12, and 24.

The highest common factor is 24.

So, the correct answer is **d**.

Puzzle

Minister 1: Option 1 (5 coins, doubling daily)

Minister 1 starts with 5 coins, and the amount doubles every day for 7 days. This means the number of coins on each day is:

Day 1: 5 coins

Day 2: $5 \times 2 = 10$ coins

Day 3: $10 \times 2 = 20$ coins

Day 4: $20 \times 2 = 40$ coins

Day 5: $40 \times 2 = 80$ coins

Day 6: $80 \times 2 = 160$ coins

Day 7: $160 \times 2 = 320$ coins

So, by the end of 7 days, Minister 1 has **320 gold coins**.

Minister 2: Option 2 (3 coins, tripling daily)

Minister 2 starts with 3 coins, and the amount triples every day for 7 days. This means the number of coins on each day is:

Day 1: 3 coins

Day 2: $3 \times 3 = 9$ coins

Day 3: $9 \times 3 = 27$ coins

Day 4: $27 \times 3 = 81$ coins

Day 5: $81 \times 3 = 243$ coins

Day 6: $243 \times 3 = 729$ coins

Day 7: $729 \times 3 = 2187$ coins

So, by the end of 7 days, Minister 2 has **2187 gold coins**.

Minister 3: Option 3 (1 coin, multiplied by 5 daily)

Minister 3 starts with 1 coin, and the amount is multiplied by 5 every day for 7 days. This means the number of coins on each day is:

Day 1: 1 coin

Day 2: $1 \times 5 = 5$ coins

Day 3: $5 \times 5 = 25$ coins

Day 4: $25 \times 5 = 125$ coins

Day 5: $125 \times 5 = 625$ coins

Day 6: $625 \times 5 = 3125$ coins

Day 7: $3125 \times 5 = 15625$ coins

So, by the end of 7 days, Minister 3 has **15625 gold coins**.

Conclusion:

Minister 1 ends up with 320 gold coins.

Minister 2 ends up with 2187 gold coins.

Minister 3 ends up with 15625 gold coins.

Minister 3 chose the most rewarding option, ending up with the most coins by far.

Now,

If I were to choose, I would go with **Option 3** (starting with 1 coin and multiplying by 5 every day).

HOTS

1. To find the number of stones required to make heaps, we need to find the Least Common Multiple (LCM) of 15, 20, and 30.

The LCM is the smallest number that can be divided exactly by 15, 20, and 30.

Multiples of 15: 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, ...

Multiples of 20: 20, 40, 60, 80, 100, 120, 140, 160, ...

Multiples of 30: 30, 60, 90, 120, 150, ...

The least common multiple (LCM) is 60.

So, the least number of stones required to make heaps of 15, 20, or 30 stones is **60 stones**.

2. a. To find the greatest number of teams, we need to find the Highest Common Factor (HCF) of 40 and 32.

Factors of 40: 1, 2, 4, 5, 8, 10, 20, and 40

Factors of 32: 1, 2, 4, 8, 16, and 32

The highest common factor is 8.

So, the greatest number of teams that can participate is 8.

- b. Now, to find how many girls and boys will be in each team, divide the total number of girls and boys by the number of teams.

Number of girls in each team = $40 \div 8 = 5$ girls.

Number of boys in each team = $32 \div 8 = 4$ boys.

So, each team will have **5 girls and 4 boys**.



CHAPTER 4 : FRACTIONS

Warm Up

1. To find the fraction, we use the formula :

$$\text{Fraction} = \frac{\text{Number of red tomatoes}}{\text{Total number of tomatoes}}$$

Tray a:

$$\text{Fraction} = \frac{\text{Number of red tomatoes}}{\text{Total number of tomatoes}} = \frac{25}{100}$$

Tray b:

$$\text{Fraction} = \frac{\text{Number of red tomatoes}}{\text{Total number of tomatoes}} = \frac{45}{100}$$

Tray c:

$$\text{Fraction} = \frac{\text{Number of red tomatoes}}{\text{Total number of tomatoes}} = \frac{2}{10}$$

Tray d:

$$\text{Fraction} = \frac{\text{Number of red tomatoes}}{\text{Total number of tomatoes}} = \frac{60}{100}$$

Tray e:

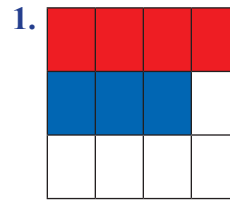
$$\text{Fraction} = \frac{\text{Number of red tomatoes}}{\text{Total number of tomatoes}} = \frac{8}{10}$$

Tray f:

$$\text{Fraction} = \frac{\text{Number of red tomatoes}}{\text{Total number of tomatoes}} = \frac{6}{10}$$

2. The total number of tomatoes in a small tray is 10. Half of 10 is 5, so each small tray must have more than 5 red tomatoes.
 Number of red tomatoes in tray c = 2 (less than 5).
 Number of red tomatoes in tray e = 8 (more than 5).
 Number of red tomatoes in tray f = 6 (more than 5).
 So, Rashmi buys either **Tray e** or **Tray f**.
3. The total number of tomatoes in a big tray = 100
 $\frac{3}{4}$ of the tomatoes are ripe.
 So, required tomatoes = $\frac{3}{4} \times 100 = 3 \times 25 = 75$.
 Thus, 75 tomatoes are ripe.
4. Do it yourself.

Exercise 4A



The square is divided into 12 equal parts.

$$\frac{1}{3} \text{ of } 12 = \frac{1}{3} \times 12 = 4$$

Shade 4 parts in red colour.

$$\frac{1}{4} \text{ of } 12 = \frac{1}{4} \times 12 = 3$$

Shade 3 parts in blue colour.

- a. Total number of shaded parts = $4 + 3 = 7$
 Total number of unshaded part = Total parts – Shaded parts = $12 - 7 = 5$.

So, the required fraction = $\frac{5}{12}$.

b. Fraction = $\frac{5}{12}$.

Numerator = 5 and denominator = 12.

2. The fractions having the numerator as 1 are called unit fractions.

Thus, the unit fractions are $\frac{1}{9}$, $\frac{1}{6}$, $\frac{1}{7}$, and $\frac{1}{10}$.

3. Fractions having the same denominator are called like fractions.

a. $\frac{4}{7}$, $\frac{5}{7}$. Here, the denominators are the same, i.e., 7, so the fractions are like fractions.

b. $\frac{2}{7}$, $\frac{8}{9}$. Here, the denominators are not the same, so the fractions are not like fractions.

c. $\frac{3}{8}$, $\frac{7}{8}$. Here, the denominators are the same, i.e., 8, so the fractions are like fractions.

d. $\frac{9}{13}$, $\frac{11}{13}$. Here, the denominators are the same, i.e., 13, so, fractions are like fractions.

4. Fractions having different denominators are called unlike fractions.

- a. $\frac{1}{5}, \frac{1}{8}$. Here, the denominators are not the same, so the fractions are unlike fractions.
- b. $\frac{3}{5}, \frac{4}{5}$. Here, the denominators are the same, i.e., 5, so the fractions are like fractions.
- c. $\frac{4}{7}, \frac{4}{9}$. Here, the denominators are not same, so the fractions are unlike fractions.
- d. $\frac{8}{11}, \frac{9}{11}$. Here, the denominators are the same, i.e., 11, so the fractions are like fractions.

5. Proper Fraction: Fractions having a numerator less than the denominator are called proper fractions.

Improper fractions: Fractions having a numerator greater than or equal to the denominator are called improper fractions.

- a. $\frac{2}{3}$: Here, Numerator (2) < Denominator (3), so the fraction is proper.
- b. $\frac{5}{3}$: Here, Numerator (5) > Denominator (3), so the fraction is improper.
- c. Same as part a: Proper fraction.
- d. Same as part a: Proper fraction.
- e. Same as part b: Improper fraction.

6. To change a mixed fraction into an improper fraction, follow these steps:

Step 1: Multiply the whole number by the denominator.

Step 2: Add the numerator to the product to get the numerator of the improper fraction.

Step 3: Keep the denominator as it is.

- a. $4\frac{3}{8} = \frac{4 \times 8 + 3}{8} = \frac{32 + 3}{8} = \frac{35}{8}$
- b. $4\frac{2}{3} = \frac{4 \times 3 + 2}{3} = \frac{12 + 2}{3} = \frac{14}{3}$
- c. $1\frac{1}{11} = \frac{1 \times 11 + 1}{11} = \frac{11 + 1}{11} = \frac{12}{11}$
- d. $5\frac{3}{7} = \frac{5 \times 7 + 3}{7} = \frac{35 + 3}{7} = \frac{38}{7}$

e. $15\frac{5}{8} = \frac{15 \times 8 + 5}{8} = \frac{120 + 5}{8} = \frac{125}{8}$

7. The following steps should be followed to convert an improper fraction into a mixed fraction:

Step 1: Divide the numerator by the denominator.

Step 2: The quotient becomes the whole number, the remainder becomes the new numerator, and the denominator remains the same.

a. Dividing 15 by 4, we get:

Quotient = 3 and
remainder = 3.

Hence, $\frac{15}{4} = 3\frac{3}{4}$.

$$\begin{array}{r} \text{Denominator} \\ 4 \overline{) 15} \\ \underline{-12} \\ 3 \end{array}$$

Whole number

Numerator

b. Same as above: $\frac{18}{4} = 4\frac{2}{4}$.

c. Same as above: $\frac{19}{5} = 3\frac{4}{5}$.

d. Same as above: $\frac{26}{8} = 3\frac{2}{8}$.

e. Same as above: $\frac{32}{6} = 5\frac{2}{6}$.

8. a. Since, $3\frac{1}{4} = \frac{3 \times 4 + 1}{4} = \frac{12 + 1}{4} = \frac{13}{4}$.

$\frac{13}{4} = \frac{\dots}{4}$, so the missing value is 13.

b. $5\frac{6}{8} = \frac{5 \times 8 + 6}{8} = \frac{40 + 6}{8} = \frac{46}{8}$.

$\frac{46}{8} = \frac{46}{\dots}$, so the missing value is 8.

c. If the improper fraction of $11\frac{2}{5}$ is $\frac{57}{\dots}$, then

$11 \times 5 = 55 + 2 = 57$. So the missing value is 5 + 2.

d. $4\frac{\dots}{9} = \frac{38}{9}$; $4 \times 9 = 36$. We need 2 more to get 38, so the missing value is 2.

e. $\frac{\dots}{5} = \frac{23}{5}$; $23 \div 5 = 4$ remainder 3, so the missing value is 4.

f. $5\frac{1}{16} = \frac{5 \times 16 + 1}{16} = \frac{80 + 1}{16} = \frac{81}{16}$, so the missing value is 81.



Exercise 4B

1. a. $\frac{1}{5} = \frac{1 \times 2}{5 \times 2} = \frac{2}{10}$; $\frac{1}{5} = \frac{1 \times 3}{5 \times 3} = \frac{3}{15}$;
 $\frac{1}{5} = \frac{1 \times 4}{5 \times 4} = \frac{4}{20}$; $\frac{1}{5} = \frac{1 \times 5}{5 \times 5} = \frac{5}{25}$;
 $\frac{1}{5} = \frac{1 \times 6}{5 \times 6} = \frac{6}{30}$.

Hence, $\frac{2}{10}$, $\frac{3}{15}$, $\frac{4}{20}$, $\frac{5}{25}$, and $\frac{6}{30}$ are five

equivalent fractions of $\frac{1}{5}$.

b. $\frac{1}{4} = \frac{1 \times 2}{4 \times 2} = \frac{2}{8}$; $\frac{1}{4} = \frac{1 \times 3}{4 \times 3} = \frac{3}{12}$; $\frac{1}{4} = \frac{1 \times 4}{4 \times 4} = \frac{4}{16}$
 $\frac{1}{4} = \frac{1 \times 5}{4 \times 5} = \frac{5}{20}$; $\frac{1}{4} = \frac{1 \times 6}{4 \times 6} = \frac{6}{24}$.

Hence, $\frac{2}{8}$, $\frac{3}{12}$, $\frac{4}{16}$, $\frac{5}{20}$, and $\frac{6}{24}$ are five

equivalent fractions of $\frac{1}{4}$.

c. $\frac{2}{7} = \frac{2 \times 2}{7 \times 2} = \frac{4}{14}$; $\frac{2}{7} = \frac{2 \times 3}{7 \times 3} = \frac{6}{21}$; $\frac{2}{7} = \frac{2 \times 4}{7 \times 4} = \frac{8}{28}$
 $\frac{2}{7} = \frac{2 \times 5}{7 \times 5} = \frac{10}{35}$; $\frac{2}{7} = \frac{2 \times 6}{7 \times 6} = \frac{12}{42}$.

Hence, $\frac{4}{14}$, $\frac{6}{21}$, $\frac{8}{28}$, $\frac{10}{35}$, and $\frac{12}{42}$ are five

equivalent fractions of $\frac{2}{7}$.

d. $\frac{8}{11} = \frac{8 \times 2}{11 \times 2} = \frac{16}{22}$; $\frac{8}{11} = \frac{8 \times 3}{11 \times 3} = \frac{24}{33}$;
 $\frac{8}{11} = \frac{8 \times 4}{11 \times 4} = \frac{32}{44}$; $\frac{8}{11} = \frac{8 \times 5}{11 \times 5} = \frac{40}{55}$;
 $\frac{8}{11} = \frac{8 \times 6}{11 \times 6} = \frac{48}{66}$.

Hence, $\frac{16}{22}$, $\frac{24}{33}$, $\frac{32}{44}$, $\frac{40}{55}$, and $\frac{48}{66}$ are five

equivalent fractions of $\frac{8}{11}$.

e. $\frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10}$; $\frac{2}{5} = \frac{2 \times 3}{5 \times 3} = \frac{6}{15}$
 $\frac{2}{5} = \frac{2 \times 4}{5 \times 4} = \frac{8}{20}$; $\frac{2}{5} = \frac{2 \times 5}{5 \times 5} = \frac{10}{25}$;
 $\frac{2}{5} = \frac{2 \times 6}{5 \times 6} = \frac{12}{30}$.

Hence, $\frac{4}{10}$, $\frac{6}{15}$, $\frac{8}{20}$, $\frac{10}{25}$, and $\frac{12}{30}$ are five

equivalent fractions of $\frac{2}{5}$.

2. a. $\frac{16}{80} = \frac{16 \div 2}{80 \div 2} = \frac{8}{40}$; $\frac{16}{80} = \frac{16 \div 4}{80 \div 4} = \frac{4}{20}$

b. $\frac{12}{32} = \frac{12 \div 4}{32 \div 4} = \frac{3}{8}$

c. $\frac{3}{11} = \frac{3 \times 5}{11 \times 5} = \frac{15}{55}$

d. $\frac{4}{9} = \frac{4 \times 7}{9 \times 7} = \frac{28}{63}$

e. $\frac{12}{48} = \frac{12 \div 2}{48 \div 2} = \frac{6}{24}$; $\frac{12}{48} = \frac{12 \div 3}{48 \div 3} = \frac{4}{16}$;
 $\frac{12}{48} = \frac{12 \div 6}{48 \div 6} = \frac{2}{8}$

f. $\frac{15}{75} = \frac{15 \div 3}{75 \div 3} = \frac{5}{25}$; $\frac{15}{75} = \frac{15 \div 5}{75 \div 5} = \frac{3}{15}$

$\frac{15}{75} = \frac{15 \div 15}{75 \div 15} = \frac{1}{5}$

g. $\frac{36}{60} = \frac{36 \div 6}{60 \div 6} = \frac{6}{10}$; $\frac{36}{60} = \frac{36 \div 3}{60 \div 3} = \frac{12}{20}$

$\frac{36}{60} = \frac{36 \div 12}{60 \div 12} = \frac{3}{5}$

3. a. By cross multiplying: $4 \times 45 = 180$ and $5 \times 25 = 125$.

Since the cross products are not equal, the given fractions are not equivalent.

b. By cross multiplying: $3 \times 24 = 72$ and $9 \times 8 = 72$.

Since the cross products are equal, the given fractions are equivalent.

- c. By cross multiplying: $21 \times 75 = 1575$ and $35 \times 45 = 1575$.

Since the cross products are equal, the given fractions are equivalent.

- d. By cross multiplying: $75 \times 10 = 750$ and $50 \times 15 = 750$.

Since the cross products are equal, the given fractions are equivalent.

- e. By cross multiplying: $6 \times 4 = 24$ and $1 \times 24 = 24$.

Since the cross products are equal, the given fractions are equivalent.

- f. By cross multiplying: $4 \times 20 = 80$ and $8 \times 10 = 80$.

Since the cross products are equal, the given fractions are equivalent.

- g. By cross multiplying: $5 \times 22 = 110$ and $15 \times 8 = 120$.

Since the cross product are not equal, the given fractions are not equivalent.

- h. By cross multiplying: $14 \times 24 = 336$ and $16 \times 6 = 96$.

Since the cross products are not equal, the given fractions are not equivalent.

4. Given fraction: $\frac{5}{7}$

a. Denominator 28: $\frac{5 \times 4}{7 \times 4} = \frac{20}{28}$.

b. Numerator 25: $\frac{5 \times 5}{7 \times 5} = \frac{25}{35}$.

c. Denominator 49: $\frac{5 \times 7}{7 \times 7} = \frac{35}{49}$.

5. By using fraction wall or a kit, we can place the $\frac{1}{6}$ pieces below the $\frac{1}{3}$ piece. We observe that exactly two of the one-sixth pieces are required to cover the area of the one-third piece.

$\frac{1}{3}$		$\frac{1}{3}$		$\frac{1}{3}$	
$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$

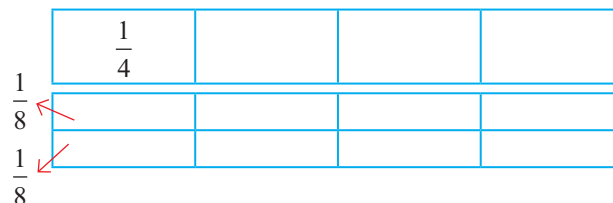
Thus, two $\frac{1}{6}$ s make $\frac{1}{3}$.

6. a. Since $\frac{1}{4} = \frac{2}{8}$ (Because $\frac{1}{4}$ is equivalent to $\frac{2}{8}$),

we can say that 2 pieces of $\frac{1}{8}$ make $\frac{1}{4}$.

So, the answer is 2.

Alternative Method: The given figure is divided into 8 equal parts, each part represents $\frac{1}{8}$.



We observe that exactly 2 of the one-eighth pieces are required to cover the area of the one-fourth

- b. Same as above: 4

7. a. Same as 6 a: 6

- b. Same as 6 a: 4

- c. Same as 6 a: 3

- d. Same as 6 a: 2

8. From the given fraction wall (Refer to Touchpad Math 5 Page no. 93):

b. $\frac{2}{4} = \frac{1}{2}$

c. $\frac{5}{8} \neq \frac{3}{5}$

d. $\frac{9}{12} = \frac{3}{4}$

e. $\frac{6}{9} = \frac{4}{6}$

f. $\frac{4}{10} = \frac{2}{5}$

9. From the picture, identify the rows that line up exactly with half of the whole.

With quarters, half of the whole is

2 out of 4 parts, i.e., $\frac{2}{4}$.

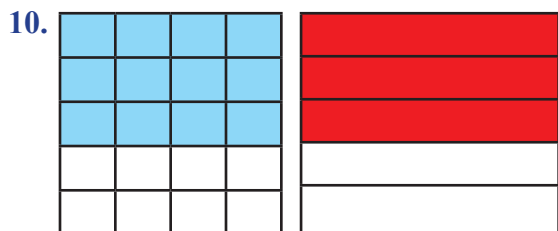


With sixths, half of the whole is

3 out of 6 parts $\frac{3}{6}$.

So the fractions, i.e., equal to $\frac{1}{2}$ are $\frac{2}{4}$ and $\frac{3}{6}$.

Both represent the same amount as one-half of the whole.



Exercise 4C

1. a. $\frac{10 \div 5}{15 \div 5} = \frac{2}{3}$ b. $\frac{4 \div 4}{16 \div 4} = \frac{1}{4}$
- c. $\frac{12 \div 3}{15 \div 3} = \frac{4}{5}$ d. $\frac{11 \div 11}{44 \div 11} = \frac{1}{4}$
- e. $\frac{28 \div 7}{49 \div 7} = \frac{4}{7}$ f. $\frac{36 \div 18}{54 \div 18} = \frac{2}{3}$

2. a. $\frac{8}{24}$, The HCF of 8 and 24 is 8.

So, we divide the numerator and denominator of the fraction by 8.

$$\frac{8}{24} = \frac{8 \div 8}{24 \div 8} = \frac{1}{3}$$

Hence, $\frac{1}{3}$ is the lowest term of $\frac{8}{24}$.

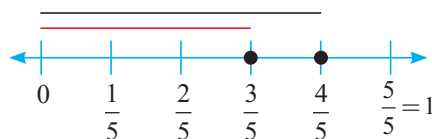
- b. Same as above: $\frac{15}{20} = \frac{15 \div 5}{20 \div 5} = \frac{3}{4}$
- c. Same as above: $\frac{8}{10} = \frac{8 \div 2}{10 \div 2} = \frac{4}{5}$
- d. Same as above: $\frac{15}{12} = \frac{15 \div 3}{12 \div 3} = \frac{5}{4}$
- e. Same as above: $\frac{16}{34} = \frac{16 \div 2}{34 \div 2} = \frac{8}{17}$
- f. Same as above: $\frac{15}{39} = \frac{15 \div 3}{39 \div 3} = \frac{5}{13}$
- g. Same as above: $\frac{18}{45} = \frac{18 \div 9}{45 \div 9} = \frac{2}{5}$

h. Same as above: $\frac{52}{65} = \frac{52 \div 13}{65 \div 13} = \frac{4}{5}$

i. Same as above: $\frac{4}{12} = \frac{4 \div 4}{12 \div 4} = \frac{1}{3}$

j. Same as above: $\frac{10}{25} = \frac{10 \div 5}{25 \div 5} = \frac{2}{5}$

3. a. Represent $\frac{3}{5}$ and $\frac{4}{5}$ on a number line as shown below:



Clearly, $\frac{3}{5} < \frac{4}{5}$.

- b. Same as above: $\frac{6}{8} < \frac{9}{8}$.

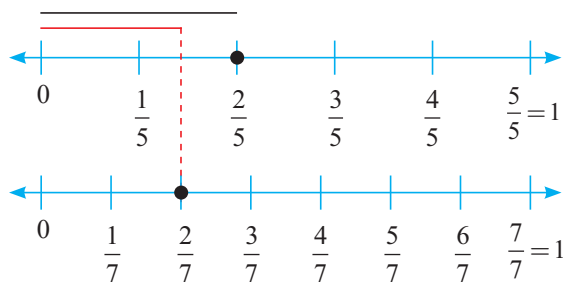
- c. To compare $\frac{2}{5}$ and $\frac{2}{7}$, draw two number lines of the exact same length, both starting from 0 and ending at 1.

Divide the first line into 5 equal parts. Each part represents $\frac{1}{5}$.

Divide the second line into 7 equal parts. Each part represents $\frac{1}{7}$.

Represent $\frac{2}{5}$ on first number line and $\frac{2}{7}$ on second number line.

Clearly, $\frac{2}{5} > \frac{2}{7}$.



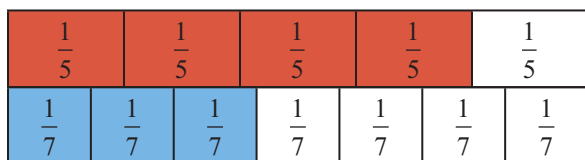
- d. Convert the given fractions into improper fractions and compare them on the number line, as done in part a. : $2\frac{2}{8} < 4\frac{1}{8}$.

e. Same as part d: $2\frac{3}{11} < 3\frac{3}{11}$.

f. Same as part d: $3\frac{1}{3} > 1\frac{3}{7}$

4. a. For $\frac{4}{5}$, shade 4 out of 5 equal parts.

For $\frac{3}{7}$, shade 3 out of 7 equal parts.



$\frac{4}{5}$ covers a larger portion of the fraction wall than $\frac{3}{7}$, because 4 out of 5 parts is a larger proportion than 3 out of 7 parts.

Thus, $\frac{3}{7}$ is smaller than $\frac{4}{5}$.

b. Same as above: $\frac{3}{11}$ is smaller than $\frac{3}{9}$.

c. Same as above: $\frac{5}{12}$ is smaller than $\frac{3}{5}$.

d. Same as above: $\frac{3}{10}$ is smaller than $\frac{7}{10}$.

5. a. Given fractions: $\frac{2}{4}, \frac{3}{4}$

If the fractions are like fractions, the fraction with the greater numerator is greater than the other.

Here, fractions are like fractions and $2 < 3$, so

$$\frac{2}{4} < \frac{3}{4}.$$

b. Same as above: $\frac{3}{8} > \frac{2}{8}$

c. Same as above: $\frac{4}{11} < \frac{5}{11}$

d. Same as above: $\frac{9}{24} > \frac{7}{24}$

e. Given fractions: $\frac{3}{8}, \frac{3}{7}$

If the given fractions are unlike fractions with the same numerator, then the fraction with the smaller denominator is greater than the other.

Here, fractions are unlike fractions and $8 > 7$,

$$\text{so } \frac{3}{8} < \frac{3}{7}.$$

f. Same as part a: $\frac{5}{9} > \frac{4}{9}$

g. Same as part e: $\frac{4}{13} < \frac{4}{11}$

h. Given fractions: $\frac{15}{10}, \frac{3}{2}$

Here, the fractions are unlike, with different denominators, so to compare the fractions,

we cross multiply: $\frac{15}{10} \times \frac{3}{2}$, $15 \times 2 = 30$ and $3 \times 10 = 30$

Both products are equal, so $\frac{15}{10} = \frac{3}{2}$.

6. a. Change mixed fraction into improper fraction.

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

The given fractions form a group of like fractions. So, we compare their numerators.

Here, $4 < 7 < 9 < 15$. So, $\frac{4}{5} < \frac{7}{5} < \frac{9}{5} < \frac{15}{5}$

Thus, the ascending order of the fractions is $\frac{4}{5}, 1\frac{2}{5}, \frac{9}{5}, \frac{15}{5}$.

b. Same as above: The ascending order of fractions is $\frac{44}{25}, 1\frac{20}{25}, \frac{65}{25}, 6\frac{6}{25}$.

