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**STANDARD FIVE**

**MATHEMATICS**

**SCIENCE**

**SOCIAL SCIENCE**

**Term - II**

**Volume-2**

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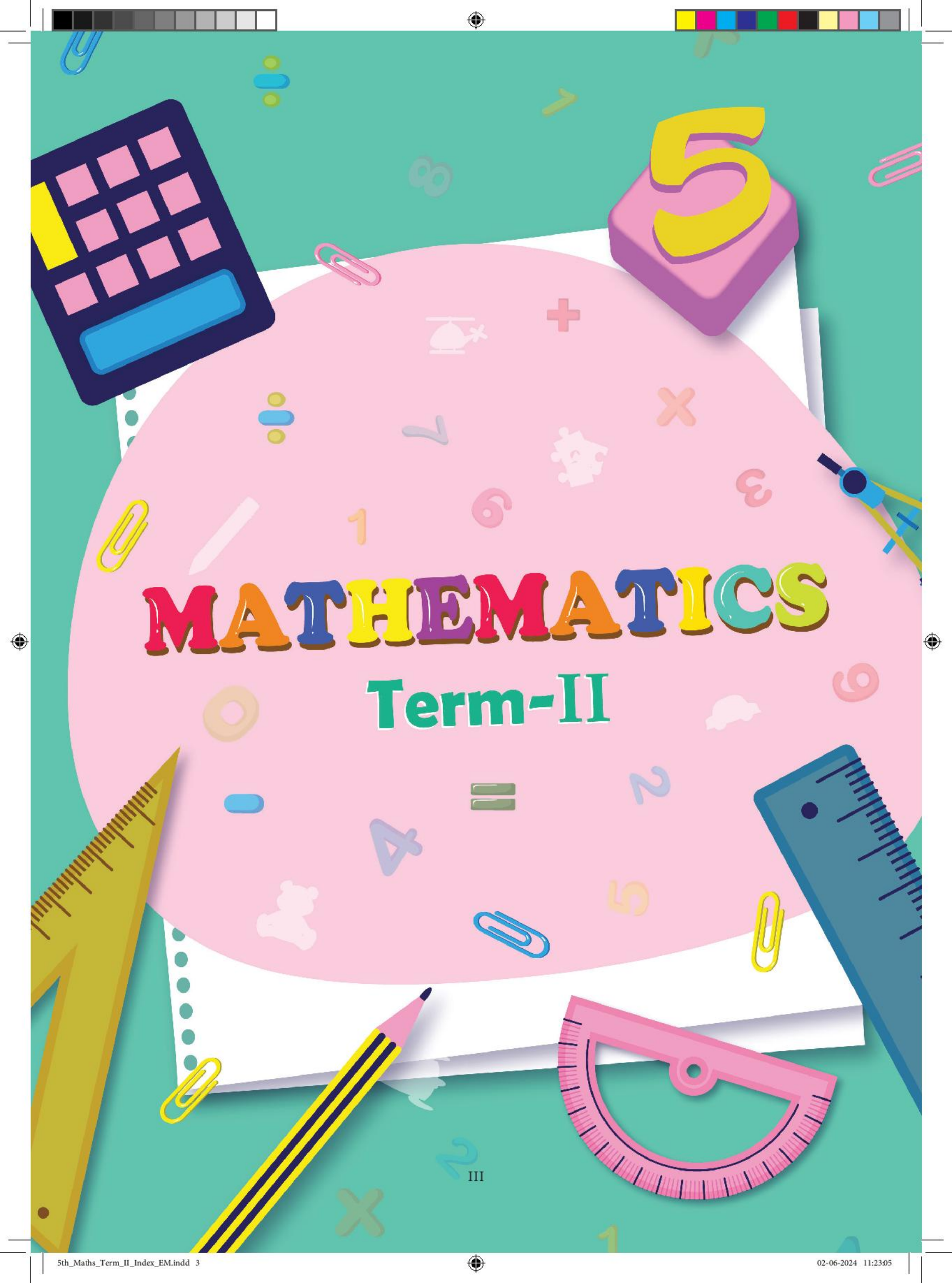
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# MATHEMATICS

## Term-II



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E-book



Assessment



# GEOMETRY

## Recall:

Point, line, line segment and Ray:

**Point** ●

A point is an exact position on a plane surface

**Line** ↔

A line is a set of points in a straight path that extends in opposite directions without ending.