7. a. The given fractions form a group of unlike fractions with the same numerator. So, we compare their denominators.

Here, $3 < 6 < 9 < 27$. So, $\frac{5}{3} > \frac{5}{6} > \frac{5}{9} > \frac{5}{27}$.

Thus, the descending order of the fractions is $\frac{5}{3}, \frac{5}{6}, \frac{5}{9}, \frac{5}{27}$.

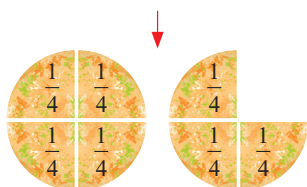
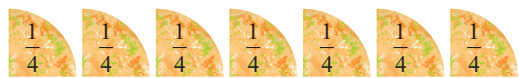
b. Same as above: The descending order of fractions is $\frac{25}{24}, \frac{17}{24}, \frac{7}{24}, \frac{5}{24}$.



8. Take a paratha and consider it as a fractional disc.

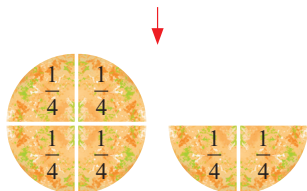
Divide it equally into 4 equal parts.

Raman ate 7 pieces of $\frac{1}{4}$ paratha.



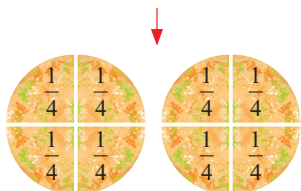
$$\begin{aligned} & \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \\ &= \left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \right) + \left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} \right) \\ &= 1 + \frac{3}{4} = 1\frac{3}{4} \end{aligned}$$

Radhika ate 6 pieces of $\frac{1}{4}$ paratha.



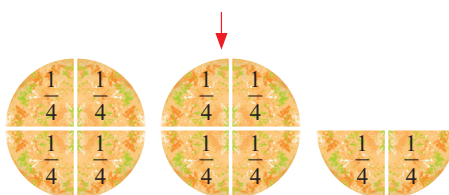
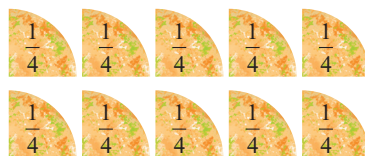
$$\begin{aligned} & \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \\ &= \left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \right) + \left(\frac{1}{4} + \frac{1}{4} \right) \\ &= 1 + \frac{2}{4} = 1\frac{2}{4} \end{aligned}$$

Maa ate 8 pieces of $\frac{1}{4}$ paratha.



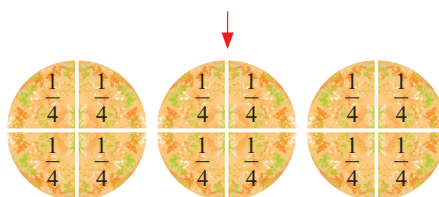
$$\begin{aligned} & \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \\ &= \left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \right) + \left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \right) \\ &= 1 + 1 = 2 \end{aligned}$$

Dadaji ate 10 pieces of $\frac{1}{4}$ paratha.



$$\begin{aligned} & \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \\ &= \left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \right) + \left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \right) + \frac{1}{4} + \frac{1}{4} \\ &= (1 + 1) + \left(\frac{1}{4} + \frac{1}{4} \right) = 2 + \frac{2}{4} = 2\frac{2}{4} \end{aligned}$$

Baba ate 12 pieces of $\frac{1}{4}$ paratha.



$$\begin{aligned} & \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \\ &= \left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \right) + \left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \right) + \left(\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \right) \\ &= 1 + 1 + 1 = 3 \end{aligned}$$

Clearly, we see that baba ate more paratha than others.

Exercise 4D

1. a. $\frac{3}{15} + \frac{2}{15} = \frac{3+2}{15} = \frac{5}{15} = \frac{1}{3}$

b. $\frac{5}{8} - \frac{2}{8} = \frac{5-2}{8} = \frac{3}{8}$

c. $\frac{4}{9} + \frac{5}{9} = \frac{4+5}{9} = \frac{9}{9}$

d. $\frac{14}{12} - \frac{8}{12} = \frac{14-8}{12} = \frac{6}{12} = \frac{1}{2}$

e. $\frac{9}{14} - \frac{3}{14} = \frac{9-3}{14} = \frac{6}{14} = \frac{3}{7}$

f. $\frac{4}{5} + \frac{1}{5} = \frac{4+1}{5} = \frac{5}{5}$

2. a. $\frac{3}{7} - \frac{2}{7} = \frac{3-2}{7} = \frac{1}{7}$

b. $\frac{9}{10} - \frac{5}{10} = \frac{9-5}{10} = \frac{4}{10} = \frac{2}{5}$

c. $\frac{16}{12} + \frac{20}{12} = \frac{16+20}{12} = \frac{36}{12}$

d. $\frac{13}{9} - \frac{4}{9} = \frac{13-4}{9} = \frac{9}{9}$

e. $\frac{27}{25} - \frac{13}{25} = \frac{27-13}{25} = \frac{14}{25}$

f. $\frac{9}{11} + \frac{5}{11} = \frac{9+5}{11} = \frac{14}{11}$

3. a. $2\frac{1}{3} + 1\frac{1}{3} = \frac{2 \times 3 + 1}{3} + \frac{1 \times 3 + 1}{3}$
 $= \frac{7}{3} + \frac{4}{3} = \frac{7+4}{3} = \frac{11}{3} = 3\frac{2}{3}$

b. $4\frac{3}{4} - 2\frac{1}{4} = \frac{4 \times 4 + 3}{4} - \frac{2 \times 4 + 1}{4}$
 $= \frac{19}{4} - \frac{9}{4} = \frac{19-9}{4} = \frac{10}{4} = \frac{5}{2} = 2\frac{1}{2}$

c. $5\frac{1}{6} - 3\frac{5}{6} = \frac{5 \times 6 + 1}{6} - \frac{3 \times 6 + 5}{6}$
 $= \frac{31}{6} - \frac{23}{6} = \frac{31-23}{6} = \frac{8}{6} = \frac{4}{3} = 1\frac{1}{3}$

d. $8\frac{2}{5} + 1\frac{3}{5} = \frac{8 \times 5 + 2}{5} + \frac{1 \times 5 + 3}{5}$
 $= \frac{42}{5} + \frac{8}{5} = \frac{42+8}{5} = \frac{50}{5} = 10$

4. Total milk in the vessel = $\frac{5}{8}$ L

Milk consumed by the cat = $\frac{3}{8}$ L

Milk left in the vessel = $\frac{5}{8} - \frac{3}{8} = \frac{5-3}{8} = \frac{2}{8} = \frac{1}{4}$ L

So, $\frac{1}{4}$ L of milk was left in the vessel.

5. Thickness of the first board = $3\frac{5}{16}$ cm

Thickness of the first board = $4\frac{7}{16}$ cm

Combined thickness

$$= 3\frac{5}{16} + 4\frac{7}{16} = \frac{3 \times 16 + 5}{16} + \frac{4 \times 16 + 7}{16}$$

$$= \frac{53}{16} + \frac{71}{16} = \frac{53+71}{16} = \frac{124}{16} = \frac{31}{4} = 7\frac{3}{4} \text{ cm}$$

Thus, the combined thickness of the boards is $7\frac{3}{4}$ cm.

6. Ribbon purchased by Pinki = $6\frac{3}{4}$ m

Ribbon purchased by Radhika = $8\frac{1}{4}$ m

Ribbon purchased by Sheela = $5\frac{2}{4}$ m

Total ribbon purchased

$$= 6\frac{3}{4} + 8\frac{1}{4} + 5\frac{2}{4} = \frac{6 \times 4 + 3}{4} + \frac{8 \times 4 + 1}{4} + \frac{5 \times 4 + 2}{4}$$

$$= \frac{27}{4} + \frac{33}{4} + \frac{22}{4} = \frac{27+33+22}{4} = \frac{82}{4}$$

$$= \frac{41}{2} = 20\frac{1}{2} \text{ m}$$

Thus, they purchased $20\frac{1}{2}$ m of ribbon in all.



7. Total weight of fruits = $16\frac{3}{6}$ kg

Weight of apples and oranges = $\left(5\frac{5}{6} + 6\frac{1}{6}\right)$ kg

So, weight of pears = Total weight of fruits – weight of apples and oranges

$$= 16\frac{3}{6} - \left(5\frac{5}{6} + 6\frac{1}{6}\right) = \frac{99}{6} - \left(\frac{35}{6} + \frac{37}{6}\right)$$

$$= \frac{99}{6} - \frac{72}{6} = \frac{27}{6} = \frac{9}{2} = 4\frac{1}{2} \text{ kg}$$

So, the weight of pears in basket is $4\frac{1}{2}$ kg.

Learning Logs

1. a. $3\frac{3}{5} = \frac{3 \times 5 + 3}{5} = \frac{18}{5}$ b. $2\frac{5}{7} = \frac{2 \times 7 + 5}{7} = \frac{19}{7}$

c. $6\frac{2}{3} = \frac{6 \times 3 + 2}{3} = \frac{20}{3}$ d. $4\frac{5}{6} = \frac{4 \times 6 + 5}{6} = \frac{29}{6}$

2. a. $\frac{17}{8}$; Divide 17 by 8

$$\begin{array}{r} \text{Denominator} \quad 2 \leftarrow \text{Whole number} \\ 8 \overline{) 17} \\ \underline{-16} \\ 1 \leftarrow \text{Numerator} \end{array}$$

we get quotient = 2 and remainder = 1

So, $\frac{17}{8} = 2\frac{1}{8}$.

b. Same as above: $\frac{23}{6} = 3\frac{5}{6}$

c. Same as above: $\frac{19}{5} = 3\frac{4}{5}$

d. Same as above: $\frac{15}{7} = 2\frac{1}{7}$

3. a. $\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6}$; $\frac{2}{3} = \frac{2 \times 3}{3 \times 3} = \frac{6}{9}$;

$\frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12}$; $\frac{2}{3} = \frac{2 \times 5}{3 \times 5} = \frac{10}{15}$.

b. Same as above: $\frac{8}{14}, \frac{12}{21}, \frac{16}{28}, \frac{20}{35}$

c. Same as above: $\frac{5}{6}, \frac{10}{12}, \frac{15}{18}, \frac{20}{24}, \frac{25}{30}$

d. Same as above: $\frac{3}{5}, \frac{6}{10}, \frac{9}{15}, \frac{12}{20}, \frac{15}{25}$

4. a. $\frac{2}{3} = \frac{2 \times 6}{3 \times 6} = \frac{12}{18}$

So, the missing value is 18.

b. $\frac{6}{13} = \frac{6 \times 4}{13 \times 4} = \frac{24}{52}$

So, the missing value is 24.

c. Same as part a: Missing value is 81.

5. a. Cross multiply: $\frac{5}{8} \times \frac{15}{24}$;

$5 \times 24 = 120$ and $15 \times 8 = 120$.

Since the cross products are equal, the given fractions are equivalent.

b. Same as above: Fractions are equivalent.

c. Same as above: Fractions are not equivalent.

6. a. $\frac{40}{72}$, The HCF of 40 and 72 is 8.

So, we divide the numerator and denominator of the fraction by 8.

$$\frac{40}{72} = \frac{40 \div 8}{72 \div 8} = \frac{5}{9}$$

b. Same as above: $\frac{38}{95} = \frac{2}{5}$

c. Same as above: $\frac{51}{68} = \frac{3}{4}$

d. Same as above: $\frac{35}{63} = \frac{5}{9}$

7. a. Given fractions: $\frac{9}{7}, \frac{9}{35}, \frac{9}{14}, \frac{9}{28}$.

If the given fractions are unlike fractions with the same numerator, then the fraction with the smaller denominator is greater than the other.

The given fractions form a group of unlike fractions. So, we compare their denominators.

Here, $7 < 14 < 28 < 35$, so $\frac{9}{35} < \frac{9}{28} < \frac{9}{14} < \frac{9}{7}$.

Thus, the ascending order of fractions is $\frac{9}{35}, \frac{9}{28}, \frac{9}{14}, \frac{9}{7}$.

b. Given fractions: $2\frac{5}{12}, 1\frac{3}{12}, 4\frac{1}{12}, \frac{4}{12}$

Convert mixed fractions to improper fractions.

$$2\frac{5}{12} = \frac{2 \times 12 + 5}{12} = \frac{29}{12}; 1\frac{3}{12} = \frac{1 \times 12 + 3}{12} = \frac{15}{12};$$

$$4\frac{1}{12} = \frac{4 \times 12 + 1}{12} = \frac{49}{12}.$$

If the given fractions are like fractions, then the fraction with the greater numerator is greater than the other.

Here, $49 > 29 > 15 > 4$,

$$\text{so } 4\frac{1}{12} > 2\frac{5}{12} > 1\frac{3}{12} > \frac{4}{12}$$

Thus the ascending order of fractions is $\frac{4}{12}, 1\frac{3}{12}, 2\frac{5}{12}, 4\frac{1}{12}$

8. a. Given fractions; $\frac{12}{6}, \frac{12}{7}, \frac{12}{3}, \frac{12}{14}$.

If the given fractions are unlike fractions with the same numerator, then the fraction with the smaller denominator is greater than the other.

The given fractions form a group of unlike fractions. So, we compare their denominators.

$$\text{Here, } 3 < 6 < 7 < 14, \text{ so } \frac{12}{3} > \frac{12}{6} > \frac{12}{7} > \frac{12}{14}.$$

Thus the descending order of fractions is $\frac{12}{3}, \frac{12}{6}, \frac{12}{7}, \frac{12}{14}$.

b. Same as Question 7 b.:

$$6\frac{4}{18}, 3\frac{2}{18}, \frac{17}{18}, \frac{7}{18}$$

9. a. $\frac{3}{4} + \frac{2}{4} = \frac{3+2}{4} = \frac{5}{4}$

b. $2\frac{4}{9} + \frac{2}{9} = \frac{2 \times 9 + 4}{9} + \frac{2}{9} = \frac{22}{9} + \frac{2}{9} = \frac{24}{9} = \frac{8}{3}$

c. $\frac{3}{6} + \frac{2}{6} + 3\frac{1}{6} = \frac{3}{6} + \frac{2}{6} + \frac{3 \times 6 + 1}{6}$
 $= \frac{3+2+19}{6} = \frac{24}{6} = 4$

d. $2\frac{4}{10} + 1\frac{3}{10} + 2\frac{1}{10}$
 $= \frac{2 \times 10 + 4}{10} + \frac{1 \times 10 + 3}{10} + \frac{2 \times 10 + 1}{10}$

$$= \frac{24}{10} + \frac{13}{10} + \frac{21}{10} = \frac{24+13+21}{10}$$

$$= \frac{58}{10} = \frac{29}{5} = 5\frac{4}{5}$$

10. a. $\frac{13}{10} - \frac{7}{10} = \frac{13-7}{10} = \frac{6}{10}$

b. $1\frac{3}{8} - \frac{7}{8} = \frac{11}{8} - \frac{7}{8} = \frac{11-7}{8} = \frac{4}{8} = \frac{1}{2}$

c. $\frac{12}{15} - \frac{9}{15} = \frac{12-9}{15} = \frac{3}{15} = \frac{1}{5}$

d. $1\frac{15}{20} - \frac{30}{20} = \frac{1 \times 20 + 15}{20} - \frac{30}{20} = \frac{35}{20} - \frac{30}{20}$
 $= \frac{35-30}{20} = \frac{5}{20} = \frac{1}{4}$

11. Weight of the drum full of rice = $40\frac{1}{6}$ kg

$$\text{Weight of the empty drum} = 13\frac{3}{6} \text{ kg}$$

Weight of the rice in the drum = Weight of the full drum – weight of the empty drum

$$= \left(40\frac{1}{6} - 13\frac{3}{6} \right) = \frac{40 \times 6 + 1}{6} - \frac{13 \times 6 + 3}{6}$$

$$= \frac{241}{6} - \frac{81}{6} = \frac{241-81}{6} = \frac{160}{6} = \frac{80}{3} = 26\frac{2}{3}$$

So, the weight of rice in the drum is $26\frac{2}{3}$ kg.

HOTS

$$\text{Total distance travelled in a day} = 47\frac{1}{9} \text{ km}$$

$$\text{Distance covered by bus} = 29\frac{1}{9} \text{ km}$$

$$\text{Distance covered by horse-cart} = 8\frac{5}{9} \text{ km}$$

So, the distance travelled on foot = Total distance – distance covered by bus and horse-cart

$$= 47\frac{1}{9} - \left(29\frac{1}{9} + 8\frac{5}{9} \right) = 47\frac{1}{9} - 37\frac{6}{9}$$

$$= \frac{424}{9} - \frac{339}{9} = \frac{85}{9} = 9\frac{4}{9}$$

Thus, the man travelled $9\frac{4}{9}$ km on foot.



Mental Maths

1. Fraction having a numerator less than the denominator is called proper fraction.

In option a and d, the numerator is greater than the denominator, so these are not proper fractions.

In option b. Both numerator and denominator are equal, so it is equal fraction.

In option c, the numerator is less than the denominator, so it is a proper fraction.

So, the correct option is c.

$$2. \frac{2}{5} + 1\frac{3}{5} = \frac{2}{5} + \frac{1 \times 5 + 3}{5} = \frac{2}{5} + \frac{8}{5} = \frac{10}{5} = 2$$

So, the correct option is c.

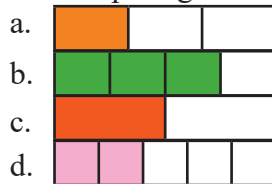
3. Convert all fractions into their lowest form.

In option a. $\frac{3}{6} = \frac{3 \div 3}{6 \div 3} = \frac{1}{2}$

Fractions in option b, c and d are already in the lowest form.

So, the correct option is a.

4. On comparing all the options,



$\frac{3}{4}$ is the largest. So, the correct option is b.

CHAPTER 5 : GEOMETRY

Warm Up

Given: The lunar cycle starts with the new moon.

The phases occurs in this order:

New moon → Waxing crescent → First quarter → Waxing gibbous → Full moon → Waning gibbous → Last quarter → Waning crescent → (back to New moon)

Since the lunar cycle has 8 equal phases, each phase represents $\frac{1}{8}$ of the cycle.

- (a) i. $\frac{1}{2}$ cycle: $\frac{1}{2} = \frac{4}{8}$. After moving 4 phases from new moon, we reach the full moon.

- ii. $\frac{1}{4}$ cycle: $\frac{1}{4} = \frac{2}{8}$. After moving 2 phases from new moon, we reach the first quarter.

- iii. $\frac{1}{8}$ cycle: After moving one phase from new moon, we reach the waxing crescent.

- iv. $\frac{5}{8}$ cycle: After moving 5 phases from new moon, we reach the waning gibbous.

- (b) Since the lunar cycle has 8 equal phases, each phase represents $\frac{1}{8}$ of the cycle.

New moon = $\frac{0}{8}$;

Waxing crescent = $\frac{1}{8}$;

First quarter = $\frac{2}{8}$;

Waxing gibbous = $\frac{3}{8}$;

Full moon = $\frac{4}{8}$;

Waning gibbous = $\frac{5}{8}$;

Last quarter = $\frac{6}{8}$;

Waning crescent = $\frac{7}{8}$.

- i. Waxing gibbous: It is the 3rd phase after the new moon: $\frac{3}{8}$ cycle.

- ii. Waning crescent: It is the 7th phase after the new moon: $\frac{7}{8}$ cycle.

- iii. Last quarter : It is the 6th phase after the new moon: $\frac{6}{8} = \frac{3}{4}$ cycle.

- iv. New moon: It is starting point of the cycle: $\frac{0}{8}$ cycle.

2. a. There are two endpoints and no arrows, so it is a line segment. It is represented as $\overline{GH}$.

- b. There are arrows at both ends, so it is a line. It

is represented as $\overleftrightarrow{AB}$.

- c. There is one endpoint at R and an arrow at the other end, so it is a ray. It is represented as $\overrightarrow{RS}$.
- d. The endpoint is at V and it extends infinitely to the left, so it is a ray. It is represented as $\overleftarrow{VU}$.

Exercise 5A

1. An angle is formed when two rays have common endpoint.

Now, check each figure.

- a. Both rays do not meet at a common endpoint so the given figure does not form an angle.
 - b. Here, two rays meet at a common endpoint making an L shape. So an angle is formed.
 - c. Here, two rays do not meet at a common endpoint so the given figure does not form an angle.
 - d. Here, two rays meet at a common endpoint making an V shape. So an angle is formed.
2. To name an angle we use three letters. The middle letter must be the vertex.
 - a. The angle drawn at a point Q, so Q is the vertex. One arm goes from Q to P and the other arm goes from Q to R. So, the angle is $\angle PQR$ or $\angle RQP$.
 - b. Same as above: $\angle XYZ$ or $\angle YZX$.
 - c. Same as above: $\angle NML$ or $\angle LMN$.
 - d. Same as above: $\angle EFG$ or $\angle GFE$.
 3. Arm: An arm of an angle is a ray that forms the side of the angle.

Vertex: The vertex is the common end point where the two arms of an angle meet.

Name of the angle: To name an angle we use three letters. The middle letter must be the vertex.

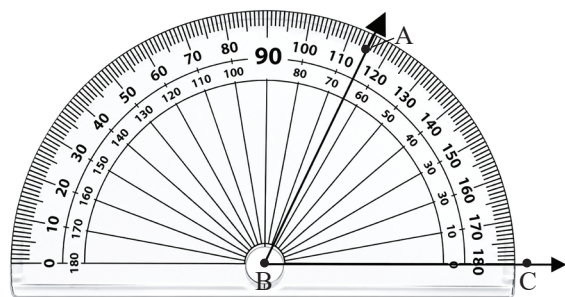
- a. Arms: OP and OT; Vertex: O;
Name of the angle: $\angle TOP$ or $\angle POT$
 - b. Arms: US and UN; Vertex: U;
Name of the angle: $\angle NUS$ or $\angle SUN$
4. Interior of an angle means the region between its two arms, excluding the arms themselves.
Exterior of an angle means points that are not on

the angle and not inside the angle.

- a. For angle $\angle DOE$, the arms OD and OE.
The point lying strictly between OD and OE is A.
- b. For angle $\angle EOF$, the arms OE and OF.
The points lying outside the region between OE and OF are A, C and D.

Exercise 5B

1. To measure the following angles by reading the scale on the protractor. We read each angle by keeping one arm along the baseline (0°) of the protractor and note where the other arm meets the correct scale.
 - a. The base arm lies along the 0° line on the right side. The other arm passes through the 60° mark on the protractor. So, the measure of an angle is 60° .
 - b. Same as above: Measure of an angle is 140° .
 - c. Same as above: Measure of an angle is 25° .
 - d. Same as above: Measure of an angle is 165° .
 - e. Same as above: Measure of an angle is 140° .
 - f. Same as above: Measure of an angle is 90° .
2. a. Let us measure $\angle ABC$ using a protractor.
Place the protractor so that its centre point is exactly on vertex B of $\angle ABC$.



Align the baseline of the protractor with side BC of the angle, as shown in the figure.

Now observe the marking on the protractor where the other side BA of $\angle ABC$ crosses the scale.

From the reading on the scale, we find that $\angle ABC = 65^\circ$.

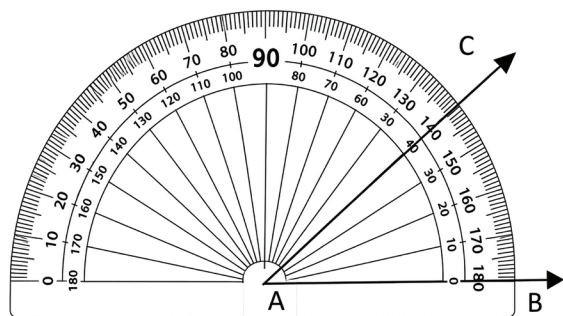
- b. Same as above: $\angle PQR = 110^\circ$
 - c. Same as above: $\angle STU = 90^\circ$
 - d. Same as above: $\angle GOD = 105^\circ$.
3. To construct an angle of 40° , follow these steps:
Step 1: Begin by drawing a ray AB using a ruler.





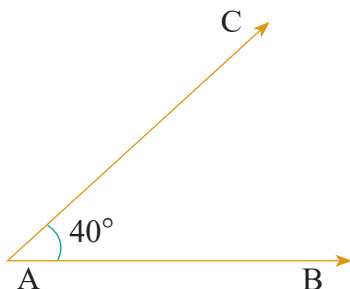
Step 2: Place the protractor on ray AB with its centre at point A, ensuring the baseline aligns with AB.

Step 3: Check the inner and outer scales of the protractor to find the one with the 0° mark aligned with AB.



Step 4: Mark point C on the paper where the 40° mark on the protractor intersects.

Step 5: Remove the protractor and use a ruler to join points A and C.



Thus, $\angle CAB = 40^\circ$ is formed.

b.-j.: Same as above.

Exercise 5C

1. a. In the given figure, the angle formed is less than 90° , so it is an acute angle.
b. The angle formed is a right angle because its measure is exactly 90° .
c. The angle formed in the given figure is greater than 90° but less than 180° , so it is an obtuse angle.
d. The angle formed in the figure is exactly 180° , so it is a straight angle.
2. a. The hour hand is at 5 and the minute hand is at 12, forming an obtuse angle ($>90^\circ$, $<180^\circ$).
b. The hour hand is at 3 and the minute hand is at 12, forming a right angle.

- c. The hour hand is at 12 and the minute hand is at 6, forming a straight angle.
 - d. The hour hand is at 7 and the minute hand is at 12, forming a reflex angle ($>180^\circ$, $<360^\circ$).
 - e. The hour hand is at 4 and the minute hand is at 3, forming an acute angle.
 - f. The hour hand is at 2 and the minute hand is at 10, forming a reflex angle ($>180^\circ$, $<360^\circ$).
 - g. The hour hand is at 9 and the minute hand is at 12, forming a right angle.
 - h. The hour hand is in between 7 and 8 and the minute hand is at 5, forming an acute angle.
3. a. 30° is an acute angle, because it is less than 90° .
b. 95° is an obtuse angle, because it is greater than 90° but less than 180° .
c. Same as part (b): Obtuse angle
d. 180° is a straight angle.
e. 90° is a right angle.
f. 360° is a complete angle because it is completing a full circle.
g. Same as part (a): Acute angle
h. Same as part (b): Obtuse angle
i. Same as part (a): Acute angle
j. 265° is a reflex angle, because it is greater than 180° but less than 360° .

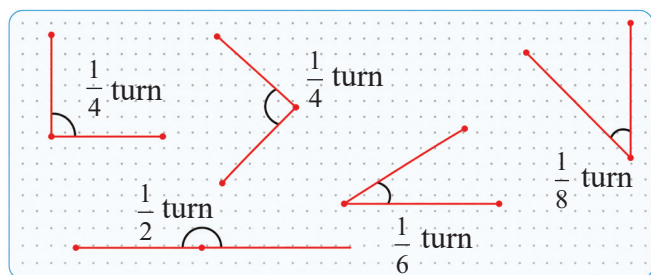
6. b. $\angle GEH$ or $\angle HEG$ or $\angle E$
c. $\angle XYZ$ or $\angle ZYX$ or $\angle Y$
7. a. Acute angles: $\angle ABD$ and $\angle DBE$
b. Right angle: $\angle ABE$ and $\angle CBE$
c. Straight angle: $\angle ABC$
d. Obtuse angle: $\angle CBD$

Exercise 5D

1. b. $\frac{1}{8}$ turn.
c. $\frac{1}{4} + \frac{1}{4} + \frac{1}{8} = \frac{2}{8} + \frac{2}{8} + \frac{1}{8} = \frac{2+2+1}{8} = \frac{5}{8}$ turn.
d. $\frac{1}{4} + \frac{1}{4} + \frac{1}{16} = \frac{4}{16} + \frac{4}{16} + \frac{1}{16} = \frac{4+4+1}{16} = \frac{9}{16}$ turn.
2. 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.
3. Clockwise = turning right, Anticlockwise = turning left
- a. South → Two right angles clockwise:
South → West (1st right angle) → North (2nd right angle)
So, the ending direction is North.
- b. North → Two right angles anticlockwise
North → West (1st right angle) → South (2nd right angle)
So, the ending direction is South.
- c. West → Four right angles anticlockwise
4 right angles = full rotation
So, the ending direction is West.
- d. Same as part (c): East
- e. East → Five right angles clockwise
4 turns bring back to start + 1 extra turn
East → South (after 1 right angle turn)
So, the ending direction is South.
- f. West → Three right angles clockwise, then two $\frac{1}{2}$ right angles clockwise
Three right angles clockwise:
West → North → East → South
Now, two half right angles clockwise:
 $2 \times \frac{1}{2}$ right angles = 1 right angle
South → West.
So, the ending direction is West.
- g. Same as part (f): West

4.



Exercise 5E

- Vertices: A, B, and C
 - Angles: $\angle ABC$, $\angle BCA$, and $\angle CAB$
 - Sides: AB, BC, and CA
- Equilateral Triangle: All three sides are equal.
Isosceles Triangle: Two sides are equal.
Scalene Triangle: All three sides are different.

 - Given, AB = 3 cm, BC = 3 cm, CA = 3 cm
Here all sides are equal in length, triangle is an equilateral.
 - Given, QP = 3 cm, PR = 4 cm, QR = 6 cm
Here all sides are different in length, triangle is scalene.
 - Given, UT = 4 cm, UV = 4 cm
Here only two sides are equal in length, triangle is an isosceles.
 - Given, ST = 3 cm, TU = 4 cm, SU = 5 cm
Here all sides are different in length, triangle is scalene.
 - Given, DE = 4 cm, EF = 4 cm, FD = 4 cm
Here all sides are equal in length, triangle is an equilateral.
 - Given, GH = 5 cm, HI = 9 cm, IG = 10 cm
Here all sides are different in length, triangle is scalene.
- Acute Triangle: All angles $< 90^\circ$
Right Triangle: One angle = 90°
Obtuse Triangle: One angle $> 90^\circ$

 - Given, the angles of the triangle are: 90° , 45° , 45°
Here one angle is 90° , the triangle is right-angled triangle.
 - Given, the angles of the triangle are: 95° , 60° , 25°
Here one angle is 95° , the triangle is obtuse-angled triangle.
 - Given, the angles of the triangle are: 25° , 125° , 30°
Here one angle is 125° , the triangle is obtuse-angled triangle.
 - Given, the angles of the triangle are: 87° , 53° , 40°
Here all angles are less than 90° , the triangle is acute-angled triangle.
 - Given, the angles of the triangle are: 70° , 55° , 55°
Here all angles are less than 90° , the triangle is acute-angled triangle.



- f. Given the angles of the triangle are: 20° , 130° , 30°

Here one angle is 130° , the triangle is obtuse-angled triangle.

4. We know that the sum of the angles of a triangle is 180° .

a. $30^\circ + 90^\circ + 60^\circ = 180^\circ$

Hence, this is a valid group of angles for a triangle.

b. $65^\circ + 35^\circ + 90^\circ = 190^\circ \neq 180^\circ$

Hence, this is not a valid group of angles for a triangle.

c. $80^\circ + 75^\circ + 35^\circ = 190^\circ \neq 180^\circ$

Hence, this is not a valid group of angles for a triangle.

d. $40^\circ + 80^\circ + 60^\circ = 180^\circ$

Hence, this is a valid group of angles for a triangle.

e. $25^\circ + 120^\circ + 45^\circ = 190^\circ \neq 180^\circ$

Hence, this is not a valid group of angles for a triangle.

f. $50^\circ + 60^\circ + 40^\circ = 150^\circ \neq 180^\circ$

Hence, this is not a valid group of angles for a triangle.

5. We know that the sum of any two sides of a triangle must be greater than the third side.

a. $4 + 3 = 7$ cm, which is not greater than 7 cm.

Hence, a triangle is not possible.

b. $4 + 2 = 6$ cm > 4 cm, $4 + 4 = 8$ cm > 2 cm and $2 + 4 = 6$ cm > 4 cm.

Hence, a triangle is possible.

c. $5 + 6 = 11$ cm > 8 cm, $6 + 8 = 14$ cm > 5 cm and $5 + 8 = 13$ cm > 6 cm.

Hence, a triangle is possible.

d. $7 + 4 = 11$ cm > 8 cm, $4 + 8 = 12$ cm > 7 cm and $7 + 8 = 15$ cm > 4 cm.

Hence, a triangle is possible.

e. $6 + 9 = 15$ cm > 12 cm, $6 + 12 = 18$ cm > 9 cm and $12 + 9 = 21$ cm > 6 cm.

Hence, a triangle is possible.

f. $5 + 5 = 10$ cm, which is not greater than 10 cm.

Hence, a triangle is not possible.

6. a. A triangle can have three acute angles.

Thus, the correct answer is (iv).

- b. A triangle can have only one right angle.

Thus, the correct answer is (ii).

- c. An equilateral triangle is also an acute-angled triangle.

Thus, the correct answer is (ii).

- d. A scalene triangle has all sides of different length.

Thus, the correct answer is (iii).

- e. A triangle can have only one obtuse angle.

Thus, the correct answer is (ii).

Exercise 5F

1. a. A quadrilateral in which all sides are equal and all angles are 90° is a square.

- b. A parallelogram has two pairs of parallel sides.

- c. The sum of all the interior angles in any quadrilateral is 360° .

- d. A trapezium has one pair of parallel sides.

2. a. Rhombus $\rightarrow$ ii. Diagonals bisect at 90°

- b. Rectangle $\rightarrow$ iii. All angles are 90°

- c. Trapezium $\rightarrow$ i. One pair of parallel sides

- d. Kite $\rightarrow$ v. Two pairs of adjacent sides equal

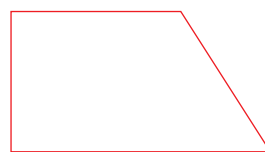
- e. Square $\rightarrow$ iv. All sides equal, angles 90°

3. a. A square has all sides equal and all angles 90° . A rectangle has all angles 90° but does not require all sides to be equal. Therefore, every square is a rectangle, but every rectangle is not a square.

- b. A rhombus has both pairs of opposite sides parallel. Therefore, it satisfies the definition of a parallelogram.

- c. Yes, a trapezium can have right angles.

Example: a right trapezium has one pair of parallel sides and one side is perpendicular to them, forming right angle.



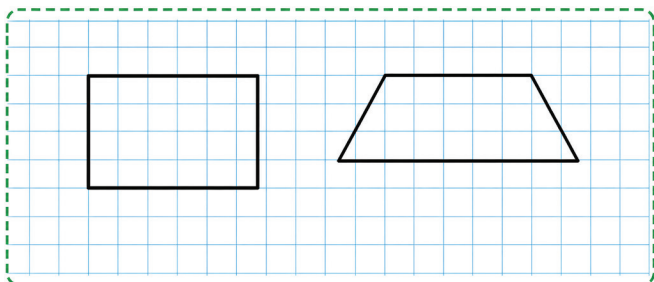
- d. In a rectangle, the diagonals are equal and bisect each other but they are not perpendicular.

In a rhombus, the diagonals bisect each other at right angles but they are not equal.

- e. A kite does not have both pairs of opposite sides parallel. Therefore, it is not considered a parallelogram.

4. a. Isosceles triangles, right-angled triangles and scalene triangles.
b. Two pairs of adjacent equal sides scalene.
c. No, all angles are not equal in a kite.
d. The number of diagonal(s) in a kite is two.
e. Diagonals of a kite intersect at a right angle.

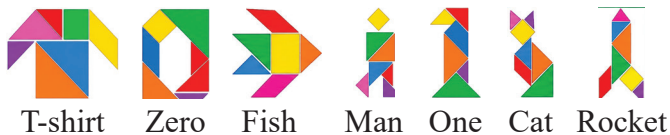
5.



(Answer may vary)

6. a. All four triangles can be arranged to form a square or a rectangle or a larger triangle.
However, shapes like a pentagon, a hexagon, and an octagon require more than four triangular units, so they are not possible.

7.



Exercise 5G

1. a. The centre of the circle is O.
b. The diameter of the circle is AB.
c. OA, OB and OP are the radii of the circle.
d. The chords of the circle are CD and AB.
e. The points A, P, D, B, and C are on the circle.
f. The points Q, and R lie on the exterior of the circle.
g. The points M, N and O lie on the interior of the circle.
h. $AB = 2 \times OP$.
i. CD is a chord of the circle.
j. The longest chord of the circle is diameter AB.
2. a. False; Radius is half of the diameter, not double.
b. True; A circle has infinite diameters, radii and chords.
c. False; A circle has only one fixed centre.

- d. True; A diameter is a chord that passes through the centre. So, every diameter is a chord.
- e. False; A chord does not always pass through the centre. So, not every chord is a diameter.

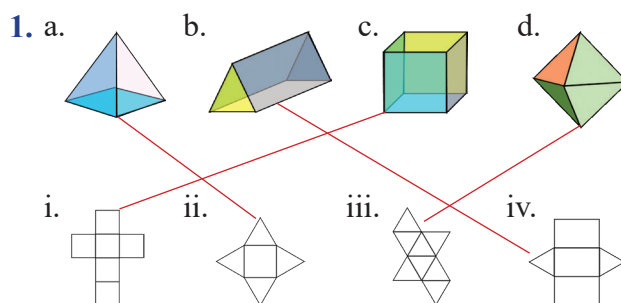
4. Diameter = $2 \times$ radius

- a. Radius = 2 cm; Diameter = 2×2 cm = 4 cm
- b. Radius = 3 cm; Diameter = 2×3 cm = 6 cm
- c. Radius = 11 cm; Diameter = 2×11 cm = 22 cm
- d. Radius = 8 cm; Diameter = 2×8 cm = 16 cm

5. Radius = diameter $\div 2$

- a. Diameter = 6 cm, Radius = $6 \div 2 = 3$ cm
- b. Diameter = 10 cm, Radius = $10 \div 2 = 5$ cm
- c. Diameter = 24 cm, Radius = $24 \div 2 = 12$ cm
- d. Diameter = 16 cm, Radius = $16 \div 2 = 8$ cm

Exercise 5H



2. Rony makes a big cube using 27 small cubes ($3 \times 3 \times 3$) and paints all its outer faces.

After cutting it, we observe different types of small cubes.

- a. Cubes with three faces painted:
These are the corner cubes of the big cube.
A cube has 8 corners, so all corner cubes have 3 faces painted.
So, total = 8 small cubes.
- b. Cubes with two faces painted:
These are the cubes that are on the edges but not at the corners.
Each edge has 1 such cube, and a cube has 12 edges.
So, total = 12 small cubes
- c. Cubes with one face painted:
These are the cubes placed on the faces but not on edges or corners.
Each face has 1 centre cube, and a cube has 6 faces.
So, total = 6 small cubes
- d. Cubes with no faces painted:



These are the cubes completely inside the big cube.

So, only 1 cube is inside and it does not touch any outer face.

3. a. Compare the first solid and the second solid carefully.

We can see that 2 cubes are missing from each row of the middle section of the front face, and 1 cube is missing from the side face. The same pattern continues through all layers.

So, the number of missing cubes is:

$$2 + 2 + 2 + 1 + 1 + 1 + 1 = 10 \text{ cubes.}$$

- b. 4 cubes are missing from the middle section of the front face. The same pattern continues through all layers.

So, the number of missing cubes is: $4 + 4 = 8$

- c. We can see that 3 cubes are missing from each row of the middle section of the front face, and 6 cubes are missing from the side face. The same pattern continues through all layers.

So, the number of missing cubes is:

$$4 + 4 + 4 + 6 + 6 = 24 \text{ cubes.}$$

Learning Logs

- a. When two rays form an angle, their common endpoint is called the vertex of the angle.

b. Angles are measured in degrees.

c. The measure of a straight angle is 180° .

d. An angle of measure 360° is called complete angle.

e. The sides of a scalene triangle are of different lengths.

f. Diameter of a circle = $2 \times$ Radius of the circle.
- a. False

b. False

c. True

d. False
- a. Right angle

b. Acute angle

c. Obtuse angle

d. Straight angle

e. Right angle

f. Obtuse angle
- a. A triangle can have maximum 3 acute angles.

b. A triangle can have only 1 right angle.

- c. A triangle can have only 1 obtuse angle (because the sum of angles would exceed 180° if more than one is obtuse).

- d. Number of cubes in bottom level = $4 \times 4 = 16$

$$\text{Number of cubes in } 2^{\text{nd}} \text{ level} = 3 \times 3 = 9$$

$$\text{Number of cubes in } 3^{\text{rd}} \text{ level} = 2 \times 2 = 4$$

$$\text{Number of cube in top level} = 1$$

$$\text{Total number of cubes} = 16 + 9 + 4 + 1 = 30.$$

Mental Maths

- In 1 hour, the minute hand completes one full rotation.

One full rotation = 360° .

Thus, the correct answer is (d).
- From the given option, only reflex angle is not smaller than straight angle.

Thus, the correct answer is (c).
- In option (d), lines do not meet at a common point does not form angle.

Thus, the correct answer is (d).
- Number of steps moves by hour hand from 10 to 1 = 3

Each step = 30°

Three steps = $3 \times 30^\circ = 90^\circ$ = right angle

Hence, the correct answer is (a).
- A straight angle = 180°

Angle between two numbers in a clock = 30°

Number of steps = $180^\circ \div 30^\circ = 6$

Start from 2, moving 6 steps:

$$2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8.$$

Thus, the correct answer is (c).
- Raman is facing North. He turns 3 right angles anticlockwise.

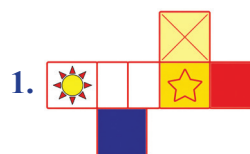
Each right angle = 90° turn:

North $\rightarrow$ West (1^{st} turn) $\rightarrow$ South (2^{nd} turn) $\rightarrow$ East (3^{rd} turn)

So, the final direction is East.

Thus, the correct answer is (a).

HOTS



2. 6; $\triangle ABD$, $\triangle ADE$, $\triangle AEC$, $\triangle ABE$, $\triangle ADC$, $\triangle ABC$.

MODEL TEST PAPER – 1

- 10,00,000 = Ten lakh
Thus, the correct answer is (b).
- $9996 \div 98 = 102$
Thus, the correct answer is (c).
- Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, and 36.
From the given options 6, 12 and 18 are all factors of 36.
Thus, the correct answer is (d).
- Number divisible by both 4 and 6 is 12 or multiples of 12.
From the given option only 24 is the multiple of 12, which is divisible by both 4 and 6.
Thus, the correct answer is (c).
- $\frac{3}{4}$ of 240 = $\frac{3}{4} \times 240 = 3 \times 60 = 180$
Thus, the correct answer is (c).
- Equivalent fraction of $\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$
Thus, the correct answer is (a).
- There are six sides of hexagon.
Thus, the correct answer is (b).
- The sum of interior angles of triangle is 180° .
Thus, the correct answer is (b).
- $100000 - 57259 = 42741$.
Thus, the correct answer is (d).
- LCM of 10, 15 and 20 is 60.
Thus, the correct answer is (a).
- a. $6,13,272 + 2,43,648 = 8,569,20$
 $8,56,920 - 5,36,440 = 3,20,480$
b. 473×128
 $= 473 \times (100 + 20 + 8)$
 $= 47,300 + 9460 + 3784$
 $= 60,544$
c. $4,36,000 \div 125 = 3488$
- a. $2\frac{1}{4} + 1\frac{3}{4} + 1\frac{2}{4} = \frac{9}{4} + \frac{7}{4} + \frac{6}{4} = \frac{9+7+6}{4} = \frac{22}{4}$
 $= \frac{11}{2} = 5\frac{1}{2}$
b. $4\frac{1}{5} - \frac{2}{5} = \frac{21}{5} - \frac{2}{5} = \frac{21-2}{5} = \frac{19}{5} = 3\frac{4}{5}$
c. $50 - 48 \div 6 \times 4 + 5$
 $= 50 - 8 \times 4 + 5$
 $= 50 - 32 + 5$
 $= 18 + 5$
 $= 23$

- Fraction of the amount spent on books = $\frac{2}{5}$
Fraction of the amount spent on stationary = $\frac{1}{5}$
Total fraction of the amount spent on these two items = $\frac{2}{5} + \frac{1}{5}$
 $= \frac{2+1}{5} = \frac{3}{5}$
Now, fraction of the amount spent on food
 $= 1 - \frac{3}{5} = \frac{5-3}{5} = \frac{2}{5}$
- a. A bus carries 165 passengers in one trip.
Number of trips = 35
Total passengers = $165 \times 35 = 165 \times (30 + 5)$
 $= 165 \times 30 + 165 \times 5 = 4950 + 825 = 5775$
b. The human heart beats 1080 times in 15 minutes.
In 1 minute = $1080 \div 15 = 72$ beats
In 1 day = $24 \times 60 = 1440$ minutes
Total beats in a day = 72×1440
 $= 72 \times (1000 + 400 + 40)$
 $= 72000 + 28800 + 2880 = 1,03,680$
c. 15 boxes weigh 1215 kg
Weight of 1 box = $1215 \div 15 = 81$ kg
- a. $240 \div 12 = 20$ (no remainder)
So, 12 is a factor of 240.
b. $336 \div 16 = 21$ (no remainder)
So, 336 is a multiple of 16.
c. A number ending in 0 or 5 is divisible by 5.
3950 ends in 0, 3950 divisible by 5.
d. 26916;
Sum of digits: $2 + 6 + 9 + 1 + 6 = 24$
24 is divisible by 3, 26916 is divisible by 3.
- a. Factors of 20: 1, 2, 4, 5, 10, 20
Factors of 42: 1, 2, 3, 6, 7, 14, 21, 42
Common factor = 1, 2
So, the HCF of 20 and 42 is 2.
b. Multiples of 18: 18, 36, 54, 72, ...
Multiples of 24: 24, 48, 72, 96, ...
Multiples of 30: 30, 60, 90, 120, ...
LCM of 18, 24, and 30 is 360.



c. We know that $\text{LCM} \times \text{HCF} = \text{Product of the two numbers}$

$$180 \times 30 = 60 \times \text{other number}$$

$$\text{Other number} = \frac{180 \times 30}{60} = 90.$$

d. $\text{LCM} \times \text{HCF} = \text{Product of two numbers}$

$$36 \times \text{HCF} = 108$$

$$\text{HCF} = 108 \div 36 = 3$$

18. a. 32446 becomes 32000 if it is rounded to the nearest 1000.

b. $\frac{4}{9}$ and $\frac{16}{36}$ are equivalent fractions.

$$\text{Since, } \frac{4}{9} = \frac{4 \times 4}{9 \times 4} = \frac{16}{36}$$

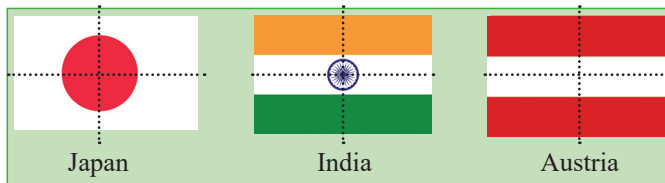
c. An obtuse angle is more than 90° but less than 180° .

d. An equilateral triangle has three sides of equal length.

CHAPTER 6 : SYMMETRY AND PATTERNS

Warm Up

1.



Flags of Japan, India and Austria are symmetrical.

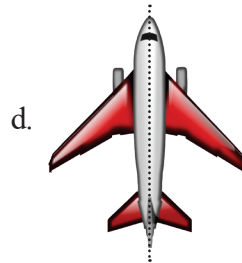
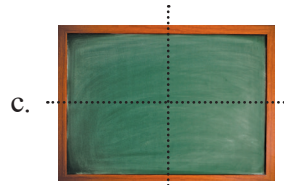
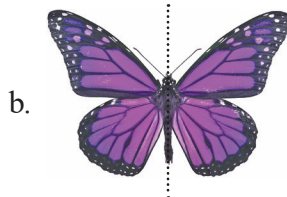
2. 50 stars are arranged column wise in the pattern

5 – 4 – 5 – 4 – 5 – 4 – 5 – 4 – 5 – 4 – 5

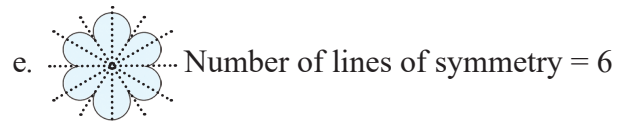
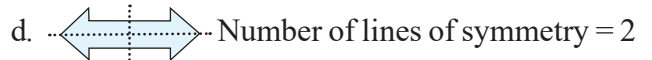
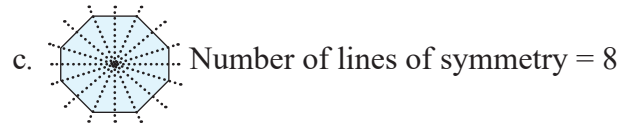
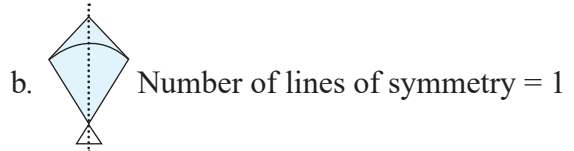
Thirteen horizontal stripes, alternating red and white as: Red – White – Red – White

Exercise 6A

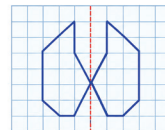
1. a. A pencil is shown with a vertical dashed line through its center, indicating it is symmetrical.



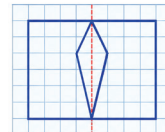
2. a. A regular pentagon is shown with five dashed lines of symmetry passing through its vertices and midpoints. Number of lines of symmetry = 5



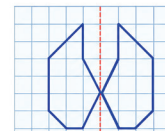
3. a.



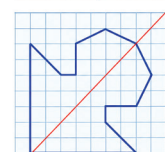
b.

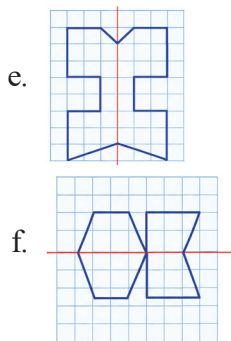


c.



d.

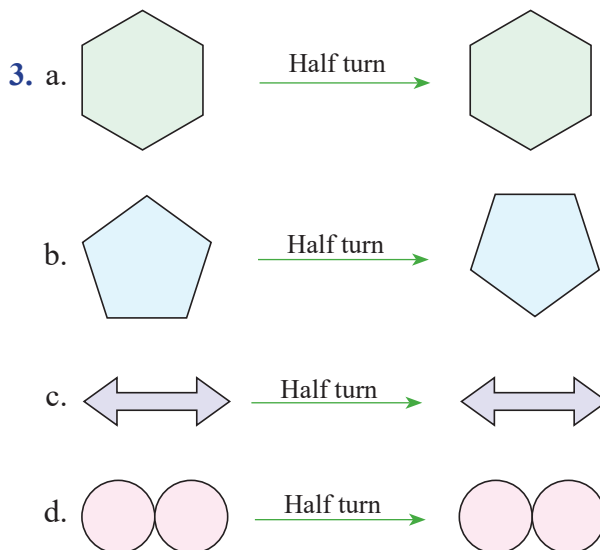




4. a. Capital letters of the English alphabet which have only a horizontal line of symmetry: B, C, D, E, K
- b. Capital letters of the English alphabet which have only a vertical line of symmetry: A, M, T, U, V, W, Y
- c. Capital letters of the English alphabet which have both horizontal and vertical lines of symmetry: H, I, O, X
5. 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 regular hexagon has six lines of symmetry.
- e. A parallelogram has no lines of symmetry.

Exercise 6B

1. a. The letter (B) is reversed across a line (horizontally). So, the second letter is flipped.
- b. The letter (F) is rotated through an angle, so the second letter is turn.
- c. The letter (J) is move one place to another place, so the second letter is slide.
- d. The letter (M) is reversed across a line (vertically), so the second letter is flipped.
- e. The letter (S) is rotated through an angle, so the second letter is turn.
- f. The letter (E) is reversed across a line (vertically), so the second letter is flipped.
2. a. After a $\frac{1}{4}$ turn, it does not look the same.
- b. After a $\frac{1}{4}$ turn, it looks the same.
- c. Same as part (b).
- d. Same as part (a).

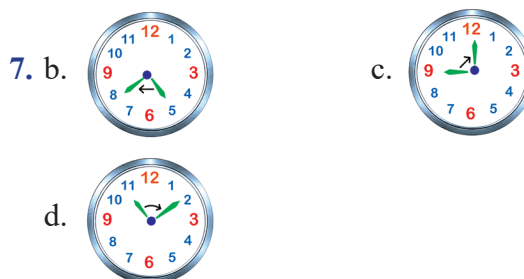


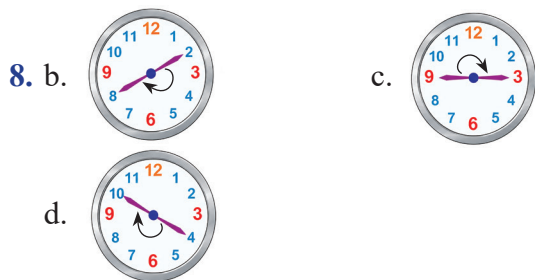
Part (a), (c) and (d) will look the same after half turn.

4. a. Capital letter that remain same after $\frac{1}{4}$ turn: O.
- b. Capital letters that remain same after $\frac{1}{2}$ turn: H, I, N, O, S, X, and Z.
- 5.

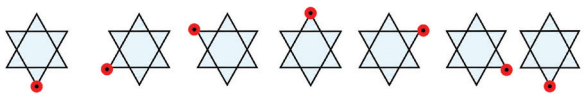
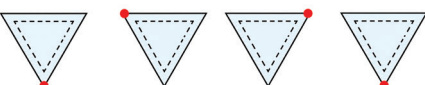
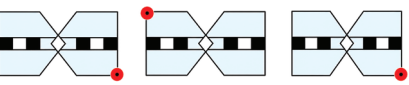
	Shape	$\frac{1}{4}$ turn	$\frac{1}{2}$ turn
a.			
b.			
c.			

6. a. $\frac{1}{4}$ turn
- b. $\frac{1}{4}$ turn



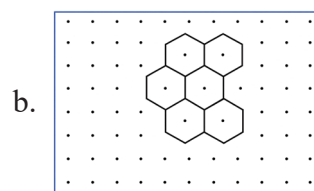
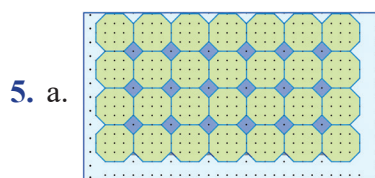


Exercise 6C

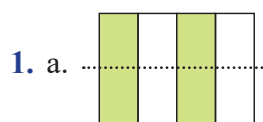
1. a. 
Thus, the order of rotational symmetry = 6
- b. 
Thus, the order of rotational symmetry = 2
- c. 
Thus, the order of rotational symmetry = 3
- d. 
Thus, the order of rotational symmetry = 2
- e. Same as above: The order of rotational symmetry = 1
- f. Same as above: The order of rotational symmetry = 3
- g. Same as above: The order of rotational symmetry = 2
- h. Same as above: The order of rotational symmetry = 5
- i. Same as above: The order of rotational symmetry = 4
- j. Same as above: The order of rotational symmetry = 1
- k. Same as above: The order of rotational symmetry = 6
- l. Same as above: The order of rotational symmetry = 8
2. a. 180° b. 180°
c. 180° d. 360°
e. 45° f. 90°

Exercise 6E

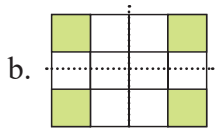
1. a. Row 1: 1 under (do not repeat), 3 over, 3 under, 3 over, ... (repeat).
Row 2: 3 over, 3 under, 3 over, 3 under, 3 over, ... (repeat).
Row 3: 2 over (do not repeat), 3 under, 3 over, 3 under, 3 over, ... (repeat).
Row 4: 2 under (do not repeat), 3 over, 3 under, 3 over, ... (repeat).
Row 5: 3 under, 3 over, 3 under, 3 over, ... (repeat).
Row 6: 1 over (do not repeat), 3 under, 3 over, 3 under, ... (repeat).
- b. Row 1: 1 under, 3 over, 1 under, 3 over, 1 under, ... (repeat).
Row 2: 2 under (do not repeat), 1 over, 3 under, 1 over, 3 under, ... (repeat).
Row 3: 1 over, 3 under, 1 over, 3 under, 1 over, ... (repeat).
Row 4: 2 over (do not repeat), 1 under, 3 over, 1 under, ... (repeat).
Row 5: 1 under, 3 over, 1 under, 3 over, 1 under, ... (repeat).
Row 6: 2 under (do not repeat), 1 over, 3 under, 1 over, 3 under, ... (repeat).



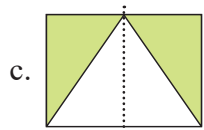
Learning Logs



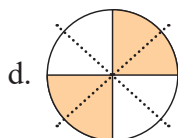
Number of lines of symmetry = 1



Number of lines of symmetry = 2

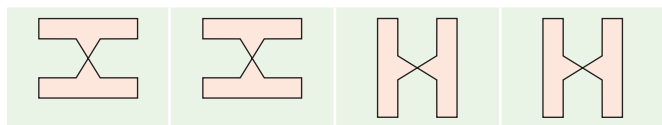


Number of lines of symmetry = 1



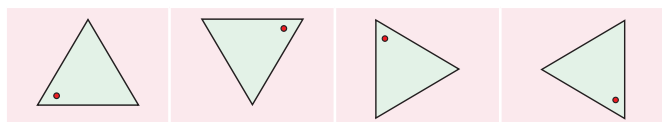
Number of lines of symmetry = 2

2. a.



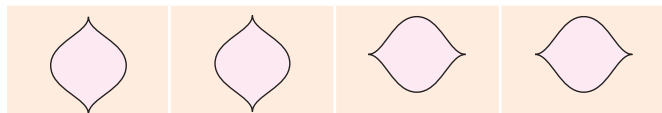
The order of rotational symmetry = 2

b.



The order of rotational symmetry = 1

c.



The order of rotational symmetry = 2

3. a. The umbrella rotates 90° clockwise at each step. Only step 4 does not follow this rule.
 b. The ice cream figures rotate 90° anticlockwise at each step. Only step 5 does not follow this rule.
 c. The pencils are arranged in a fixed alternating pattern. Only step 6 does not follow this rule.
 d. The numbers follow a pattern of subtracting 3 each time. The correct pattern is 45, 42, 39, 36, 33, 30. Therefore, only 35 does not follow the pattern.
 e. The numbers follow a rule where each term is obtained by adding increasing consecutive numbers. The correct pattern is obtained by:

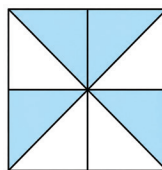
adding 1, then 2, then 3, then 4, then 5, and so on. The correct pattern is 15, 16, 18, 21, 25, 30. Therefore, 24 does not follow rule.

Mental Maths

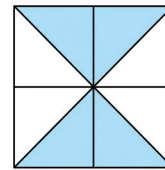
- Isosceles triangle has one line of symmetry.
Thus, the correct answer is (d).
- The number of lines of symmetry and the order of rotational symmetry of a regular hexagon are 6 and 6.
Thus, the correct answer is (c).
- The letter 'H' has both horizontal and vertical symmetry.
Thus, the correct answer is (d).
- Red, Blue, Yellow, Red, Blue, Yellow, ...
Thus, the correct answer is (a).
- If a shape has rotational symmetry of order 4, it means the shape looks the same 4 times during one full 360° rotations.
Thus, the correct answer is (c).
- From the given option only N has no line of symmetry.
Thus, the correct answer is (d).

HOTS

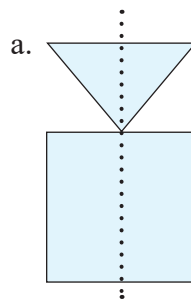
1. a.



b.

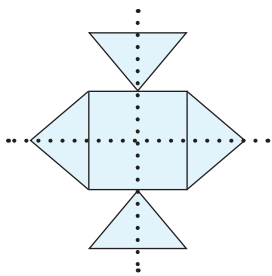


2. The figure is a square with two triangular parts attached to it: one triangle on the top and one triangle on the right. Since the two triangles are not placed symmetrically, the figure does not have reflection symmetry or rotational symmetry.



Remove the right triangle so that the figure has only reflection symmetry.

b.



Add matching triangles on all four sides of the square so that the figure has both rotational and reflection symmetry.

CHAPTER 7 : MEASUREMENT

Warm Up

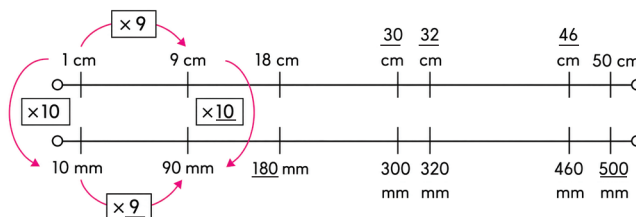
1. a. $2 \text{ m } 50 \text{ cm} = (2 \times 100 + 50) \text{ cm}$
 $\Rightarrow \text{Length (in cm)} = 250 \text{ cm}$
 $225 \text{ kg} = (225 \times 1000) \text{ g}$
 $\Rightarrow \text{Weight (in g)} = 225000 \text{ g}$
- b. $3 \text{ m } 65 \text{ cm} = (3 \times 100 + 65) \text{ cm}$
 $\Rightarrow \text{Length (in cm)} = 365 \text{ cm}$
 $248 \text{ kg} = (248 \times 1000) \text{ g}$
 $\Rightarrow \text{Weight (in g)} = 248000 \text{ g}$
- c. $1 \text{ m } 82 \text{ cm} = (1 \times 100 + 82) \text{ cm}$
 $\Rightarrow \text{Length (in cm)} = 182 \text{ cm}$
 $95 \text{ kg} = (95 \times 1000) \text{ g}$
 $\Rightarrow \text{Weight (in g)} = 95000 \text{ g}$
- d. $2 \text{ m } 12 \text{ cm} = (2 \times 100 + 12) \text{ cm}$
 $\Rightarrow \text{Length (in cm)} = 212 \text{ cm}$
 $76 \text{ kg} = (76 \times 1000) \text{ g}$
 $\Rightarrow \text{Weight (in g)} = 76000 \text{ g}$
- e. $3 \text{ m } 2 \text{ cm} = (3 \times 100 + 2) \text{ cm}$
 $\Rightarrow \text{Length (in cm)} = 302 \text{ cm}$
 $5400 \text{ kg} = (5400 \times 1000) \text{ g}$
 $\Rightarrow \text{Weight (in g)} = 5400000 \text{ g}$
- f. $1 \text{ m } 68 \text{ cm} = (1 \times 100 + 68) \text{ cm}$
 $\Rightarrow \text{Length (in cm)} = 168 \text{ cm}$
 $145 \text{ kg} = (145 \times 1000) \text{ g}$
 $\Rightarrow \text{Weight (in g)} = 145000 \text{ g}$
2. $1 \text{ L} = 1000 \text{ mL}$,
 Therefore, $15 \text{ L} = (15 \times 1000) \text{ mL} = 15000 \text{ mL}$

Exercise 7A

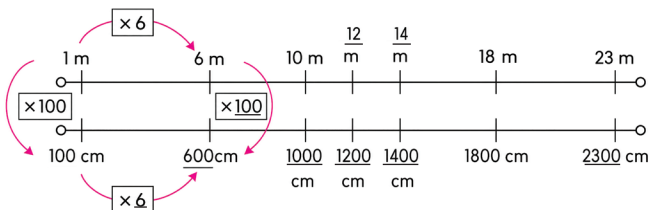
1. a. Height of the India Gate monument = 42 m
 b. Length of a mobile phone = 13 cm
 c. Length of elephant's trunk = 2 m
 d. Length of the Nile River = 6650 km

- e. Length of the Great Wall of China = 21196 km
 f. Length of a blue whale = 30 m
 g. Height of the Tehri Dam = 261 m

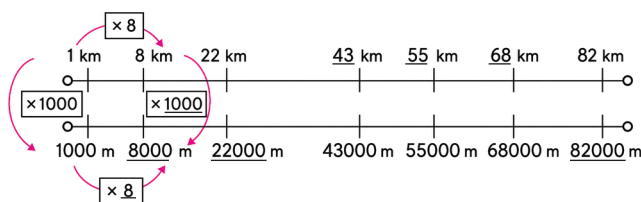
4. a. As we know, $1 \text{ cm} = 10 \text{ mm}$



- b. As we know, $1 \text{ m} = 100 \text{ cm}$



- c. As we know, $1 \text{ km} = 1000 \text{ m}$



5. a. $204 \text{ cm} = 200 \text{ cm} + 4 \text{ cm} = 2 \text{ m } 4 \text{ cm}$ (iii)
 b. $540 \text{ cm} = 500 \text{ cm} + 40 \text{ cm} = 5 \text{ m } 40 \text{ cm}$ (i)
 c. $750 \text{ cm} = 700 \text{ cm} + 50 \text{ cm} = 7 \text{ m } 50 \text{ cm}$
 $= 6 \text{ m } 150 \text{ cm}$ (v)
 d. $240 \text{ cm} = 200 \text{ cm} + 40 \text{ cm} = 2 \text{ m } 40 \text{ cm}$ (iv)
 e. $404 \text{ cm} = 400 \text{ cm} + 4 \text{ cm} = 4 \text{ m } 4 \text{ cm}$
 $= 2 \text{ m } 204 \text{ cm}$ (iii)
6. a. $8 \text{ km into hm} = 8 \times 10 = 80 \text{ hm}$
 b. $12 \text{ km into dm} = 12 \times 10 \times 10 \times 10 \times 10$
 $= 120000 \text{ dm}$
 c. $44 \text{ dam into mm} = 44 \times 10 \times 10 \times 10 \times 10$
 $= 440000 \text{ mm}$
 d. $25 \text{ dam into m} = 25 \times 10 = 250 \text{ m}$
 e. $57 \text{ dm into mm} = 57 \times 10 \times 10 = 5700 \text{ mm}$
 f. $42 \text{ m into cm} = 42 \times 100 = 4200 \text{ cm}$
 g. $300 \text{ cm into m} = 300 \div 10 \div 10 = 3 \text{ m}$
 h. $45000 \text{ m into km} = 45000 \div 1000$
 $= 45 \text{ km}$
 i. $30000 \text{ mm into dam}$
 $= 30000 \div 10 \div 10 \div 10 \div 10 = 3 \text{ dam}$
 j. $326 \text{ dam into m} = 326 \times 10 = 3260 \text{ m}$

$$\begin{aligned} \text{k. } 27000 \text{ cm into dam} &= 27000 \div 10 \div 10 \div 10 \\ &= 27 \text{ dam} \end{aligned}$$

$$\text{l. } 48 \text{ cm into mm} = 48 \times 10 = 480 \text{ mm}$$

$$\text{7. a. } 6 \text{ feet into inches} = 6 \times 12 = 72 \text{ inches}$$

$$\text{b. } 24 \text{ inches into mm} = 24 \times 25 \text{ mm} = 600 \text{ mm}$$

$$\begin{aligned} \text{c. } 3 \text{ feet } 3 \text{ inches into inches} &= (3 \times 12 + 3) \text{ inches} \\ &= 39 \text{ inches} \end{aligned}$$

$$\text{d. } 5 \text{ miles into km} = (5 \times 1600) \text{ m} = 8000 \text{ m}$$

Now, convert it into km,

$$8000 \div 1000 = 8 \text{ km}$$

$$\text{e. } 7 \text{ yards into feet} = (7 \times 3) \text{ feet} = 21 \text{ feet}$$

$$\begin{aligned} \text{f. } 4 \text{ yards into inches} &= (4 \times 3 \times 12) \text{ inches} \\ &= 144 \text{ inches} \end{aligned}$$

Exercise 7B

$$\text{1. a. } 64 \text{ m } 36 \text{ cm, } 16 \text{ m } 5 \text{ cm, and } 8 \text{ m } 31 \text{ cm}$$

m		cm	
6	4	3	6
1	6	0	5
+		8	3
8	8	7	2

Therefore, the answer is 88 m 72 cm.

$$\text{b. } 5 \text{ km } 248 \text{ m, } 11 \text{ km } 55 \text{ m and } 3 \text{ km } 6 \text{ m}$$

km		m	
5	2	4	8
1	1	0	5
+		3	0
1	9	3	0
		9	

Therefore, the answer is 19 km 309 m.

$$\text{2. a. } 48 \text{ cm } 3 \text{ mm from } 78 \text{ cm } 2 \text{ mm}$$

cm		mm
7	8	2
-		4
4	8	3
2	9	9

Therefore, the answer is 29 cm 9 mm.

$$\text{b. } 36 \text{ km } 50 \text{ m from } 104 \text{ km } 600 \text{ m}$$

km		m	
1	0	4	6
-		3	6
6	8	5	5
		0	

Therefore, the answer is 68 km 550 m.

$$\begin{aligned} \text{3. a. } 3 \text{ m } 60 \text{ cm} \times 5 &= 3 \text{ m} \times 5 + 60 \text{ cm} \times 5 \\ &= 3 \times 5 \text{ m} + 60 \times 5 \text{ cm} \\ &= 15 \text{ m} + 300 \text{ cm} \\ &= 18 \text{ m} \end{aligned}$$

Therefore, the answer is 18 m.

$$\begin{aligned} \text{b. } 23 \text{ km } 105 \text{ m} \times 12 &= 23 \text{ km} \times 12 + 105 \text{ m} \times 12 \\ &= 23 \times 12 \text{ km} + 105 \times 12 \text{ m} \\ &= 276 \text{ km} + 1260 \text{ m} \\ &= 277 \text{ km } 260 \text{ m} \end{aligned}$$

Therefore, the answer is 277 km 260 m.

$$\begin{aligned} \text{c. } 16 \text{ cm } 8 \text{ mm} \times 15 &= 16 \text{ cm} \times 15 + 8 \text{ mm} \times 15 \\ &= 16 \times 15 \text{ cm} + 8 \times 15 \text{ mm} \\ &= 240 \text{ cm} + 120 \text{ mm} \\ &= 252 \text{ cm} \end{aligned}$$

Therefore, the answer is 252 cm.

$$\text{4. a. } 48 \text{ cm } 8 \text{ mm} = 480 \text{ mm } 8 \text{ mm} = 488 \text{ mm}$$

Divide $488 \text{ mm} \div 4$

	1	2	2
4	4	8	8
-	4		
	0	8	
	-	8	
		0	8
		-	8
			0

$$488 \text{ mm} \div 4 = 122 \text{ mm}$$

$$\begin{aligned} \text{Now, } 122 \text{ mm} &= 120 \text{ mm} + 2 \text{ mm} \\ &= 12 \text{ cm } 2 \text{ mm} \end{aligned}$$

Therefore, the answer is 12 cm 2 mm.

$$\text{b. Same as above: } 14 \text{ m } 14 \text{ cm}$$

$$\text{c. Same as above: } 3 \text{ km } 334 \text{ m}$$

$$\text{5. a. Length of first piece of ribbon} = 3 \text{ m } 12 \text{ cm}$$

$$\text{Length of second piece of ribbon} = 85 \text{ cm}$$

Total length of both the ribbons

$$= 3 \text{ m } 12 \text{ cm} + 85 \text{ cm} = 3 \text{ m } 97 \text{ cm}$$

$$\text{b. Length of cloth Archana has} = 28 \text{ m}$$

Cloth used by her for making a curtain

$$= 5 \text{ m } 20 \text{ cm}$$

$$\text{Cloth left with her} = 28 \text{ m} - 5 \text{ m } 20 \text{ cm}$$

$$= 22 \text{ m } 80 \text{ cm}$$

$$\text{c. Length of one piece of ribbon} = 4 \text{ m } 20 \text{ cm}$$

Total length of 50 such ribbons

$$= (4 \text{ m } 20 \text{ cm}) \times 50 = 200 \text{ m } 1000 \text{ cm} = 210 \text{ m}$$



6. a. $5000 \text{ kg} = 5000 \div 100 = 50 \text{ quintal} = 50 \div 10$
 $= 5 \text{ tonnes}$
 b. $6850 \text{ kg} = 6000 \text{ kg} + 800 \text{ kg} + 50 \text{ kg}$
 $= 6 \text{ tonnes } 8 \text{ quintals } 50 \text{ kg}$
 c. $12 \text{ tonnes} = 12 \times 1000 = 12000 \text{ kg}$
 d. $8560 \text{ kg} = 8000 \text{ kg} + 500 \text{ kg} + 60 \text{ kg}$
 $= 80 \text{ quintals} + 5 \text{ quintals} + 60 \text{ kg}$
 $= 85 \text{ quintals } 60 \text{ kg}$

Exercise 7D

1. a.

	kg		g		
	2	4	3	4	5
		7	1	1	0
+		2	0	4	5
	3	3	5	0	0

Therefore, the answer is 33 kg and 500 g.

b.

	g		mg		
	1	8	2	5	0
	1	0	0	5	7
+		6	5	8	9
	3	4	8	9	6

Therefore, the answer is 34 g and 896 mg.

2. a.

	kg		g		
	1	5	3	7	0
-	0	4	3	0	9
	1	1	0	6	1

Therefore, the answer is 11 kg and 61 g.

b.

	g			mg		
	1	0	9	3	7	9
-		5	5	3	1	2
	5	4	0	6	7	

Therefore, the answer is 54 g and 67 mg.

3. a. $16 \text{ g } 50 \text{ mg} \times 30$

$$= 16 \text{ g} \times 30 + 50 \text{ mg} \times 30$$

$$= 480 \text{ g} + 1500 \text{ mg}$$

$$= 481 \text{ g} + 500 \text{ mg}$$

Therefore, the answer is 481 g and 500 mg.

b. $42 \text{ kg } 395 \text{ g} \times 10$

$$= 42 \text{ kg} \times 10 + 395 \text{ g} \times 10$$

$$= 420 \text{ kg} + 3950 \text{ g}$$

$$= 423 \text{ kg} + 950 \text{ g}$$

Therefore, the answer is 423 kg and 950 g.

$$\begin{array}{r} 1703 \\ 3 \overline{) 5109} \\ \underline{-3} \\ 21 \\ \underline{-21} \\ 009 \\ \underline{-9} \\ 0 \end{array}$$

Therefore, the answer is 1703 g.

$$\begin{array}{r} 17503 \\ 20 \overline{) 350060} \\ \underline{-20} \\ 150 \\ \underline{-140} \\ 100 \\ \underline{-100} \\ 06 \\ \underline{-0} \\ 60 \\ \underline{-60} \\ 0 \end{array}$$

Therefore, the answer is 17 kg 503 g.

$$\begin{array}{r} 7300 \\ 9 \overline{) 65700} \\ \underline{-63} \\ 27 \\ \underline{-27} \\ 00 \end{array}$$

Therefore the answer is 7 kg 300 g.

5. a. Weight of 1 pencil box = 275 g

$$\text{Weight of 28 pencil boxes} = 275 \times 28$$

$$= 7700 \text{ g}$$

$$\text{Since } 1000 \text{ g} = 1 \text{ kg, } 7700 \text{ g} = 7 \text{ kg } 700 \text{ g}$$

b. Apples bought by Sunaina = 3 kg 450 g

$$\text{Mangoes bought by Sunaina} = 2 \text{ kg } 500 \text{ g}$$

$$\text{Grapes bought by Sunaina} = 1 \text{ kg } 125 \text{ g}$$

$$\text{Total weight of the fruits bought by Sunaina}$$

$$= 3 \text{ kg } 450 \text{ g} + 2 \text{ kg } 500 \text{ g} + 1 \text{ kg } 125 \text{ g}$$

$$= 7 \text{ kg } 75 \text{ g}$$

c. Weight of Anand = 48 kg 250 g

$$\text{Weight of Sonam} = 48 \text{ kg } 250 \text{ g} - 8 \text{ kg } 125 \text{ g}$$

$$= 40 \text{ kg } 125 \text{ g}$$

d. Number of balls in a box = 36

$$\text{Total weight of balls} = 5580 \text{ g}$$

$$\text{Weight of one ball} = 5580 \div 36$$

$$= 155 \text{ g or } 155000 \text{ mg}$$

6. Weight of rice sack = 9 kg 750 g

$$\text{New weight of sack} = 3 \text{ kg } 750 \text{ g}$$

$$\text{Quantity of rice used} = 9 \text{ kg } 750 \text{ g} - 3 \text{ kg } 750 \text{ g}$$

$$= 6 \text{ kg}$$

7. Weight of box of books = 14 kg 750 g

$$\text{New weight of box of books} = 10 \text{ kg } 500 \text{ g}$$

$$\text{Weight of the books removed}$$

$$= 14 \text{ kg } 750 \text{ g} - 10 \text{ kg } 500 \text{ g} = 4 \text{ kg } 250 \text{ g}$$

8. Weight of supplies delivered by the truck in the morning = 17 kg 800 g



Weight of supplies delivered by the truck in the afternoon = 14 kg 370 g

Weight of supplies delivered by the truck in the evening = 23 kg 400 g

Total amount of supplies delivered
 = 17 kg 800 g + 14 kg 370 g + 23 kg 400 g
 = 55 kg 570 g

9. Restaurant uses onions on Monday = 15 kg 250 g

Restaurant uses onions on Tuesday = 23 kg 400 g

Restaurant uses onions on Wednesday = 5 kg 125 g

Total weight of onions used in 3 days
 = 15 kg 250 g + 23 kg 400 g + 5 kg 125 g
 = 43 kg 775 g

10. Rate of buying a newspaper = ₹12 per kg

Money, he paid for buying 16 kg 500 g of newspapers = ₹12 × 16.5 kg = ₹198

11.	Item	Weight	Cost per kg	Total cost
	Rice	12 kg 500 g	₹60	₹750
	Flour	7 kg 250 g	₹40	₹290
	Sugar	5 kg	₹45	₹225
	Chana dal	3 kg 600 g	₹70	₹252
	Besan	4 kg	₹60	₹240
	Jaggery	1 kg 400 g	₹50	₹70

Exercise 7E

- 5 L = 5 × 1000 = 5000 mL
 - 23 cL = 23 × 10 = 230 mL
 - 2 L 5 mL = 2 × 1000 + 5 = 2005 mL
 - 5 dL = 5 × 100 = 500 mL
- 3000 mL = 3000 ÷ 1000 = 3 L
 - 5648 mL = 5648 ÷ 1000 = 5 L 648 mL
 - 700 hL = 700 × 100 = 70000 L
 - 628 kL = 628 × 1000 = 628000 L
- 1340 hL = 1340 × 10 = 13400 daL
 - 6000 L = 6000 ÷ 1000 = 6 kL
 - 3 L 523 mL = 3 × 1000 + 523 = 3523 mL
 - 2 dL 5 cL = 2 × 100 + 5 × 10 = 250 mL
- 2450 mL = 2450 ÷ 1000 = 2 L 450 mL
 - 3765 mL = 3765 ÷ 1000 = 3 L 765 mL
 - 3 L 92 mL = 3 × 1000 + 92 = 3092 mL
 - 38 L = 38 × 1000 = 38000 mL

Exercise 7F

$$\begin{array}{r}
 \text{kL} \quad \text{g} \\
 \begin{array}{cccc}
 6 & 2 & 9 & 2 \\
 7 & 3 & 8 & 5
 \end{array} \\
 + \\
 \hline
 1 \quad 3 \quad 6 \quad 7 \quad 7
 \end{array}$$

Therefore, the answer is 13 kL 677 L.

$$\begin{array}{r}
 \text{L} \quad \text{mL} \\
 \begin{array}{cccc}
 3 & 4 & 8 & 0 \\
 1 & 8 & 2 & 0 & 0
 \end{array} \\
 + \\
 \hline
 2 \quad 2 \quad 6 \quad 3 \quad 5
 \end{array}$$

Therefore, the answer is 22 L 635 mL.

$$\begin{array}{r}
 \text{L} \quad \text{mL} \\
 \begin{array}{cccc}
 9 & 4 & 5 & 5 \\
 4 & 8 & 0 & 0
 \end{array} \\
 - \\
 \hline
 4 \quad 6 \quad 5 \quad 5
 \end{array}$$

Therefore, the answer is 4 L 655 mL.

$$\begin{array}{r}
 \text{kL} \quad \text{L} \\
 \begin{array}{cccc}
 2 & 0 & 0 & 0 & 0 \\
 1 & 2 & 7 & 5 & 0
 \end{array} \\
 - \\
 \hline
 7 \quad 2 \quad 5 \quad 0
 \end{array}$$

Therefore, the answer is 7 kL 250 L.

- 5 L 375 mL × 38
 = 5 L × 38 + 375 mL × 38
 = 190 L + 14250 mL
 = 204 L 250 mL
 Therefore, the answer is 204 L 250 mL.
 - 4 kL 31 L × 24
 = 4 kL × 24 + 31 L × 24
 = 96 kL + 744 L
 Therefore the answer is 96 kL 744 L.
- 47 L 20 mL ÷ 10
 = (47000 + 20) mL ÷ 10
 = 47020 ÷ 10
 = 4702 mL = 4 L 702 mL
 - 26 kL 480 L ÷ 16
 = (26000 + 480) ÷ 16
 = 26480 ÷ 16 = 1655 L = 1 kL 655 L
- 1 L + 500 mL + 100 mL = 1 L 600 mL
 - 1 L + 500 mL = 1 L 500 mL
 - 500 mL + 100 mL + 100 mL = 700 mL
 - 1 L + 1 L + 500 mL = 2 L 500 mL

6. a. Capacity of the first bucket = 18 L 350 mL
Capacity of the second bucket = 16 L 755 mL
Total capacity of both buckets = 18 L 350 mL + 16 L 755 mL

$$\begin{array}{r} 18 \text{ L } 350 \text{ mL} \\ + 16 \text{ L } 755 \text{ mL} \\ \hline 35 \text{ L } 105 \text{ mL} \end{array}$$

Therefore, there are 35 L 105 mL of water in both the buckets.

- (b) Oil bought by mother = 5 L 500 mL
Oil used by her mother = 4 L 355 mL
Convert both quantities into millilitres:
5 L 500 mL = 5500 mL
4 L 355 mL = 4355 mL
Oil left at the end of month
= 5500 mL – 4355 mL = 1145 mL
Therefore, 1145 mL of oil is left at the end of the month.
- (c) Quantity of cold drink in one bottle = 2 L 250 mL
Convert it into millilitres:
2 L 250 mL = 2250 mL
Quantity of cold drink in 16 bottles
= 2250 × 16 = 36,000 mL
Convert into litres:
36,000 mL = 36 L
Therefore, the quantity of cold drink in 16 bottles is 36 L.
- (d) Capacity of 25 glasses = 8 L 225 mL
Convert into millilitres.
8 L 225 mL = 8225 mL
Capacity of 1 glass = 8225 ÷ 25 = 329 mL
Capacity of 5 glasses = 329 × 5 = 1645 mL
Convert into litres and millilitres:
1645 mL = 1 L 645 mL
Therefore, the capacity of 5 glasses is 1 L 645 mL.

7. Milk sold in the first 3 days = 46 L 200 mL
Milk sold in the next 2 days = 53 L 195 mL
Total quantity of milk sold in 5 days
= 46 L 200 mL + 53 L 195 mL

$$\begin{array}{r} 46 \text{ L } 200 \text{ mL} \\ + 53 \text{ L } 195 \text{ mL} \\ \hline 99 \text{ L } 395 \text{ mL} \end{array}$$

Therefore, the milkman sold 99 L 395 mL of milk in 5 days.

8. Mustard oil bought by Sara = 500 mL
Coconut oil bought by Sara = 250 mL
Refined oil bought by Sara = 2 L = 2000 mL
Total quantity of oil she bought
= 500 mL + 250 mL + 2000 mL = 2750 mL
Convert into litres and millilitres:
2750 mL = 2 L 750 mL
Therefore, the total quantity of the three kinds of oil is 2 L 750 mL.
9. Total quantity of milk = 35 L
Convert into millilitres.
35 L = 35,000 mL
Capacity of one packet = 350 mL
Number of packets = 35,000 ÷ 350 = 100
Therefore, 100 packets of milk can be packed.
10. Capacity of the swimming pool = 200 kL
Water already in the pool = 115 kL 730 L
Capacity of water needed fill the pool
= 500 kL – 115 kL 730 L
Borrow 1 kL = 1000 L.

$$\begin{array}{r} 199 \text{ kL } 1000 \text{ L} \\ - 115 \text{ kL } 730 \text{ L} \\ \hline 84 \text{ kL } 270 \text{ L} \end{array}$$

Therefore, 84 kL 270 L more water is needed to fill the pool.

11. a. Milk given by one cow in a day = 22 L 350 mL
Convert into millilitres:
22 L 350 mL = 22,350 mL
Milk given by 20 cows = 22,350 × 20
= 447,000 mL
Convert into litres: 447,000 mL = 447 L
Therefore, the milkman gets 447 L of milk in one day.
- b. Total milk obtained = 447 L
Convert into millilitres: 447 L = 447,000 mL
Capacity of one bottle = 500 mL
Number of bottles = 447,000 ÷ 500 = 894
Therefore, 894 bottles of 500 mL each will be required to fill all the milk.



12.

Vehicle	Number of vehicles	Quantity of fuel in each value (in L)	Total Quantity (in L)
2-wheeler	25	6	150
3-wheeler	14	12	168
4-wheeler	10	40	400
Bus	8	250	2000
Truck	5	500	2500

- a. Total sales of fuel on that day = $150 + 168 + 400 + 2000 + 2500 = 5218$ L
 b. Total collection if the rate of fuel is ₹96
 = $5218 \times ₹96 = ₹5,00,928$

Learning Logs

1. a. Millimetre(mm) is the smallest unit of measuring length.
 b. Gram(g) is the base unit of weight.
 c. Kilolitre(kL) is the greatest unit of measuring capacity.
 d. To convert a smaller unit into a bigger unit, we divide.
 e. To convert a bigger unit into a smaller unit, we multiply.
2. a. We know that, $1 \text{ km} = 1000 \text{ m}$
 Therefore, $6 \text{ km} = 6 \times 1000 \text{ m} = 6000 \text{ m}$
 $6 \text{ km} = \underline{6000} \text{ m}$.
 b. We know that, $1000 \text{ m} = 1 \text{ km}$
 Therefore, $18000 \text{ m} = 18000 \div 1000 = 18 \text{ km}$
 $18000 \text{ m} = \underline{18} \text{ km}$
 c. We know that, $1000 \text{ m} = 1 \text{ km}$
 Therefore, $2342 \text{ m} = 2000 \text{ m} + 342 \text{ m}$
 $\phantom{\text{Therefore, }} = 2 \text{ km } 342 \text{ m}$
 $2342 \text{ m} = \underline{2} \text{ km } \underline{342} \text{ m}$
 d. We know that, $1 \text{ m} = 100 \text{ cm}$
 Therefore, $42 \text{ m} = 42 \times 100 \text{ cm} = 4200 \text{ cm}$
 $42 \text{ m} = \underline{4200} \text{ cm}$
 e. We know that, $10 \text{ mm} = 1 \text{ cm}$
 Therefore, $520 \text{ mm} = 520 \div 10 = 52 \text{ cm}$
 $520 \text{ mm} = \underline{52} \text{ cm}$
 f. We know that, $1 \text{ m} = 100 \text{ cm}$
 Therefore, $123 \text{ cm} = 1 \text{ m } 23 \text{ cm}$
 $123 \text{ cm} = \underline{1} \text{ m } \underline{23} \text{ cm}$
 g. We know that, $1 \text{ m} = 1000 \text{ mm}$
 Therefore, $45 \text{ m} = 45 \times 1000 \text{ mm} = 45000 \text{ mm}$
 $45 \text{ m} = \underline{45000} \text{ mm}$

- h. We know that, $1 \text{ km} = 1000 \text{ m}$
 Therefore, $4 \text{ km} = 4 \times 1000 \text{ m} = 4000 \text{ m}$
 Now add 800 m : $4000 \text{ m} + 800 \text{ m} = 4800 \text{ m}$
 $4 \text{ km } 800 \text{ m} = \underline{4800} \text{ m}$

- i. We know that, $1 \text{ m} = 10 \text{ dm}$
 Therefore, $4 \text{ m} = 4 \times 10 \text{ dm} = 40 \text{ dm}$
 Now add 9 dm : $40 \text{ dm} + 9 \text{ dm} = 49 \text{ dm}$
 $4 \text{ m } 9 \text{ dm} = \underline{49} \text{ dm}$

3. a. We know that, $1000 \text{ g} = 1 \text{ kg}$
 Therefore, $9000 \text{ g} = 9000 \div 1000 = 9 \text{ kg}$
 $9000 \text{ g} = \underline{9} \text{ kg}$
 b. We know that, $1000 \text{ g} = 1 \text{ kg}$
 Therefore, $3252 \text{ g} = 3000 \text{ g} + 252 \text{ g}$
 $\phantom{\text{Therefore, }} = 3 \text{ kg } 252 \text{ g}$
 $3252 \text{ g} = \underline{3} \text{ kg } \underline{252} \text{ g}$
 c. We know that, $1 \text{ g} = 1000 \text{ mg}$
 Therefore, $43 \text{ g} = 43 \times 1000 = 43000 \text{ mg}$
 $43 \text{ g} = \underline{43000} \text{ mg}$
 d. We know that, $1000 \text{ mg} = 1 \text{ g}$
 Therefore, $44000 \text{ mg} = 44000 \div 1000 = 44 \text{ g}$
 $44000 \text{ mg} = \underline{44} \text{ g}$
 e. We know that, $1 \text{ kg} = 1000 \text{ g}$
 Therefore, $5 \text{ kg} = 5000 \text{ g}$
 $5000 \text{ g} + 360 \text{ g} = 5360 \text{ g}$
 $5 \text{ kg } 360 \text{ g} = \underline{5360} \text{ g}$
 f. We know that, $1 \text{ g} = 1000 \text{ mg}$
 Therefore, $7 \text{ g} = 7000 \text{ mg}$
 $7000 \text{ mg} + 95 \text{ mg} = 7095 \text{ mg}$
 $7 \text{ g } 95 \text{ mg} = \underline{7095} \text{ mg}$
4. a. We know that, $1 \text{ L} = 1000 \text{ mL}$
 Therefore, $8 \text{ L} = 8 \times 1000 = 8000 \text{ mL}$
 $8 \text{ L} = \underline{8000} \text{ mL}$
 b. We know that, $1 \text{ L} = 1000 \text{ mL}$
 Therefore, $2 \text{ L} = 2000 \text{ mL}$
 $2000 \text{ mL} + 17 \text{ mL} = 2017 \text{ mL}$
 $2 \text{ L } 17 \text{ mL} = \underline{2017} \text{ mL}$
 c. We know that, $1000 \text{ mL} = 1 \text{ L}$
 Therefore, $2740 \text{ mL} = 2000 \text{ mL} + 740 \text{ mL}$
 $\phantom{\text{Therefore, }} = 2 \text{ L } 740 \text{ mL}$
 $2740 \text{ mL} = \underline{2} \text{ L } \underline{740} \text{ mL}$
 d. We know that, $1 \text{ L} = 1000 \text{ mL}$
 Therefore, $2 \text{ L} = 2000 \text{ mL}$
 $2000 \text{ mL} + 400 \text{ mL} = 2400 \text{ mL}$
 $2 \text{ L } 400 \text{ mL} = \underline{2400} \text{ mL}$

e. We know that, $1 \text{ L} = 1000 \text{ mL}$
 Therefore, $3 \text{ L} = 3000 \text{ mL}$
 $3000 \text{ mL} + 155 \text{ mL} = 3155 \text{ mL}$
 $3 \text{ L } 155 \text{ mL} = \underline{3155 \text{ mL}}$

f. We know that, $1 \text{ kL} = 1000 \text{ L}$
 Therefore, $3 \text{ kL} = 3000 \text{ L}$
 $3000 \text{ L} + 60 \text{ L} = 3060 \text{ L}$
 $3 \text{ kL } 60 \text{ L} = \underline{3060 \text{ L}}$

5. a. Weight of the first basket = 15 kg 250 g
 Weight of the second basket = 8 kg 750 g
 Total, weight of both the baskets
 = 15 kg 250 g + 8 kg 750 g

$$\begin{array}{r} 15 \text{ kg } 250 \text{ g} \\ + 8 \text{ kg } 750 \text{ g} \\ \hline 24 \text{ kg } 0 \text{ g} \end{array}$$

b. Weight of one box = 25 kg 250 g
 Convert into grams: $25 \text{ kg } 250 \text{ g} = 25250 \text{ g}$
 Weight of 12 boxes = $25250 \times 12 = 303000 \text{ g}$
 Convert into kilograms: $303000 \text{ g} = 303 \text{ kg}$

c. Juice in one bottle = 550 mL
 Juice in 30 bottles = $550 \times 30 = 16500 \text{ mL}$
 Convert into litres: $16500 \text{ mL} = 16 \text{ L } 500 \text{ mL}$

d. Total medicine = 8 L 200 mL
 Convert into millilitres: $8 \text{ L } 200 \text{ mL} = 8200 \text{ mL}$
 Capacity of one bottle = $8200 \div 50 = 164 \text{ mL}$

e. Total distance = 500 km
 Distance covered in the first stretch
 = 262 km 575 m
 Distance covered in the second stretch
 = 155 km 248 m
 Total distance covered =

$$\begin{array}{r} 262 \text{ km } 575 \text{ m} \\ + 155 \text{ km } 248 \text{ m} \\ \hline 417 \text{ km } 823 \text{ m} \end{array}$$

(Borrow 1 km = 1000 m.)
 Distance left =

$$\begin{array}{r} 499 \text{ km } 1000 \text{ m} \\ - 417 \text{ km } 823 \text{ m} \\ \hline 82 \text{ km } 177 \text{ m} \end{array}$$

Mental Maths

1. a. $1 \text{ kg } 600 \text{ g} = 1600 \text{ g}$
 $1 \text{ kg } 600 \text{ g} \leq 1700 \text{ g}$

b. $1 \text{ L } 600 \text{ mL} = 1600 \text{ mL}$
 $1 \text{ L } 60 \text{ mL} = 1060 \text{ mL}$
 $1 \text{ L } 600 \text{ mL} \geq 1060 \text{ mL}$

c. $10 \text{ km } 35 \text{ m} = 10,000 \text{ m} + 35 \text{ m} = 10,035 \text{ m}$
 $10 \text{ km } 35 \text{ m} \leq 10,035 \text{ m}$

d. $1 \text{ m } 60 \text{ cm} = 160 \text{ cm}$
 $2 \text{ m } 500 \text{ mm} = 2 \text{ m } 50 \text{ cm} = 250 \text{ cm}$
 $1 \text{ m } 60 \text{ cm} \leq 2 \text{ m } 50 \text{ cm}$

e. $5 \text{ g } 50 \text{ mg} = 5050 \text{ mg}$
 $4 \text{ g } 500 \text{ mg} = 4500 \text{ mg}$
 $5 \text{ g } 50 \text{ mg} \geq 4 \text{ g } 500 \text{ mg}$

f. $7000 \text{ mg} = 7 \text{ g}$
 $900 \text{ g} + 7 \text{ g} = 907 \text{ g}$
 $7 \text{ g} + 900 \text{ g} = 907 \text{ g}$
 $900 \text{ g} + 7000 \text{ mg} \leq 7 \text{ g} + 900 \text{ g}$

g. $5 \text{ kL} = 5000 \text{ L}$
 $5000 \text{ L} - 5 \text{ L} = 4995 \text{ L}$
 $5000 \text{ L} - 50 \text{ L} = 4950 \text{ L}$
 $5 \text{ kL} - 5 \text{ L} \geq 5000 \text{ L} - 50 \text{ L}$

2. a. The smallest unit to measure weight is milligram (mg).
 b. To convert hm into dm, we multiply hm by 1000.
 c. To convert cL into daL, we divide cL by 1000.

HOTS

1. Rate of water filled by the first pipe
 = 2 L 500 mL per second
 Rate of water filled by the second pipe
 = 3 L 200 mL per second
 Rate of water thrown out by the third pipe
 = 100 mL per second
 Total water entering the tank every second
 $2 \text{ L } 500 \text{ mL} + 3 \text{ L } 200 \text{ mL} = 5 \text{ L } 700 \text{ mL}$ per second
 Total water flowing out every seconds
 $= 5 \text{ L } 700 \text{ mL} - 100 \text{ mL} = 5 \text{ L } 600 \text{ mL}$ per second
 So, the net filling rate = 5 L 600 mL per second.
 Time taken to fill the tank = 3 hours
 Convert 3 hours into seconds:
 $3 \times 60 \times 60 = 10,800$ seconds
 Capacity of the tank
 = Water filled in 1 second $\times$ Number of seconds
 $= 5 \text{ L } 600 \text{ mL} \times 10,800$



Convert 5 L 600 mL into millilitres:

$$5 \text{ L } 600 \text{ mL} = 5600 \text{ mL}$$

$$5600 \times 10,000 = 60,480,000 \text{ mL}$$

$$\text{Convert into litres: } 60,480,000 \text{ mL} = 60,480 \text{ L}$$

2. Follow these steps:

Step 1: Fill the 5-litre bowl.

Water in the bowls:

- 5 L bowl = 5 L
- 4 L bowl = 0 L

Step 2: Pour water from the 5-litre bowl into the 4-litre bowl until it is full.

Now,

- 4 L bowl = 4 L
- 5 L bowl = 1 L

Step 3: Empty the 4-litre bowl.

Now,

- 4 L bowl = 0 L
- 5 L bowl = 1 L

Step 4: Pour the remaining 1 litre from the 5-litre bowl into the 4-litre bowl.

Now,

- 4 L bowl = 1 L
- 5 L bowl = 0 L

Step 5: Fill the 5-litre bowl again.

Now,

- 5 L bowl = 5 L
- 4 L bowl = 1 L

Step 6: Pour water from the 5-litre bowl into the 4-litre bowl until the 4-litre bowl is full.

Since the 4-litre bowl already contains 1 litre, it needs only 3 litres more to become full.

Therefore, 3 litres are poured from the 5-litre bowl, leaving 2 litres in it.

CHAPTER 8 : PERIMETER AND AREA

Warm Up

1. a. $6 + 6 + 7 + 7 = 26$ units
b. $5 + 5 + 7 + 7 = 24$ units
c. $6 + 6 + 7 + 7 = 26$ units
d. $6 + 6 + 7 + 7 = 26$ units
e. $7 + 7 + 13 + 13 = 40$ units

From the above data, we can say that poster (e) has the largest perimeter.

2. Yes, posters (a), (c), and (d) have a similar area of 42 sq. units
3. a. $7 \text{ units} \times 6 \text{ units} = 42 \text{ sq. units}$
b. $7 \text{ units} \times 5 \text{ units} = 35 \text{ sq. units}$
c. $7 \text{ units} \times 6 \text{ units} = 42 \text{ sq. units}$
d. $7 \text{ units} \times 6 \text{ units} = 42 \text{ sq. units}$
e. $7 \text{ units} \times 13 \text{ units} = 91 \text{ sq. units}$

Exercise 8A

1. a. Perimeter of the given shape = Sum of the length of all boundaries
 $= 3 + 6 + 3 + 2 + 4 + 2 + 4 + 2 = 26$ units
b. Perimeter of the given shape = Sum of the lengths of all boundaries
 $= 3 + 6 + 3 + 2 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 4 + 2 = 28$ units
c. Perimeter of the given shape = Sum of the lengths of all boundaries
 $= 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 24$ units
d. Perimeter of the given shape = Sum of the lengths of all boundaries
 $= 3 + 5 + 3 + 1 + 2 + 3 + 2 + 1 = 20$ units
e. Perimeter of the given shape = Sum of the lengths of all boundaries
 $= 1 + 1 + 4 + 1 + 4 + 1 + 1 + 3 = 16$ units
Therefore, shape (b) has largest perimeter.
2. a. Perimeter of rectangle $= 2(l + b)$
 $= 2(12 \text{ cm} + 8 \text{ cm})$
 $= 2 \times 20 \text{ cm}$
 $= 40 \text{ cm}$
b. Perimeter of square $= 4 \times \text{side}$
 $= 4 \times 80 \text{ cm}$
 $= 320 \text{ cm}$
c. Perimeter of rectangle $= 2(l + b)$
 $= 2(164 \text{ cm} + 136 \text{ cm})$
 $= 2 \times 300 \text{ cm}$
 $= 600 \text{ cm}$
d. Perimeter of triangle = sum of all three sides
 $= 10 \text{ cm} + 10 \text{ cm} + 12 \text{ cm}$
 $= 32 \text{ cm}$
e. Perimeter of rectangle $= 2(l + b)$
 $= 2(70 + 164)$
 $= 2 \times 234$
 $= 468 \text{ cm}$

f. Perimeter of square = $4 \times \text{side}$

$$= 4 \times 30 \text{ cm}$$

$$= 120 \text{ cm}$$

3. a. i. Perimeter of rectangle = $2(l + b)$

$$= 2(8 + 6)$$

$$= 2 \times 14$$

$$= 28 \text{ cm}$$

ii. Perimeter of rectangle = $2(l + b)$

$$= 2(9 + 8)$$

$$= 2 \times 17$$

$$= 34 \text{ cm}$$

iii. Let the breadth of the rectangle be x cm.

$$\text{Perimeter of rectangle} = 2(l + b)$$

$$\Rightarrow 24 = 2(7 + x)$$

$$\Rightarrow 12 = 7 + x$$

$$\Rightarrow x = 5 \text{ cm}$$

Therefore, the breadth of the rectangle is 5 cm.

iv. Let the length of the rectangle be x cm.

$$\text{Perimeter of rectangle} = 2(l + b)$$

$$\Rightarrow 60 = 2(x + 12)$$

$$\Rightarrow 30 = x + 12$$

$$\Rightarrow x = 18 \text{ cm}$$

Therefore, the length of the rectangle is 18 cm.

b. i. Perimeter of square = $4 \times \text{side}$

$$= 4 \times 8 = 32 \text{ cm}$$

ii. Let the side of square be x cm.

$$\text{Perimeter of square} = 4 \times \text{side}$$

$$\Rightarrow 40 = 4 \times x$$

$$\Rightarrow x = 10 \text{ cm}$$

Therefore, the side of the square is 10 cm.

iii. Perimeter of square = $4 \times \text{side}$

$$= 4 \times 15 = 60 \text{ cm}$$

iv. Let the side of the square be x cm.

$$\text{Perimeter of square} = 4 \times \text{side}$$

$$\Rightarrow 20 = 4 \times x$$

$$\Rightarrow x = 5 \text{ cm}$$

Therefore, the side of the square is 5 cm.

4. a. Sides of the triangle = 8 cm, 7 cm and 4 cm

$$\text{Perimeter of a triangle} = \text{Sum of all its sides}$$

$$= 8 \text{ cm} + 7 \text{ cm} + 4 \text{ cm}$$

$$= 19 \text{ cm}$$

Therefore, the perimeter of the triangle is 19 cm.

b. Sides of the triangle = 12 cm, 15 cm and 24 cm

$$\text{Perimeter of a triangle} = \text{Sum of all its sides}$$

$$= 12 \text{ cm} + 15 \text{ cm} + 24 \text{ cm}$$

$$= 51 \text{ cm}$$

Therefore, the perimeter of the triangle is 51 cm.

c. Perimeter of a triangle = Sum of all its sides

$$= 14 \text{ cm} + 18 \text{ cm} + 30 \text{ cm}$$

$$= 62 \text{ cm}$$

Therefore, the perimeter of the triangle is 62 cm.

d. Sides of the triangle = 6 m, 7 m and 9 m

$$\text{Perimeter of a triangle} = \text{Sum of all its sides}$$

$$= 6 \text{ m} + 7 \text{ m} + 9 \text{ m}$$

$$= 22 \text{ m}$$

Therefore, the perimeter of the triangle is 22 m.

5. Length of the room = 10 m

$$\text{Breadth of the room} = 8 \text{ m}$$

$$\text{Perimeter of a rectangle} = 2 \times (\text{Length} + \text{Breadth})$$

$$= 2 \times (10 + 8)$$

$$= 2 \times 18$$

$$= 36 \text{ m}$$

Therefore, the perimeter of the rectangular room is 36 m.

6. For the rectangular park:

$$\text{Length} = 80 \text{ m}$$

$$\text{Breadth} = 60 \text{ m}$$

$$\text{Perimeter of a rectangle} = 2 \times (\text{Length} + \text{Breadth})$$

$$= 2 \times (80 + 60)$$

$$= 2 \times 140$$

$$= 280 \text{ m}$$

For the square park:

$$\text{Side} = 100 \text{ m}$$

$$\text{Perimeter of a square} = 4 \times \text{Side}$$

$$= 4 \times 100$$

$$= 400 \text{ m}$$

Difference between the perimeters:

$$= 400 \text{ m} - 280 \text{ m}$$

$$= 120 \text{ m}$$

Therefore, the perimeters of the rectangular park and square park are 280 m and 400 m respectively and square park has greater perimeter by 120 m.

7. Perimeter of the rectangular garden = 150 m

$$\text{Breadth of the garden} = 30 \text{ m}$$



Perimeter of a rectangle = $2 \times (\text{Length} + \text{Breadth})$

$$\Rightarrow 150 = 2 \times (\text{Length} + 30)$$

$$\Rightarrow 150 \div 2 = \text{Length} + 30$$

$$\Rightarrow 75 = \text{Length} + 30$$

$$\Rightarrow \text{Length} = 75 - 30 = 45 \text{ m}$$

So, the length of the rectangular garden is 45 m.

8. Length of the plot = 85 m

Breadth of the plot = 60 m

$$\begin{aligned}\text{Perimeter of the plot} &= 2 \times (\text{Length} + \text{Breadth}) \\ &= 2 \times (85 + 60) \\ &= 2 \times 145 \\ &= 290 \text{ m}\end{aligned}$$

Rate of constructing the wall = ₹125 per metre

$$\text{Total cost} = 290 \times ₹125 = ₹36,250$$

So, the total cost of constructing the wall is ₹36,250.

9. Side of the square field = 102 m

$$\begin{aligned}\text{Perimeter of the square} &= 4 \times \text{Side} = 4 \times 102 \\ &= 408 \text{ m}\end{aligned}$$

Distance covered in one round = 408 m

$$\begin{aligned}\text{Distance covered in four rounds} &= 4 \times 408 \\ &= 1632 \text{ m}\end{aligned}$$

So, the total distance Ravi runs is 1632 m.

10. Perimeter of the square = 308 m

Perimeter of a square = $4 \times \text{Side}$

$$\Rightarrow 308 = 4 \times \text{Side}$$

$$\Rightarrow \text{Side} = 308 \div 4 = 77 \text{ m}$$

So, the length of each side of the square field is 77 m.

11. Length of the first side = 11 cm

Length of the second side = 11 cm

Length of the third side = 16 cm

$$\begin{aligned}\text{Perimeter of a triangle} &= \text{Sum of all its sides} \\ &= 11 \text{ cm} + 11 \text{ cm} + 16 \text{ cm} \\ &= 38 \text{ cm}\end{aligned}$$

So, the perimeter of the triangle is 38 cm.

12. Side of the equilateral triangle = 18 cm

$$\begin{aligned}\text{Perimeter of an equilateral triangle} &= 3 \times \text{Side} \\ &= 3 \times 18 \\ &= 54 \text{ cm}\end{aligned}$$

So, the perimeter of the equilateral triangle is 54 cm.

13. Perimeter of the triangle = 60 cm

Length of the first side = 15 cm

Length of the second side = 18 cm

Let the length of the third side be x cm.

Perimeter of a triangle = Sum of all its sides

$$\Rightarrow 60 = 15 + 18 + x$$

$$\Rightarrow 60 = 33 + x$$

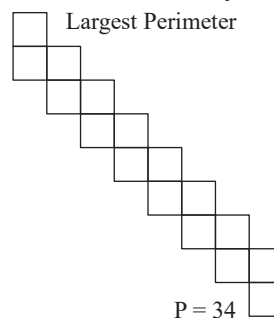
$$\Rightarrow x = 60 - 33$$

$$\Rightarrow = 27 \text{ cm}$$

So, the length of the third side is 27 cm.

14. Each paving stone is a $1 \text{ m} \times 1 \text{ m}$ square.

To get the longest perimeter, arrange all 16 stones as shown in the given figure. This arrangement has the maximum outer boundary.

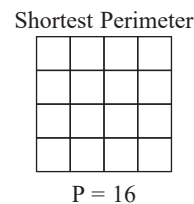


Each side = 1 m

(except 2 sides whose length is 2 m)

$$\text{Perimeter} = 30 \times 1 + 2 \times 2 = 34 \text{ m}$$

To get the shortest perimeter, arrange the 16 stones in a 4×4 square. This arrangement has the minimum outer boundary.



Side of the square = 4 m

$$\text{Perimeter} = 4 \times 4 = 16 \text{ m}$$

Longest perimeter: Arrange the 16 stones as shown in the figure. Perimeter = 34 m

Shortest perimeter: Arrange the 16 stones in a 4×4 square. Perimeter = 16 m

Exercise 8B

- Area of the shape = total number of squares in the figure = 3 sq. units
- Area of the shape = total number of squares in the figure = 6 sq. units
- Area of the shape = total number of squares in the figure = 9 sq. units

- d. Area of the shape = total number of squares in the figure = 15 sq. units
2. a. Area of the shape = total number of shaded squares in the figure = 31
- b. Area of the shape = total number of shaded squares in the figure.
 Number of complete shaded squares = 13
 Number of half-shaded squares = 8
 Total number of squares = $13 + (8 \div 2)$
 $= 13 + 4 = 17$
 So, the area of the design is 17 sq. units.
- c. Area of the shape = total number of shaded squares in the figure.
 Number of complete shaded squares = 52
 Number of half-shaded squares = 8
 Total number of squares = $52 + (8 \div 2)$
 $= 52 + 4 = 56$
 So, the area of the design is 56 sq. units.
- d. Area of the shape = total number of shaded squares in the figure.
 Number of complete shaded squares = 28
 Number of half-shaded squares = 4
 Total number of squares = $28 + (4 \div 2)$
 $= 28 + 2 = 30$
 So, the area of the design is 30 sq. units.
- e. Area of the shape = total number of shaded squares in the figure.
 Number of complete shaded squares = 10
 Squares that covered more than 50% of the figure = 12
 Total number of squares = 22
 So, the area of the design is 22 sq. units.
- f. Area of the shape = total number of shaded squares in the figure.
 Number of complete shaded squares = 30
 So, the area of the design is 30 sq. units.
3. a. Side of square = 3 cm
 Area of a Square = Side $\times$ Side
 $= 3 \times 3 = 9$ sq. cm
- b. Length of rectangle = 155 cm
 Breadth of rectangle = 124 cm
 Area of rectangle = Length $\times$ Breadth
 $= 19220$ sq. units

- c. Side of square = 18 cm
 Area of a square = Side $\times$ Side
 $= 18 \times 18 = 324$ sq. cm
- d. Length of rectangle = 105 cm
 Breadth of rectangle = 90 cm
 Area of a rectangle = Length $\times$ Breadth
 $= 105 \times 90 = 9450$ sq. units
- e. Side of square = 32 cm
 Area of a square = Side $\times$ Side
 $= 32 \times 32 = 1024$ sq. cm
- f. Length of rectangle = 60 cm
 Breadth of rectangle = 45 cm
 Area of a rectangle = Length $\times$ Breadth
 $= 60 \times 45 = 2700$ sq. units
4. a. i. Let the breadth of rectangle be x cm.
 Length of the rectangle = 9 cm
 Area of the rectangle = Length $\times$ Breadth
 $\Rightarrow 54 = 9 \times x$
 $\Rightarrow 6 = x$
 So, the breadth of the rectangle is 6 cm.
- ii. Let the length of the rectangle be x cm.
 Breadth of the rectangle = 15 cm
 Area of the rectangle = Length $\times$ Breadth
 $\Rightarrow 345 = x \times 15$
 $\Rightarrow 23 = x$
 So, the length of the rectangle is 23 cm.
- iii. Length of the rectangle = 9 cm
 Breadth of the rectangle = 12 cm
 Area of the rectangle = Length $\times$ Breadth
 $= 9 \times 12$
 $= 108$ sq. cm
- iv. Let the length of the rectangle be x cm.
 Breadth of the rectangle = 32 cm
 Area of the rectangle = Length $\times$ Breadth
 $\Rightarrow 1600 = x \times 32$
 $\Rightarrow 50 = x$
 So, the length of the rectangle is 50 cm.
- v. Let the length of the rectangle be x cm.
 Breadth of the rectangle = 4 cm
 Area of the rectangle = Length $\times$ Breadth
 $\Rightarrow 112 = x \times 4$
 $\Rightarrow 28 = x$
 So, the length of the rectangle is 28 cm.



- vi. Let the breadth of rectangle be x cm.
Length of the rectangle = 11 cm
Area of a rectangle = Length $\times$ Breadth
 $\Rightarrow 187 = 11 \times x$
 $\Rightarrow 17 = x$
So, the breadth of the rectangle is 17 cm.
- b. i. Side of square = 6 cm
Area of square = Side $\times$ Side
 $= 6 \times 6$
 $= 36$ sq. cm
- ii. Side of square = 8 cm
Area of square = Side $\times$ Side
 $= 8 \times 8$
 $= 64$ sq. cm
- iii. Side of square = 12 cm
Area of a square = Side $\times$ Side
 $= 12 \times 12$
 $= 144$ sq. cm
- iv. Let the side of the square be x cm.
Area of a square = Side $\times$ Side
 $\Rightarrow 81 = x \times x$
 $\Rightarrow 9 = x$
So, the side of the square is 9 cm.
- v. Side of square = 11 cm
Area of a square = side $\times$ side
 $= 11 \times 11$
 $= 121$ sq. cm
- vi. Side of square = 13 cm
Area of a square = Side $\times$ Side
 $= 13 \times 13$
 $= 169$ sq. cm
5. a. Length of the rectangle = 20 cm
Breadth of the rectangle = 12 cm
Area of the rectangle = Length $\times$ Breadth
 $= 20 \times 12$
 $= 240$ sq. cm
So, the area of the rectangle is 240 sq. cm.
- b. Length of the rectangle = 14 cm
Breadth of the rectangle = 10 cm
Area of the rectangle = Length $\times$ Breadth
 $= 14 \times 10$
 $= 140$ sq. cm
So, the area of the rectangle is 140 sq. cm.
- c. Length of the rectangle = 1 m 32 cm
Breadth of the rectangle = 80 cm
Convert the length into centimetres:
1 m 32 cm = 132 cm
Area of the rectangle = Length $\times$ Breadth
 $= 132 \times 80$
 $= 10,560$ sq. cm
So, the area of the rectangle is 10,560 sq. cm.
6. a. Side of the square = 16 cm
Area of the square = Side $\times$ Side
 $= 16 \times 16$
 $= 256$ sq. cm
So, the area of the square is 256 sq. cm.
- b. Side of the square = 40 cm
Area of the square = Side $\times$ Side
 $= 40 \times 40$
 $= 1600$ sq. cm
So, the area of the square is 1600 sq. cm.
- c. Side of the square = 34 m
Area of the square = Side $\times$ Side
 $= 34 \times 34$
 $= 1156$ sq. m
So, the area of the square is 1156 sq. m.
7. Area of the rectangular plot = 2550 sq. m
Length of the plot = 75 m
Area of a rectangle = Length $\times$ Breadth
Breadth = Area $\div$ Length
 $= 2550 \div 75 = 34$ m
So, the breadth of the rectangular plot is 34 m.
8. Length of the field = 46 m
Breadth of the field = 18 m
Area of the field = Length $\times$ Breadth
 $= 46 \times 18 = 828$ sq. m
Rate of ploughing = ₹3 per sq. m
Total cost = $828 \times 3 = ₹2484$
So, the cost of ploughing the field is ₹2484.
9. Length of the path = 12 m = 1200 cm
Breadth of the path = 4 m = 400 cm
Area of the path = $1200 \times 400 = 480000$ sq. cm
Length of one block = 25 cm
Breadth of one block = 12 cm
Area of one block = $25 \times 12 = 300$ sq. cm
Number of blocks required = Area of the path $\div$ Area of one block

$$= 480000 \div 300$$

$$= 1600$$

So, 1600 blocks will be required to lay the path.

10. Side of the square room = 6 m

Height of each wall = 4 m

Perimeter of the room = $4 \times \text{Side}$

$$= 4 \times 6$$

$$= 24 \text{ m}$$

Area of the four walls = Perimeter $\times$ Height

$$= 24 \times 4$$

$$= 96 \text{ sq. m}$$

Cost of painting = ₹50 per sq. m

Total cost = 96×50

$$= ₹4800$$

11. Length of the room = 6 m = 600 cm

Breadth of the room = 3 m = 300 cm

Area of the floor = Length $\times$ Breadth

$$= 600 \times 300$$

$$= 180000 \text{ sq. cm}$$

Side of one square tile = 15 cm

Area of one square tile = Side $\times$ Side

$$= 15 \times 15 = 225 \text{ sq. cm}$$

Number of tiles required = Area of the floor $\div$ Area of one tile

$$= 180000 \div 225 = 800$$

So, 800 square tiles are required to cover the floor.

12. Length of the rectangle = 24 m

Perimeter of the rectangle = 88 m

We know that,

Perimeter of a rectangle = $2 \times (\text{Length} + \text{Breadth})$

$$\Rightarrow 88 = 2 \times (24 + \text{Breadth})$$

$$\Rightarrow 88 \div 2 = 24 + \text{Breadth}$$

$$\Rightarrow 44 = 24 + \text{Breadth}$$

$$\Rightarrow \text{Breadth} = 44 - 24 = 20 \text{ m}$$

Now, find the area.

Area of the rectangle = Length $\times$ Breadth

$$= 24 \times 20$$

$$= 480 \text{ sq. m}$$

So, the area of the rectangle is 480 sq. m.

13. Perimeter of the square = 120 m

Perimeter of square = $4 \times \text{Side}$

$$\Rightarrow 120 = 4 \times \text{Side}$$

$$\Rightarrow \text{Side} = 120 \div 4 = 30 \text{ m}$$

Area of the square = Side $\times$ Side

$$= 30 \times 30$$

$$= 900 \text{ sq. m}$$

So, the area of the square is 900 sq. m.

Exercise 8C

1. a. Area of the rectangle = 2×3 sq. units

$$= 6 \text{ sq. units}$$

Area of the triangle = $6 \div 2$

$$= 3 \text{ sq. units}$$

- b. Area of the rectangle = 3×4 sq. units

$$= 12 \text{ sq. units}$$

Area of the triangle = $12 \div 2 = 6$ sq. units

- c. Area of the rectangle = 4×3 sq. units = 12 sq. units

Area of the triangle = $12 \div 2$

$$= 6 \text{ sq. units}$$

- d. Area of the rectangle = 4×5 sq. units

$$= 20 \text{ sq. units}$$

Area of the triangle = $20 \div 2$

$$= 10 \text{ sq. units}$$

2. a. Area of the square = $2 \times 2 = 4$ sq. units

Area of the triangle

$$= 4 \div 2 = 2 \text{ sq. units}$$

Area of the rectangle

$$= 2 \times 4 = 8 \text{ sq. units}$$

Area of the triangle = $8 \div 2 = 4$ sq. units

Total area of the big triangle = $2 + 4 = 6$ sq. units



- b.



Area of the rectangle = $2 \times 6 = 12$ sq. units

Area of the triangle = $12 \div 2 = 6$ sq. units

Area of the rectangle = $2 \times 3 = 6$ sq. units

Area of the triangle = $6 \div 2 = 3$ sq. units

Total area of the big triangle = $6 + 3 = 9$ sq. units

- c. Same as above: 9 sq. units.

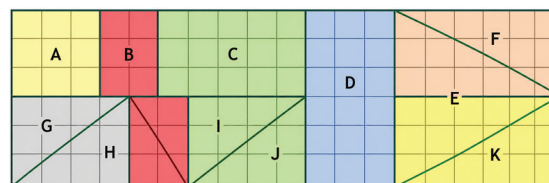
- d. Same as above: 14 sq. units.

- e. Same as above: 9 sq. units.

- f. Same as above: 14 sq. units.

- g. Same as above: 10 sq. units.

- 3.



Area of A = $3 \times 3 = 9$ sq. units

Area of B = $3 \times 2 = 6$ sq. units

Area of C = $3 \times 5 = 15$ sq. units

Area of D = $6 \times 3 = 18$ sq. units

Area of E = Half area of (orange rectangle + yellow rectangle)

$$= (3 \times 6 + 3 \times 6) \div 2 \\ = 36 \div 2 = 18 \text{ sq. units}$$

Area of F = $(3 \times 6) \div 2 = 18 \div 2 = 9$ sq. units

Area of G = $(3 \times 4) \div 2 = 12 \div 2 = 6$ sq. units

Area of H = Half area of (grey rectangle + red rectangle)

$$= (4 \times 3 + 3 \times 2) \div 2 \\ = 18 \div 2 = 9 \text{ sq. units}$$

Area of I = Half area of (red rectangle + green rectangle)

$$= (3 \times 2 + 3 \times 4) \div 2 \\ = 18 \div 2 = 9 \text{ sq. units}$$

Area of J = $(3 \times 4) \div 2 = 12 \div 2 = 6$ sq. units

Area of K = $(3 \times 6) \div 2 = 18 \div 2 = 9$ sq. units

Area (in Sq. units)	15	18	9	6
Shape	C	D, E	A, F, H, I, K	B, G, J

Learning Logs

1. a. Sides of the triangle = 9 cm, 7 cm and 8 cm
Perimeter of the triangle = Sum of all its sides
 $= 9 \text{ cm} + 7 \text{ cm} + 8 \text{ cm}$
 $= 24 \text{ cm}$
So, the perimeter of the triangle is 24 cm.
- b. Sides of the triangle = 14 cm, 18 cm and 21 cm
Perimeter of the triangle = Sum of all its sides
 $= 14 \text{ cm} + 18 \text{ cm} + 21 \text{ cm}$
 $= 53 \text{ cm}$
So, the perimeter of the triangle is 53 cm.
2. a. Length of the rectangle = 46 cm
Breadth of the rectangle = 8 cm
Area of the rectangle = Length $\times$ Breadth
 $= 46 \times 8$
 $= 368 \text{ sq. cm}$
So, the area of the rectangle is 368 sq. cm.
- b. Length of the rectangle = 18 cm
Breadth of the rectangle = 16 cm
Area of the rectangle = Length $\times$ Breadth

$$= 18 \times 16 \\ = 288 \text{ sq. cm}$$

So, the area of the rectangle is 288 sq. cm.

3. a. Area of the rectangle = 104 sq. cm
Breadth of the rectangle = 8 cm
Length of rectangle = Area $\div$ Breadth
 $= 104 \div 8$
 $= 13 \text{ cm}$

So, the length of the rectangle is 13 cm.

- b. Area of the rectangle = 102 sq. m
Breadth of the rectangle = 6 m
Length of rectangle = Area $\div$ Breadth
 $= 102 \div 6$
 $= 17 \text{ m}$

So, the length of the rectangle is 17 m.

4. a. Area of the rectangle = 288 sq. cm
Length of the rectangle = 16 cm
Breadth of rectangle = Area $\div$ Length
 $= 288 \div 16$
 $= 18 \text{ cm}$

So, the breadth of the rectangle is 18 cm.

- b. Area of the rectangle = 52 sq. m
Length of the rectangle = 13 m
Breadth of rectangle = Area $\div$ Length
 $= 52 \div 13 = 4 \text{ m}$

So, the breadth of the rectangle is 4 m.

5. Length of the park = 150 m
Breadth of the park = 100 m
Perimeter of the park = $2 \times (\text{Length} + \text{Breadth})$
 $= 2 \times (150 + 100)$
 $= 2 \times 250$
 $= 500 \text{ m}$

Distance covered in one round = 500 m

Distance covered in 5 rounds = $500 \times 5 = 2500 \text{ m}$

So, the distance covered by Mayank is 2500 m.

6. Length of one carpet = 4 m
Breadth of one carpet = 2 m
Area of one carpet = 4×2
 $= 8 \text{ sq. m}$

Number of carpets = 26

Area of the floor = 26×8
 $= 208 \text{ sq. m}$

So, the area of the floor of the hall is 208 sq. m.

7. First carpet:

Length = 16 m, Breadth = 12 m

Area = $16 \times 12 = 192$ sq. m

Second carpet

Length = 15 m, Breadth = 13 m

Area = $15 \times 13 = 195$ sq. m

Since $195 \text{ sq. m} > 192 \text{ sq. m}$, the second carpet is bigger.

So, the carpet measuring $15 \text{ m} \times 13 \text{ m}$ is bigger

8. a. Area of the rectangle = $18 \times 8 = 144$ sq. m
b. Area of the rectangle = $12 \times 14 = 168$ sq. m
c. Area of the rectangle = $13 \times 13 = 169$ sq. m
Since 169 sq. m is the greatest area, the correct answer is (c).

Mental Maths

1. b. The perimeter of a rectilinear figure is the sum of the lengths of all its sides.
Thus, the correct answer is (b).
2. a. A rectilinear figures are made up of straight line segments. A circle has a curved boundary, so it is not a rectilinear figure.
Thus, the correct answer is (a).
3. Length of the first side = 7 cm
Length of the second side = 7 cm
Length of the third side = 9 cm
Perimeter of the triangle = $7 + 7 + 9 = 23$ cm
Thus, the correct answer is (c).
4. b. Perimeter of the rectangle = 186 cm
Length of the rectangle = 65 cm
Perimeter = $2 \times (\text{Length} + \text{Breadth})$
 $\Rightarrow 186 = 2 \times (65 + \text{Breadth})$
 $\Rightarrow 186 \div 2 = 65 + \text{Breadth}$
 $\Rightarrow 93 = 65 + \text{Breadth}$
 $\Rightarrow \text{Breadth} = 93 - 65 = 28 \text{ cm}$
Thus, the correct answer is (b).

HOTS

1. Perimeter of a rectangle = $2 \times (\text{Length} + \text{Breadth})$
Given,
Perimeter of the rectangle = 24 cm
 $\Rightarrow 2 \times (\text{Length} + \text{Breadth}) = 24$
 $\Rightarrow \text{Length} + \text{Breadth} = 12$
The possible pairs of whole-number dimensions are:

- $1 \text{ cm} \times 11 \text{ cm}$
- $2 \text{ cm} \times 10 \text{ cm}$
- $3 \text{ cm} \times 9 \text{ cm}$
- $4 \text{ cm} \times 8 \text{ cm}$
- $5 \text{ cm} \times 7 \text{ cm}$
- $6 \text{ cm} \times 6 \text{ cm}$

Thus, there are 6 unique rectangles.

2. Area of a rectangle = Length $\times$ Breadth

Given,

Area of the rectangle = 24 sq. cm

The possible pairs of whole-number dimensions are:

- $1 \text{ cm} \times 24 \text{ cm}$
- $2 \text{ cm} \times 12 \text{ cm}$
- $3 \text{ cm} \times 8 \text{ cm}$
- $4 \text{ cm} \times 6 \text{ cm}$

Thus, there are 4 unique rectangles.

CHAPTER 9 : MAPS AND LOCATION

Warm Up

1. Mr Roy is to the South of the blue tent.
2. A brown tent is to the East of the green one.
3. A yellow tent is placed North of the lake.
4. An orange tent is to the West of Mr Roy.

Exercise 9A

1. a. The laptop is in West direction.
b. The bed is in East direction.
c. The window is in North direction.
2. b. Panchkuian Road goes in the North-west direction from Connaught Place.
c. Underground parking is at the right, if we go towards Connaught Place from Parliament Street and turn left.
d. There are 6 blocks in the Inner Circle: A, B, C, D, E, and F.
e. If you start at Lady Hardinge Medical College, head down Shaheed Bhagat Singh Marg towards the Outer Circle, turn right onto the Outer Circle, and then turn right again, you will reach Baba Khark Singh Marg.



3. a. Tamil nadu is the southernmost state of India.
b. Arunachal Pradesh is the easternmost state of India.
c. The state to the east of Madhya Pradesh is Chhattisgarh.
d. The state to the north-east of Karnataka is Telangana.
e. The distance between Jaipur and Srinagar is 1020 km.
4. a. 12 stations are there between Rithala and Kashmere Gate.
b. Number of stations from Rithala to Netaji Subhash Place = 5
Distance per successive stations = 1 km 500 m
= 1.5 km
Total Distance = $5 \times 1.5 \text{ km} = 7.5 \text{ km}$
The calculated distance of 7.5 km falls into the 5 - 12 km bracket.
Corresponding Fare = ₹32
Therefore, Nishtha pays ₹32.
5. In South direction is the Main Gateway of the Taj Mahal.
6. a. (11, 2) is the position of the giraffe.
b. (6, 6) is the position of the hippo.
c. (12, 9) is the position of the camel.
d. Panda is located at (9, 11).
e. Monkey is at the position (4, 12).

Learning Logs

1. a. Jind district is to the North of Rohtak.
b. Rewari district is to the immediate east of Mahendragarh.
c. Hisar district is located between Fatehabad and Bhiwani.
d. North-west direction is Charkhi Dadri located in relation to Gurugram.
2. a. To reach the avocado, move 8 steps to the east and then move 5 steps to the north.
b. The location of the papaya is (3, 7).
c. Pumpkin is at (8, 7).
d. Cherry is located at (7, 4).
3. a. The two shortest routes possible from A-55 to A-53 are

(i) A-55 $\rightarrow$ A-54 $\rightarrow$ A-53

(ii) A-55 $\rightarrow$ A-56 $\rightarrow$ A-53

- b. Two shortest route possible from A-52 to A-56 are

(i) A-52 $\rightarrow$ A-55 $\rightarrow$ A-54 $\rightarrow$ A-56

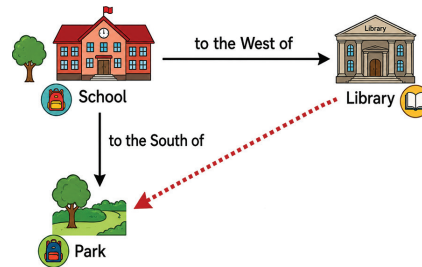
(ii) A-52 $\rightarrow$ A-51 $\rightarrow$ A-54 $\rightarrow$ A-56

Mental Maths

1. a. Facing North means looking directly upward. A right turn moves your direction 90° clockwise, which points to the right. The direction to the right is East.

Thus, the correct option is (a).

2. b.



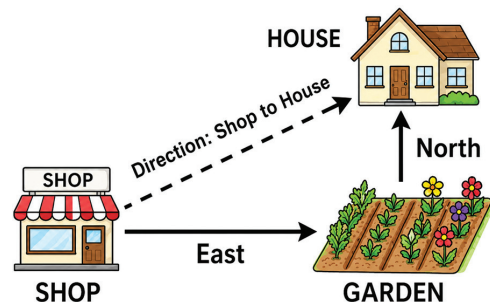
Looking from the library to the park means looking downwards and to the left, which is South-west.

Thus, the correct option is (b).

3. c. Moving up (North) and then moving right (East) places her in the region between North and East relative to where she originally started.

Thus, the correct option is (c).

4. a.



Looking from the Shop toward the house, you must look up (North) and to the right (East).

Thus, the correct option is (a).

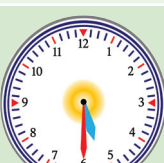
HOTS

1. Morigaon district is the tourist most likely to reach.
2. South-east is the shortest route from Biswanath to Jorhat using only directions.

CHAPTER 10 : TIME

Warm Up

1.

Country	Clock	Time
Prayagraj India		9:00
Bagdad Iraq		6:30
Beijing China		11:30
Rome Italy		4:30
Brasilia Brazil		12:30
Cairo Egypt		5:30

Exercise 10A

1. a. 05 is before 12. So, it is a.m.

Therefore, the answer is 5:40 a.m.

b. 01 is before 12. So, it is a.m.

Therefore, the answer is 1:20 a.m.

c. 00 means midnight. $00:20 = 12:20$ a.m.

Therefore, the answer is 12:20 a.m.

d. 12:00 is noon. 12:29 is afternoon.

Therefore, the answer is 12:29 p.m.

e. 11 is before 12. So, it is a.m.

Therefore, the answer is 11:30 a.m.

f. 16 is greater than 12. $16 - 12 = 4$

Therefore, the answer is 4:40 p.m.

g. 16 is greater than 12. $16 - 12 = 4$

Therefore, the answer is 4:25 p.m.

h. 00:00 means midnight.

Therefore, the answer is 12:00 midnight.

i. 22 is greater than 12. $22 - 12 = 10$

Therefore, the answer is 10:22 p.m.

j. 21 is greater than 12. $21 - 12 = 9$

Therefore, the answer is 9:38 p.m.

k. 13 is greater than 12. $13 - 12 = 1$

Therefore, the answer is 1:48 p.m.

l. 20 is greater than 12. $20 - 12 = 8$

Therefore, the answer is 8:00 p.m.

2. a. Morning time. Write 6 as 06.

Therefore, the answer is 06:05 hours.

b. Morning time. Keep the same.

Therefore, the answer is 10:24 hours.

c. 12 a.m. means midnight. Change 12 to 00.

Therefore, the answer is 00:06 hours.

d. Evening time. Add 12 to 7.

$$7 + 12 = 19$$

Therefore, the answer is 19:36 hours.

e. 12 p.m. is noon. Keep the same.

Therefore, the answer is 12:15 hours.

f. Afternoon time. $2 + 12 = 14$

Therefore, the answer is 14:17 hours.

g. Night time. $11 + 12 = 23$

Therefore, the answer is 23:00 hours.

h. Morning time. Write 4 as 04.

Therefore, the answer is 04:57 hours.

i. Midnight means 00:00 hours.

Therefore, the answer is 00:00 hours.

j. Morning time. Write 1 as 01.

Therefore, the answer is 01:40 hours.

k. Afternoon time. $3 + 12 = 15$

Therefore, the answer is 15:30 hours.

l. Night-time. $9 + 12 = 21$

Therefore, the answer is 21:40 hours.

3. a. 03:35 p.m.

It is p.m. Add 12 to 3.

$$3 + 12 = 15$$

03:35 p.m. = 15:35 hours

→ (ii)



- b. 12:49 a.m.
It is after midnight. Change 12 to 00.
12:49 a.m. = 00:49 hours → (iv)
- c. 04:44 p.m.
It is p.m. Add 12 to 4.
 $4 + 12 = 16$
04:44 p.m. = 16:44 hours → (i)
- d. 09:25 a.m.
It is morning. Keep the same time.
09:25 a.m. = 09:25 hours → (v)
- e. 07:35 p.m.
It is p.m. Add 12 to 7.
 $7 + 12 = 19$
07:35 p.m. = 19:35 hours → (iii)
4. a. From the table: Departure from Kanpur = 21:37 hours
Convert into the 12-hour clock:
 $21 - 12 = 9$
21:37 hours = 9:37 p.m.
- b. From the table: Arrival at Howrah = 17:00 hours
Convert into the 12-hour clock:
 $17 - 12 = 5$
17:00 hours = 5:00 p.m.
- c. From the table: Arrival at Jasidih = 07:39 hours
Since 7 is before 12, 07:39 hours = 7:39 a.m.
- d. From the table: Departure from Patna = 00:55 hours
Convert into the 12-hour clock:
00:55 hours = 12:55 a.m.

Exercise 10B

1.

Activities	Seconds	Minutes	Hours
Blinking of eyes	✓		
Making a phone call		✓	
Snapping fingers	✓		
Drinking a glass of water		✓	
Washing hands		✓	
Watching a movie			✓
Cooking the noodles		✓	

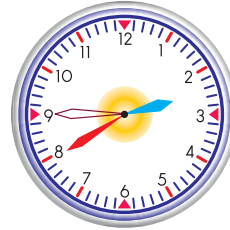
(Answer may vary)

2. a. 20 seconds
b. 30 seconds
c. 15 seconds

3. a.



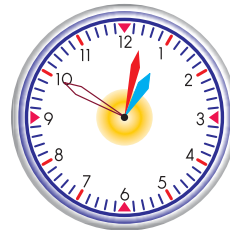
b.



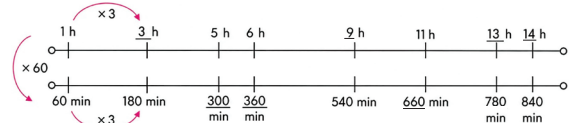
c.



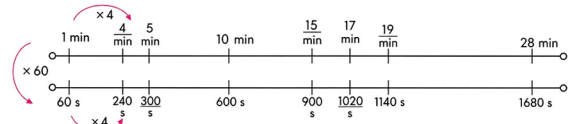
d.



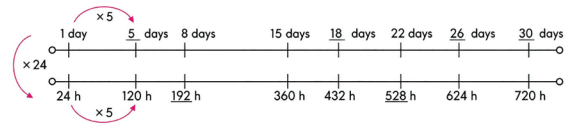
4. a.



b.



c.



5. a.

- 1 minute = 60 seconds
8 minutes = $8 \times 60 = 480$ seconds
b. 12 minutes = $12 \times 60 = 720$ seconds
 $720 + 54 = 774$ seconds
c. 21 minutes = $21 \times 60 = 1260$ seconds
 $1260 + 36 = 1296$ seconds

- d. $3 \text{ hours} = 3 \times 3600 = 10800 \text{ seconds}$
 $25 \text{ minutes} = 25 \times 60 = 1500 \text{ seconds}$
 $10800 + 1500 + 16 = 12316 \text{ seconds}$
6. a. $14 \text{ hours} = 14 \times 60 = 840 \text{ minutes}$
b. $9 \text{ hours} = 9 \times 60 = 540 \text{ minutes}$
 $540 + 54 = 594 \text{ minutes}$
c. $13 \text{ hours} = 13 \times 60 = 780 \text{ minutes}$
 $780 + 48 = 828 \text{ minutes}$
d. $3 \text{ days} = 3 \times 1440 = 4320 \text{ minutes}$
 $12 \text{ hours} = 12 \times 60 = 720 \text{ minutes}$
 $4320 + 720 + 35 = 5075 \text{ minutes}$
7. a. $7 \text{ days} = 7 \times 24 = 168 \text{ hours}$
 $168 + 15 \text{ hours} = 183 \text{ hours}$
b. $13 \text{ days} = 13 \times 24 = 312 \text{ hours}$
c. $8 \text{ days} = 8 \times 24 = 192 \text{ hours}$
 $192 + 19 \text{ hours} = 211 \text{ hours}$
d. $12 \text{ days} = 12 \times 24 = 288 \text{ hours}$
 $288 + 6 \text{ hours} = 294 \text{ hours}$
8. a. $6 \times 7 = 42 \text{ days}$
 $42 + 5 \text{ days} = 47 \text{ days}$
b. $9 \times 7 = 63 \text{ days}$
 $63 + 4 = 67 \text{ days}$
c. $42 \times 7 = 294 \text{ days}$
 $294 + 1 = 295 \text{ days}$
d. $3 \times 365 = 1095 \text{ days}$
9. a. $10 \times 12 = 120 \text{ months}$
b. $5 \times 12 = 60 \text{ months}$
 $60 + 10 = 70 \text{ months}$
c. $12 \times 12 = 144 \text{ months}$
 $144 + 7 = 151 \text{ months}$
10. a. $138 \div 60 = 2 \text{ hours } 18 \text{ minutes}$
 $(\because 1 \text{ hour} = 60 \text{ min})$
b. $395 \div 60 = 6 \text{ hours } 35 \text{ minutes}$
 $(\because 1 \text{ hour} = 60 \text{ min})$
c. $1023 \div 60 = 17 \text{ hours } 3 \text{ minutes}$
 $(\because 1 \text{ hour} = 60 \text{ min})$
d. $2006 \div 60 = 33 \text{ hours } 26 \text{ minutes}$
 $(\because 1 \text{ hour} = 60 \text{ min})$
11. a. $1414 \div 60 = 23 \text{ minutes } 34 \text{ seconds}$
 $(\because 1 \text{ min} = 60 \text{ sec})$
b. $2165 \div 60 = 36 \text{ minutes } 5 \text{ seconds}$
 $(\because 1 \text{ min} = 60 \text{ sec})$

12. a. $75 \div 24 = 3 \text{ days } 3 \text{ hours}$
 $(\because 1 \text{ day} = 24 \text{ hours})$
b. $735 \div 24 = 30 \text{ days } 15 \text{ hours}$
 $(\because 1 \text{ day} = 24 \text{ hours})$
c. $539 \div 24 = 22 \text{ days } 11 \text{ hours}$
 $(\because 1 \text{ day} = 24 \text{ hours})$
d. $1018 \div 24 = 42 \text{ days } 10 \text{ hours}$
 $(\because 1 \text{ day} = 24 \text{ hours})$
13. a. $230 \div 7 = 32 \text{ weeks } 6 \text{ days}$
 $(\because 1 \text{ week} = 7 \text{ days})$
b. $341 \div 7 = 48 \text{ weeks } 5 \text{ days}$
 $(\because 1 \text{ week} = 7 \text{ days})$

Exercise 10C

1. a. $2 \text{ days } 17 \text{ h} + 3 \text{ days } 15 \text{ h}$

	Days	Hours
	2	17
+	3	15
	5	32

$$32 \text{ h} = 24 \text{ h} + 8 \text{ h} = 1 \text{ day } 8 \text{ h}$$

Add 1 day to 5 days: 6 days

Therefore, the answer is 6 days 8 h.

- b. $4 \text{ days } 13 \text{ h} + 1 \text{ day } 8 \text{ h}$

	Days	Hours
	4	13
+	1	8
	5	21

Therefore, the answer is 5 days 21 hours.

- c. $5 \text{ weeks } 4 \text{ days} + 4 \text{ weeks } 6 \text{ days}$

	Weeks	Days
	5	4
+	4	6
	9	10

$$10 \text{ days} = 7 \text{ days} + 3 \text{ days} = 1 \text{ week } 3 \text{ days}$$

Add 1 week to 9 weeks: 10 weeks

Therefore, the answer is 10 weeks 3 days.

- d. $9 \text{ h } 32 \text{ min} + 6 \text{ h } 26 \text{ min}$

	Hours	Minutes
	9	32
+	6	26
	15	58

Therefore, the answer is 15 hours 58 minutes.



e. $9 \text{ min } 28 \text{ sec} + 6 \text{ min } 16 \text{ sec}$

	Minutes	Seconds
+	9	28
	6	16
	15	44

Therefore, the answer is 15 minutes 44 seconds.

2. a. $4 \text{ days } 20 \text{ h} - 2 \text{ days } 12 \text{ h}$

	Days	Hours
-	4	20
	2	12
	2	8

Therefore, the answer is 2 days 8 hours.

b. $5 \text{ weeks } 3 \text{ days} - 3 \text{ weeks } 5 \text{ days}$

Since 3 days is smaller than 5 days, borrow 1 week.

1 week = 7 days

5 weeks 3 days = 4 weeks 10 days

	Weeks	Days
-	4	10
	3	5
	1	5

Therefore, the answer is 1 week 5 days.

c. $8 \text{ h } 40 \text{ min} - 7 \text{ h } 25 \text{ min}$

	Hours	Minutes
-	8	40
	7	25
	1	15

Therefore, the answer is 1 hours 15 minutes.

d. $24 \text{ h} - 8 \text{ h } 40 \text{ min}$

Convert 24 h as 23 h 60 min.

	Hours	Minutes
-	23	60
	8	40
	15	20

Therefore, the answer is 15 hours 20 minutes.

e. $18 \text{ min } 40 \text{ s} - 15 \text{ min } 33 \text{ s}$

	Minutes	Seconds
-	18	40
	15	33
	3	7

Therefore, the answer is 3 minutes 7 seconds.

f. $30 \text{ min} - 20 \text{ min } 48 \text{ s}$

Convert 30 min into 29 min 60 s.

	Minutes	Seconds
-	29	60
	20	48
	9	12

Therefore, the answer is 9 minutes 12 seconds.

g. $20 \text{ years} - 15 \text{ years } 9 \text{ months}$

Borrow 1 year = 12 months.

20 years = 19 years 12 months

	Years	Months
-	19	12
	15	9
	4	3

Therefore, the answer is 4 years 3 months.

3. a. Time = 7:30 p.m.

Add 4 h:

7:30 p.m. + 4 h = 11:30 p.m.

Add 50 min:

11:30 p.m. + 50 min = 12:20 a.m.

b. Time = 8:40 p.m.

Add 6 h:

8:40 p.m. + 6 h = 2:40 a.m.

Add 30 min:

2:40 a.m. + 30 min = 3:10 a.m.

4. a. Time = 2:30 p.m.

Subtract 3 h:

2:30 p.m. - 3 h = 11:30 a.m.

b. Time = 4:15 p.m.

Subtract 6 h:

4:15 p.m. - 6 h = 10:15 a.m.

Subtract 25 min:

10:15 a.m. - 25 min = 9:50 a.m.

5. Convert 3:10 p.m. into 24-hour format:

3:10 p.m. = 15:10

Subtract:

15 h 10 min - 7h 25 min

Borrow 1 hour = 60 minutes:

	Hours	Minutes
-	14	70
	7	25
	7	45

Therefore, the required time is 7 hours 45 minutes.

6. a. Starting time of the school = 8:45 a.m.
Closing time of the school = 3:30 p.m.
Convert 3:30 p.m. = 15:30

Working hours of the school

15 h 30 min – 8 h 45 min

Borrow 1 hour:

	Hours	Minutes
	14	90
–	8	45
	6	45

Therefore, the working hours of the school is 6 hours 45 minutes.

- b. Opening time of the office = 9:30 a.m.
Office closes after 10 hours 30 minutes.
Add 10 h:
9:30 a.m. + 10 h = 7:30 p.m.
Add 30 min:
7:30 p.m. + 30 min = 8:00 p.m.
Therefore, the closing time of the office is 8:00 p.m.

- c. Departure time of the train = 6:30 p.m.
Time interval from 6:30 p.m. to 12:00 midnight = 5 h 30 min
From 12:00 midnight to 4:30 a.m. = 4 h 30 min
So, total time taken:

	Hours	Minutes
	5	30
+	4	30
	10	00

Therefore, the duration of the journey is 10 hours.

- d. Time interval: Monday 4:40 p.m. to Tuesday 4:40 p.m. = 24 h
Time interval: Tuesday 4:40 p.m. to Wednesday 4:40 p.m. = 24 h
Time interval: Wednesday 4:40 p.m. to Thursday 4:40 p.m. = 24 h
But the train reached at 12:30 p.m., which is 4 h 10 min before 4:40 p.m.
Total duration of the journey = 72 h – 4 h 10 min = 67 h 50 min
- e. Joining date of Vijay in the company = 8 August 2016
Leaving date of Vijay in the company = 3 January 2024

	Years	Month	Days
	2023	01	33
–	2024	01	03
	2016	08	04
	7	4	25

Therefore, Vijay work for 7 years 4 months 25 days for the company.

- f. Jaya's winter holidays were from 5th December 2024 to 12th February 2025.

December:

5 December to 31 December = 27 days

January = 31 days

February:

1 February to 12 February = 12 days

Total days school was closed

27 + 31 + 12 = 70 days

Therefore, Jaya's school was closed for 70 days.

- g. Present age of Kanav = 50 years 2 months
Starting age of Kanav's teaching = 22 years 7 months

Subtract:

Since 2 months is smaller than 7 months, borrow 1 year.

50 years 2 months = 49 years 14 months

	Years	Months
	49	14
–	22	7
	27	7

Therefore, Kanav has been teaching since 27 years 7 months.

Learning Logs

1.	12-hour clock	24-hour clock
a.	7:22 p.m.	19:22 hours
b.	12:48 a.m.	00:48 hours
c.	8:05 a.m.	08:05 hours
d.	9:25 p.m.	21:25 hours

2. a. 10:35 a.m. + 3 h = 1:35 p.m.
1:35 p.m. + 35 min = 2:10 p.m.
- b. 5:45 p.m. + 9 h = 2:45 a.m.
2:45 a.m. + 50 min = 3:35 a.m.
- c. 23:50 + 5 h = 04:50 hours
04:50 + 15 min = 05:05 hours



- d. $2:10 \text{ p.m.} - 1 \text{ h} = 1:10 \text{ p.m.}$
 $1:10 \text{ p.m.} - 45 \text{ min} = 12:25 \text{ p.m.}$
e. $2:05 \text{ a.m.} - 4 \text{ h} = 10:05 \text{ p.m. (previous day)}$
 $10:05 \text{ p.m.} - 35 \text{ min} = 9:30 \text{ p.m.}$
f. $12:20 - 6 \text{ h} = 06:20 \text{ hours}$
 $06:20 - 30 \text{ min} = 05:50 \text{ hours}$

3. a. Borrow 1 hour:

$$42 \text{ h } 24 \text{ min} = 41 \text{ h } 84 \text{ min}$$

Hours	Minutes
41	84
- 24	42
17	42

Therefore, the answer is 17 hours 42 minutes.

b.

Hours	Minutes
20	43
+ 4	27
25	10

Therefore, the answer is 25 hours 10 minutes.

c.

Hours	Minutes
30	14
+ 8	29
38	43

Therefore, the answer is 38 hours 43 minutes.

d. Borrow 1 hour: $35 \text{ h } 42 \text{ min} = 34 \text{ h } 102 \text{ min}$

Hours	Minutes
34	102
- 16	47
18	55

Therefore, the answer is 18 hours 55 minutes.

4. a.

Years	Months
7	8
+ 8	9
15	17

17 months = 1 year 5 months

15 years + 1 year = 16 years

Therefore, the answer 16 years 5 months.

b. $24 \text{ days } 19 \text{ hours} + 26 \text{ days } 18 \text{ hours}$

Days	Hours
24	19
+ 26	18
50	37

37 hours = 1 day 13 hours

50 days + 1 day = 51 days

Therefore, the answer the 51 days 13 hours.

5. a. Borrow 1 minute:

$$14 \text{ min } 21 \text{ s} = 13 \text{ min } 81 \text{ s}$$

Minutes	Seconds
13	81
- 8	32
5	49

Therefore, the answer is 5 minutes 49 seconds.

b. Borrow 1 day:

$$22 \text{ days } 8 \text{ h} = 21 \text{ days } 32 \text{ h}$$

Days	Hours
21	32
- 13	9
8	23

Therefore, the answer is 8 days 23 hours.

c. Borrow 1 year:

$$50 \text{ years } 3 \text{ months} = 49 \text{ years } 15 \text{ months}$$

Years	Months
49	15
- 23	7
26	8

Therefore, the answer is 26 years 8 months.

6. Starting time of Manoj's study = 5:20 p.m.

Add 1 hour:

$$5:20 \text{ p.m.} + 1 \text{ h} = 6:20 \text{ p.m.}$$

Add 50 minutes:

$$6:20 \text{ p.m.} + 50 \text{ min} = 7:10 \text{ p.m.}$$

Therefore, Manoj finished studying at 7:10 p.m.

7. From 9:30 a.m. to midnight = 14 h 30 min

From midnight to 6:45 a.m. = 6 h 45 min

Total duration:

Hours	Minutes
14	30
+ 6	45
21	15

Therefore, the total duration of the journey is 21 hours 15 minutes.

8. Starting date = 25 December

Remaining days in December:

25 to 31 December = 7 days

Days left:

$$18 - 7 = 11 \text{ days}$$

Counting 11 days in January:

Last day = 11th January

HOTS

- Time from 8:00 a.m. to 8:00 p.m. = 12 hours
Clock gains = 5 minutes per hour
Total gain = $12 \times 5 = 60$ minutes = 1 hour
Actual time = 8:00 p.m.
Clock will show:
 $8:00 \text{ p.m.} + 1 \text{ hour} = 9:00 \text{ p.m.}$
- 1 hour = 60 minutes
Number of minutes in a day:
 $24 \times 60 = 1440$ minutes
Heartbeats in a day:
 $1440 \times 72 = 103680$ beats per day

Mental Maths

- a. For p.m. time (except 12 p.m.), add 12 to the hour.
 $9:15 \text{ p.m.} = 9 + 12 = 21:15$ hours
Thus, the correct answer is (a).
- d. $2:20 \text{ p.m.} - 3 \text{ hours} = 11:20 \text{ a.m.}$
 $11:20 \text{ a.m.} - 30 \text{ minutes} = 10:50 \text{ a.m.}$
Thus, the correct answer is (d).
- b.

	Years	Months
	6	8
+	8	6
	14	14

 $14 \text{ months} = 1 \text{ year } 2 \text{ months}$
 $14 \text{ years} + 1 \text{ year} = 15 \text{ years}$
 $15 \text{ years } 2 \text{ months}$
 Thus the correct answer is (b).
- a. Borrow 1 hour:
 $9 \text{ h } 25 \text{ min} = 8 \text{ h } 85 \text{ min}$

	Hours	Minutes
	8	85
-	3	45
	5	40

Thus, the correct answer is (a).

CHAPTER 11 : MONEY

Warm Up

- 1 dollar = ₹88
10 dollars = $10 \times ₹88$
= ₹880

- 1 dollar = ₹88
 $25 \text{ dollars} = 25 \times ₹88$
= ₹2200
- 1 PKR = 30 paise
 $32 \text{ PKR} = 32 \times 30 \text{ paise}$
= 960 paise
 $960 \text{ paise} = ₹9.60$
- 1 PKR = 30 paise
 $75 \text{ PKR} = 75 \times 30 \text{ paise}$
= 2250 paise
 $2250 \text{ paise} = ₹22.50$
- 1 Pound (GBP) = ₹118
 $18 \text{ Pounds} = 18 \times ₹118$
= ₹2124
- 1 Pound (GBP) = ₹118
 $63 \text{ Pounds} = 63 \times ₹118$
= ₹7434
- 1 Euro (EUR) = ₹102
 $24 \text{ Euros} = 24 \times ₹102$
= ₹2448
- 1 Euro (EUR) = ₹102
 $55 \text{ Euros} = 55 \times ₹102$
= ₹5610
- 1 Yen (JPY) = 60 paise
 $29 \text{ Yen} = 29 \times 60$
= 1740 paise = ₹17.40
- 1 Yen (JPY) = 60 paise
 $77 \text{ Yen} = 77 \times 60$
= 4620 paise = ₹46.20
- 11 Yuan (CNY) = ₹12
 $12 \text{ Yuan} = 12 \times ₹12$
= ₹144
- 1 Yuan (CNY) = ₹12
 $80 \text{ Yuan} = 80 \times ₹12$
= ₹960

Exercise 11A

- Cost of movie tickets = ₹200
Cost of popcorn and cold drinks = ₹160
Cab fare = ₹180
Total amount shared by all friends
= ₹200 + ₹160 + ₹180 = ₹540
Number of friends = 4
Amount shared by each friend = $₹540 \div 4 = ₹135$



2. Possible combinations:

₹100 notes	₹50 notes	Total amount
0	17	₹850
1	15	₹850
2	13	₹850
3	11	₹850
4	9	₹850
5	7	₹850
6	5	₹850
7	3	₹850
8	1	₹850

3. Cost of 1 notebook = ₹40

Cost of 10 notebooks = $10 \times ₹40 = ₹400$

Cost of 1 pen = ₹15

Cost of 8 pens = $8 \times ₹15 = ₹120$

Total amount = $₹400 + ₹120 = ₹520$

Therefore, Rohan should pay ₹520 to the shopkeeper.

4. a. Available denominations: ₹5, ₹10, ₹20, ₹50

To use the minimum number of notes/coins:

$₹110 = ₹50 + ₹50 + ₹10$

Number of notes = 3

Therefore, Sagun can pay using two ₹50 notes and one ₹10 note.

b. Cost of toy = ₹150

Amount already given = $₹50 + (2 \times ₹5)$

$= ₹50 + ₹10$

$= ₹60$

Remaining amount = $₹150 - ₹60 = ₹90$

Number of ₹10 notes = $₹90 \div 10 = 9$

Therefore, Sagun gives 9 notes of ₹10.

c. Cost of birthday gift = ₹240

Number of ₹20 notes = $₹240 \div ₹20 = 12$

Therefore, Sagun gives 12 notes of ₹20.

Exercise 11B

1. a. Cost of 1 eraser in the first offer

$= ₹60 \div 12 = ₹5$

Cost of 1 eraser in the second offer

$= ₹80 \div 20 = ₹4$

Since $₹4 < ₹5$, 20 erasers for ₹80 is the better buy.

b. Cost of 1 kg potatoes in first offer

$= ₹50 \div 2 = ₹25$

Cost of 1 kg of potatoes in second offer

$= ₹100 \div 5 = ₹20$

Since $₹20 < ₹25$, 5 kg potatoes for ₹100 is the better buy.

c. Cost of 1 glass in first offer = $₹288 \div 8 = ₹36$

Cost of 1 glass in second offer

$= ₹225 \div 5 = ₹45$

Since $₹36 < ₹45$, 8 glasses of juice for ₹288 is the better buy.

d. Cost of 1 dozen in first offer = $₹504 \div 12 = ₹42$

Cost of 1 dozen in second offer

$= ₹684 \div 18 = ₹38$

Since $₹38 < ₹42$, 18 dozen bananas for ₹684 is the better buy.

2. a. Cost of 1 pen = $₹45 \div 5 = ₹9$

Cost of 8 pens = $8 \times ₹9 = ₹72$

Cost of 15 pens = $15 \times ₹9 = ₹135$

Therefore, the cost of 8 pens and 15 pens are ₹72 and ₹135 respectively.

b. Cost of 1 orange = $₹420 \div 35 = ₹12$

Cost of 25 oranges = $25 \times ₹12 = ₹300$

So, the cost of 25 oranges is ₹300.

c. The cost of 18 books is ₹2250. Find the cost of 4 books.

Cost of 1 book = $₹2250 \div 18 = ₹125$

Cost of 4 books = $4 \times ₹125 = ₹500$

Therefore, the cost of 4 books is ₹500.

d. 12 kg of tomatoes cost ₹480. Find the cost of 27 kg of tomatoes.

Cost of 1 kg tomatoes = $₹480 \div 12 = ₹40$

Cost of 27 kg tomatoes = $27 \times ₹40 = ₹1080$

Therefore, the cost of 27 kg of tomatoes is ₹1080.

e. Cost of 1 shirt = $₹2600 \div 4 = ₹650$

1 dozen = 12 shirts

Cost of 12 shirts = $12 \times ₹650 = ₹7800$

Therefore, the cost of one dozen shirts is ₹7800.

f. Earnings in 1 month = $₹45,000 \div 9 = ₹5,000$

2 years = 24 months

Earnings in 24 months = $24 \times ₹5,000 = ₹1,20,000$

Therefore, he will earn ₹1,20,000 in 2 years.

g. Cost of 1 litre milk = $₹432 \div 6 = ₹72$

Cost of 35 litres milk = $35 \times ₹72 = ₹2520$

Therefore, they will spend ₹2520 to buy 35 litres of milk.

Exercise 11C

1. Cost of wire = $50 \times ₹10 = ₹500$
 Cost of bulbs = $6 \times ₹90 = ₹540$
 Cost of holders = $6 \times ₹25 = ₹150$
 Cost of switches = $4 \times ₹30 = ₹120$
 Total bill amount = $₹500 + ₹540 + ₹150 + ₹120$
 $= ₹1310$

S.No.	Item	Quantity	Rate per unit	Cost
1.	Wire	50 m	₹10/m	₹500
2.	Bulb	6	₹90	₹540
3.	Holder	6	₹25	₹150
4.	Switch	4	₹30	₹120
			Total	₹1310

2. a.

S.No.	Item	Quantity	Price per item	Cost
1.	Notebook	2	₹25	₹50
2.	Pencil	5	₹6	₹30
3.	Eraser	3	₹4	₹12
			Total	₹92

- b. Total amount = $₹50 + ₹30 + ₹12 = ₹92$
 Riya has to pay ₹92.
- c. Money given to the shopkeeper = ₹200
 Total bill = ₹92
 Money she should get back
 $= ₹200 - ₹92 = ₹108$
 So, Riya should get back ₹108.
3. a. Cost of apples = $2 \times ₹80 = ₹160$
 Cost of bread = $1 \times ₹55 = ₹55$
 Cost of eggs
 1 dozen = 12 eggs = ₹72
 Cost of 1 egg = $₹72 \div 12 = ₹6$
 Cost of 10 eggs = $10 \times ₹6 = ₹60$

S.No.	Item	Quantity	Price per item	Cost
1.	Apple	2 kg	₹80 per kg	₹160
2.	Bread	1	₹55	₹55
3.	Egg	10	₹72 per dozen	₹60
			Total	₹275

- b. Total amount = $₹160 + ₹55 + ₹60 = ₹275$
 Therefore, Aman needs to pay ₹275.
- c. Money paid to the shopkeeper = ₹500
 Total bill = ₹275
 Money he should get back
 $= ₹500 - ₹275 = ₹225$
 Therefore, Aman will get back ₹225.

4. a. Cost of school bag = $1 \times ₹550 = ₹550$
 Cost of geometry boxes = $2 \times ₹120 = ₹240$
 Cost of water bottles = $2 \times ₹180 = ₹360$
 Total amount Sara has to pay
 $= ₹550 + ₹240 + ₹360 = ₹1150$
 Therefore, Sara has to pay ₹1150.
- b. Amount in the account = ₹1500
 Amount spent = ₹1150
 Remaining money left = $₹1500 - ₹1150 = ₹350$
 Therefore, ₹350 would be left in Sara's mother's account.

Learning Logs

1. a. Cost of 1 dosa = $₹612 \div 9 = ₹68$
 Cost of 10 dosa = $₹68 \times 10 = ₹680$
- b. Cost of 1 kg sugar = $₹216 \div 6 = ₹36$
 Cost of 17 kg sugar = $₹36 \times 17 = ₹612$
- c. Cost of 1 kg Onion = $₹66 \times 3 = ₹22$
 Cost of 9 kg onions = $₹22 \times 9 = ₹198$
2. Cost of Orange = $2 \times ₹60 = ₹120$
 Cost of Grapes = $3 \times ₹110 = ₹330$
 Cost of Kiwi = $8 \times ₹30 = ₹240$
 Cost of Pineapple = $1 \times ₹130 = ₹130$
 Total cost = $₹120 + ₹330 + ₹240 + ₹130 = ₹820$

S.No.	Item	Quantity	Price per item	Cost
1.	Orange	2 kg	₹60/kg	₹120
2.	Grapes	3 kg	₹110/kg	₹330
3.	Kiwi	8	₹30/piece	₹240
4.	Pineapple	1	₹130	₹130
			Total	₹820

3. Cost of 1 plate = ₹60
 Cost of 7 plates = $7 \times ₹60 = ₹420$
 Cost of 1 bowl = ₹45
 Cost of 5 bowls = $5 \times ₹45 = ₹225$
 Total amount = $₹420 + ₹225 = ₹645$
 Therefore, Meena should pay ₹645 to the shopkeeper.
4. Compost made in 1 year = 130 kg
 Price of 1 kg compost = ₹24
 Money saved = $130 \times ₹24 = ₹3120$
 Therefore, they save ₹3120 in a year.



Mental Maths

- a. Savings = $20 \times 5 = ₹100$
Thus, the correct answer is (a).
- b. Cost of pencils = $2 \times ₹10 = ₹20$
Cost of eraser = ₹5
Total costs = $₹20 + ₹5 = ₹25$
Thus, the correct answer is (b).
- b. Total earning = $8 \times ₹350 = ₹2800$
Thus, the correct answer is (b).
- c. Effective cost = $₹800 - ₹50 = ₹750$
Thus, the correct answer is (c).

HOTS

- Amount needed for a school trip = ₹250
Amount in digital wallet = ₹150
Remaining amount = $₹250 - ₹150 = ₹100$
So, Arjun cannot pay the full amount using only his wallet.
He needs ₹100 more from his bank account.

2.

Plan	Cost	Validity
Plan 1	₹588	56 days
Plan 2	₹770	70 days
Plan 3	₹861	84 days

Cost per day:

Plan 1: $₹588 \div 56 = ₹10.50$ per day

Plan 2: $₹770 \div 70 = ₹11$ per day

Plan 3: $₹861 \div 84 \approx ₹10.25$ per day

Plan 3 has the lowest cost per day.

So, Neha should choose the ₹861 plan (84 days validity).

CHAPTER 12 : DATA HANDLING

Warm Up

Favourite flowers	Number of Students
Rose	11
Lily	6
Aster	7
Tulip	4
Total	28

- 4 students chose Tulip as their favourite flower.
- 6 students like Lily flower and 7 students like Aster flower. So, lily flower is liked by fewer students.
- 11 students like Rose flower. It is the most popular among the students.

Exercise 12A

- From the pictograph:

(Key:  = 4 kg of apples)

Variety	Number of symbols	Quantity sold
Fuji	3 	$3 \times 4 = 12$ kg
Kiku	$3\frac{1}{2}$ 	$3\frac{1}{2} \times 4 = 14$ kg
Golden delicious	3 	$3 \times 4 = 12$ kg
Red delicious	4 	$4 \times 4 = 16$ kg
Ambrosia	$2\frac{1}{2}$ 	$2\frac{1}{2} \times 4 = 10$ kg

- The variety with the highest quantity sold is Red delicious (16 kg).
- Fuji apples sold = 12 kg
Ambrosia apples sold = 10 kg
Difference: $= 12 - 10 = 2$ kg
Therefore, 2 kg more Fuji apples were sold.
- Total apples sold = $12 + 14 + 12 + 16 + 10 = 64$ kg
Therefore, the store sold 64 kg of apples in a week.

- From the pictograph:

(Key:  = 6 children)

Mode of transport	Number of symbols	Number of students
Bus	7 	$7 \times 6 = 42$
Car	4 	$4 \times 6 = 24$
Walking	6 	$6 \times 6 = 36$
Bicycle	3 	$3 \times 6 = 18$

- Car symbols = 4
Number of students = $4 \times 6 = 24$
So, 24 students commute by car.
- Bus has the highest number of symbols (7).
So, Bus is the most commonly used mode of transport.

- c. Bicycle has the least number of symbols (3).
So, Bicycle is the least preferred mode of transport.

3. From the pictograph:

(Key: 🍏 = 2 apples)

Week	Number of symbols	Apples eaten
Week 1	8 🍏	$8 \times 2 = 16$ apples
Week 2	6 🍏	$6 \times 2 = 12$ apples
Week 3	10 🍏	$10 \times 2 = 20$ apples
Week 4	7 🍏	$7 \times 2 = 14$ apples

- a. Week 2 has 6 symbols.
Number of apples = $6 \times 2 = 12$ apples
So, they ate 12 apples in week 2.
- b. Apples eaten in Week 1 = 16
Apples eaten in Week 4 = 14
Difference = $16 - 14 = 2$ apples
So, they ate 2 more apples in week 1 than in week 4.
- c. Total apples eaten = $16 + 12 + 20 + 14$
= 62 apples
Seeds collected = $62 \times 4 = 248$ seeds
So, the total number of seeds collected was 248.

4. From the pictograph:

(Key: ★ = 4 students)

Activity	Number of symbols	Number of students
Zip-lining	7 ★	$7 \times 4 = 28$
Obstacle Course	4 ★	$4 \times 4 = 16$
Cycling	6 ★	$6 \times 4 = 24$
Nature Trail	2 ★	$2 \times 4 = 8$
Mini Rock Climbing Wall	5 ★	$5 \times 4 = 20$

- a. Total students = $28 + 16 + 24 + 8 + 20$
= 96 students
So, there are 96 students in Class 5.
- b. Zip-lining has the highest number of students (28).
So, zip-lining is the most preferred adventure activity.

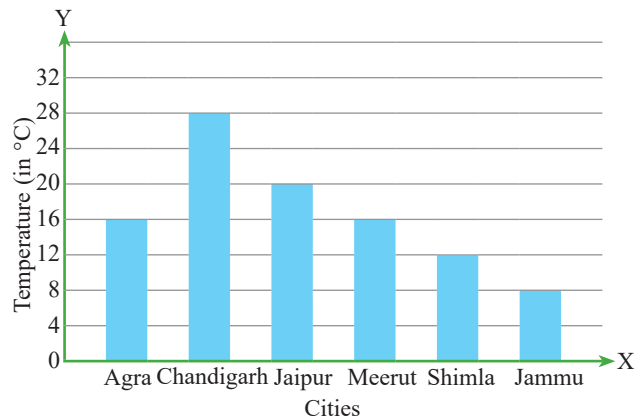
- c. Students who like zip-lining = 28
Students who like obstacle courses = 16
Total = $28 + 16 = 44$ students
So, 44 students like zip-lining and obstacle courses.
- d. Students who like zip-lining = 28
Students who like cycling = 24
Difference = $28 - 24 = 4$ students
So, the difference is 4 students.

Exercise 12B

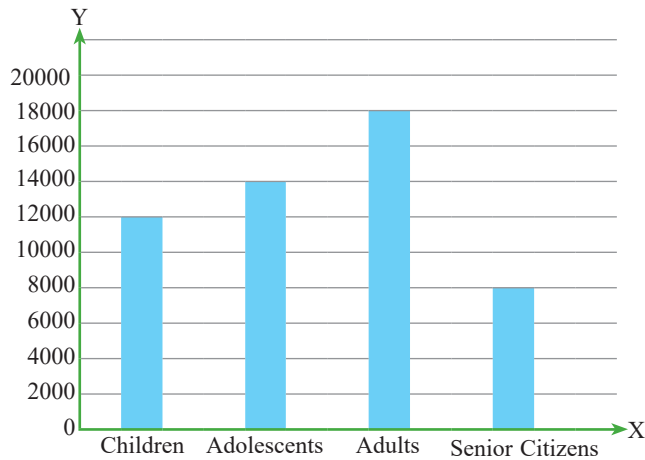
1. a. The bar graph represents the sales of toys at Good Toy Shop during a particular week.
- b. The scale of the graph:
1 unit = 2 toys
- c. From the bar graph: Wednesday's bar reaches 16 on the vertical axis.
So, 16 toys were sold on Wednesday.
- d. From the graph:
- Monday = 12 toys
 - Tuesday = 18 toys
 - Wednesday = 16 toys
 - Thursday = 10 toys
 - Friday = 6 toys
 - Saturday = 8 toys
 - Sunday = 16 toys
- The least sale was on Friday (6 toys).
- e. The highest bar is for Tuesday (18 toys).
So, Tuesday had the highest sales.
- f. Total toys sold
= Monday + Tuesday + Wednesday + Thursday + Friday + Saturday + Sunday
= $12 + 20 + 16 + 10 + 6 + 8 + 16$
= 88 toys
So, the total sales during the week were 88 toys.
2. ₹3500. So, ₹3500 is spent on education.
- b. Food (₹2500) has the least amount of expense.
- c. Total expense = ₹2500 + ₹3000 + ₹3500 + ₹4000 + ₹3500 = ₹16,500.
So, the total amount spent is ₹16,500.
- d. Clothes (₹4000) has the maximum amount of expense.



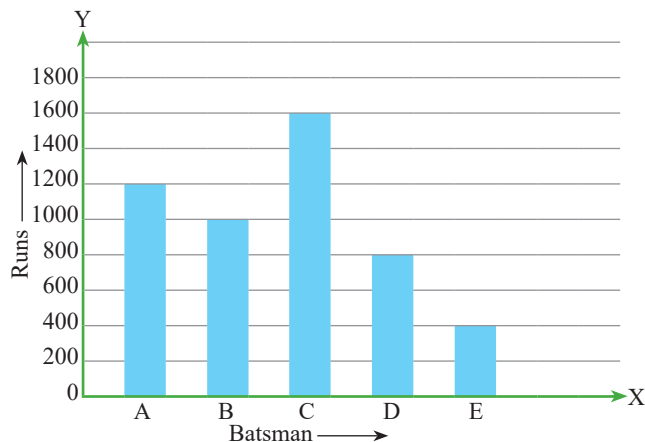
3. Scale: 1 unit = 4°C



4. Scale: 1 unit = 2000 persons



5. Scale: 1 unit = 200 runs



Exercise 12C

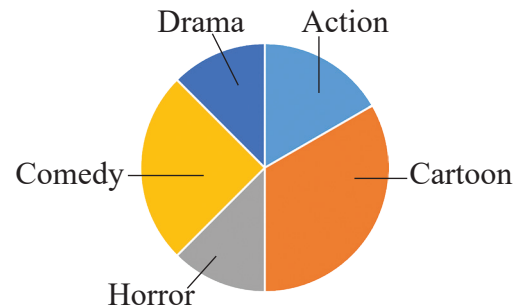
1. From the circle graph:

- Spring = Half of the circle = $\frac{1}{2}$
- Autumn = Quarter of the circle = $\frac{1}{4}$
- Winter = One-eighth of the circle = $\frac{1}{8}$

- Summer = One-eighth of the circle = $\frac{1}{8}$
- a. The largest part of the circle represents spring.
- b. The autumn sector represents $\frac{1}{4}$ of the circle.
- c. Winter and Summer have equal parts in the circle graph.
- d. The sector representing $\frac{1}{4}$ is Autumn.

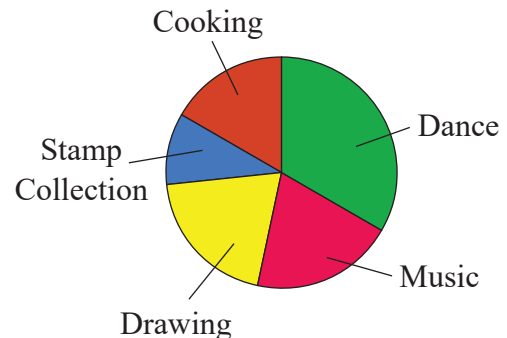
2. Total children = 4 + 8 + 3 + 6 + 3 = 24

Type of movie	Number of children	Fraction
Action	4	$\frac{4}{24} = \frac{1}{6}$
Cartoon	8	$\frac{8}{24} = \frac{1}{3}$
Horror	3	$\frac{3}{24} = \frac{1}{8}$
Comedy	6	$\frac{6}{24} = \frac{1}{4}$
Drama	3	$\frac{3}{24} = \frac{1}{8}$



3. Same as above:

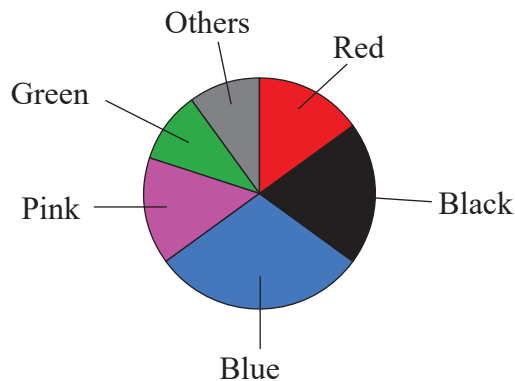
- a. Dance: $\frac{1}{3}$, Music: $\frac{1}{5}$, Drawing: $\frac{1}{5}$,
Stamp Collection: $\frac{1}{10}$, Cooking: $\frac{1}{6}$



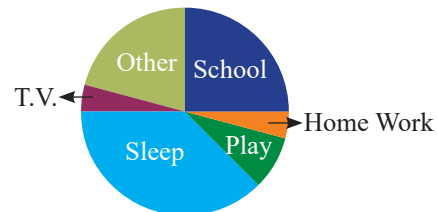
b. Same as above:

Red: $\frac{3}{20}$, Black: $\frac{1}{5}$, Blue: $\frac{3}{10}$, Pink: $\frac{3}{20}$,

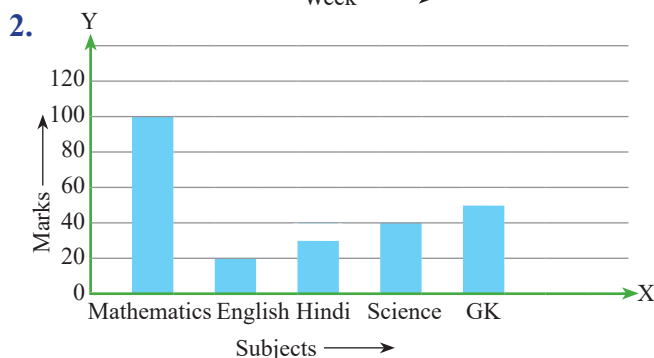
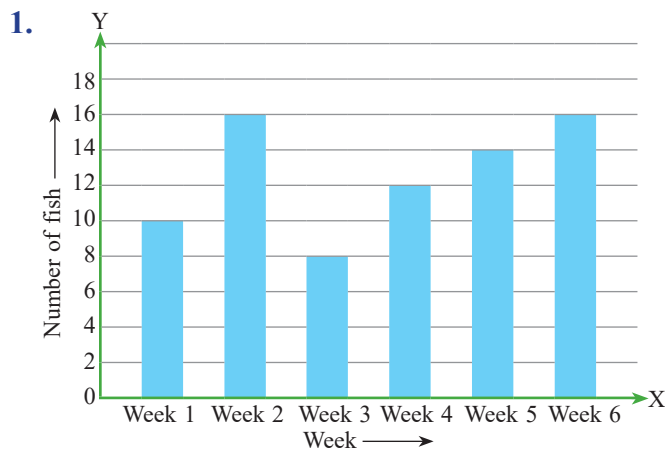
Green: $\frac{1}{10}$, Others: $\frac{1}{10}$



Play	2	$\frac{2}{24} = \frac{1}{12}$
Sleep	9	$\frac{9}{24} = \frac{3}{8}$
TV	4	$\frac{1}{6}$
Other	5	$\frac{5}{24}$



Learning Logs



3. a. 15 families have three members.
b. 5 people live alone.
c. 4 members are there is most of the families.

Activity	Time (in hours)	Fraction
School	6	$\frac{6}{24} = \frac{1}{4}$
Homework	1	$\frac{1}{24}$

Mental Maths

- Any information in the form of numbers or figures is called data.
- A representation of data using rectangles is called a bar graph.
- The graph in which date is represented using picture symbols is called a pictograph.
- Another name of a pie chart is a circle graph.
- If $\text{☺} = 4$ students,
 $\text{☺ ☺ ☺ ☺ ☺} = 18$ students.

HOTS

- 10 white cars Diwakar had count.
- 8 green cars Diwakar had count.
- white colour car was the most powerful.

MODEL TEST PAPER – 2

- b. Centimetre
- b. Perimeter = $2 \times (\text{Length} + \text{Breadth})$
 $= 2 \times (8 + 5)$
 $= 2 \times 13$
 $= 26 \text{ cm}$
- b. Area of square = Side $\times$ Side
 $= 6 \times 6$
 $= 36 \text{ sq. cm}$
- a. Scale
- b. To show the directions (North, South, East, West)
- d. 3:45 p.m. + 2 hours 30 minutes = 6:15 p.m.
- c. Value of ₹5 coins = $3 \times 5 = ₹15$
Value of ₹20 coins = $2 \times 20 = ₹40$



Value of ₹200 notes = $4 \times 200 = ₹800$

Total = $15 + 40 + 800 = ₹855$

8. c. Circle graph

9. d. Isosceles triangle

10. a. Area of a rectangle = Length $\times$ Breadth
 $= 25 \times 20$
 $= 500 \text{ sq. m}$

11. a. Perimeter is the distance around the edge of a figure.

b. Area is the amount of surface a figure covers.

c. The perimeter of a square of side 3 cm is:

Perimeter = $4 \times \text{Side}$

$= 4 \times 3$

$= 12 \text{ cm}$

12. a. Tile A: Yes, it has line symmetry.

Tile B: Yes, it has line symmetry.

Tile C: Yes, it has line symmetry.

b. Tile A: 14 sq. cm

Tile B: 16 sq. cm

Tile C: 6 sq. cm

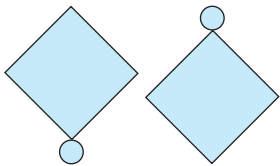
13. a. $\frac{1}{4}$ turn

b. $\frac{1}{2}$ turn

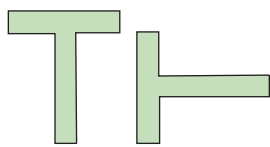
c. $\frac{1}{4}$ turn

d. $\frac{1}{2}$ turn

14. a.



b.



15. a. 18 kg 54 g = 18,054 g

b. 8235 mL = 8 L 235 mL

c. 82 m = 8200 cm

d. 32 kL = 32,000 L

e. 54 kg = 540 dg

f. 3 km 416 m = 3416 m

16. a. Number of books Saamy has = 18

Weight of each book = 1 kg 65 g

Weight of 18 books = $18 \times 1 \text{ kg } 65 \text{ g}$
 $= 18 \text{ kg} + (18 \times 65 \text{ g})$
 $= 18 \text{ kg} + 1170 \text{ g}$
 $= 18 \text{ kg} + 1 \text{ kg } 170 \text{ g}$
 $= 19 \text{ kg } 170 \text{ g}$

b. Total length of road = 12 km 600 m

Number of days taken by workers to complete the work = 6

Distance laid each day = $12 \text{ km } 600 \text{ m} \div 6$

$= 12600 \text{ m} \div 6$

$= 2100 \text{ m}$

$= 2 \text{ km } 100 \text{ m}$

c. Total capacity of swimming pool = 200 kL

Water present in the pool = 115 kL 730 L

Convert 200 kL into litres:

200 kL = 200,000 L

Water present = 115,730 L

Water needed = $200,000 - 115,730 = 84,270 \text{ L}$

Therefore, 84 kL 270 L more water required to fill the pool.

17.

Column A	Column B
a. 03:35 p.m.	iii. 15:35 hours
b. 12:49 a.m.	iv. 00:49 hours
c. 04:44 p.m.	ii. 16:44 hours
d. 09:25 a.m.	v. 09:25 hours
e. 07:35 p.m.	i. 19:35 hours

18. a. 5 kg sugar at ₹55 per kg

$= 5 \times 55 = ₹275$

b. 6 bottles of ketchup at ₹105 per bottle

$= 6 \times 105 = ₹630$

c. $\frac{1}{2}$ litre mustard oil at ₹108 per litre

$= \frac{1}{2} \times 108 = ₹54$

d. 10 kg rice at ₹42 per kg

$= 10 \times 42 = ₹420$

Total amount paid = $275 + 630 + 54 + 420$
 $= ₹1379$

19.