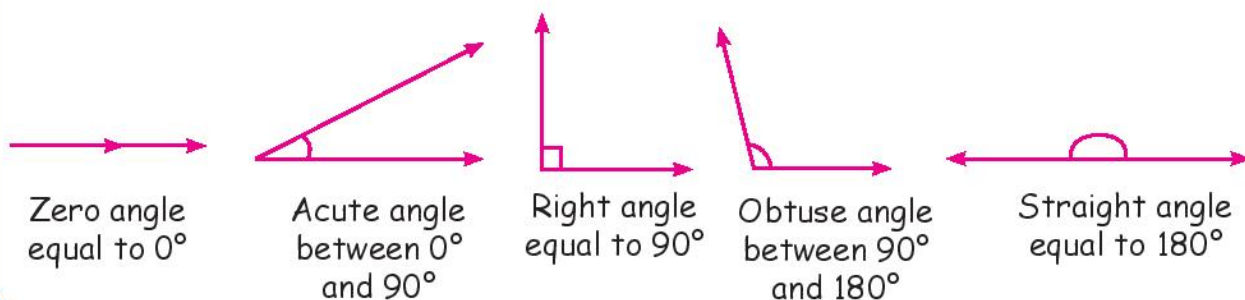
**Line segment** —

A line segment is a part of a line between two end points.

**Ray** →

A ray is a part of a line that has one end point and extends in one direction without ending.

## Types of Angles

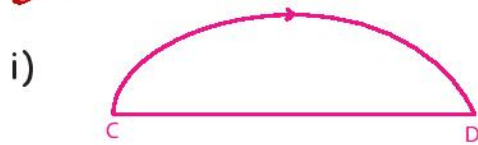


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## Try this

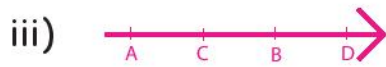
1 Tick (✓) the correct alternative



The shortest distance between the points C and D is shown by the segment CD / the curve CD



line PQ and line QP represent different lines / the same line



point C lies on the ray AB/ray BD

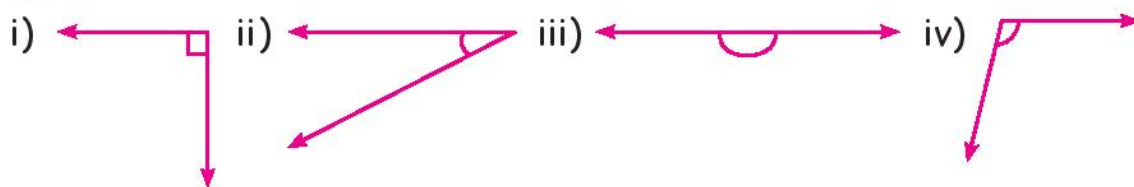


Segment MN has infinite / finite length



Ray RT is a part / is not a part of the line TR

2 Write the type of the angle



## 1.1 COMPLEMENTARY ANGLES AND SUPPLEMENTARY ANGLES

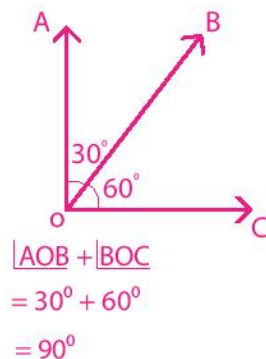
### 1. Complementary angles

When the sum of the measures of two angles is  $90^\circ$ , pair of angles are called complementary angles.

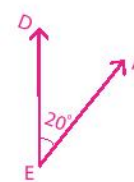
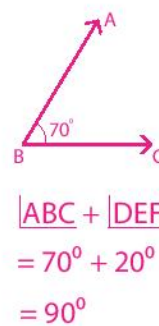


### Examples

i)



ii)

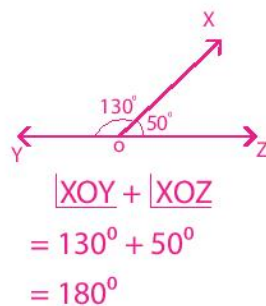


## 2. Supplementary Angles

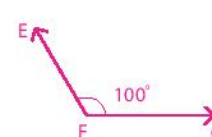
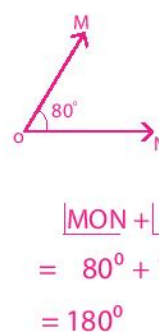
When the sum of the measures of two angles is 180, the pair of angles are called supplementary angles.

### Examples

i)



ii)



### Exercise 1.1



Write the measures of the complementary angles of the following angles

- i)  $45^\circ$     ii)  $30^\circ$     iii)  $72^\circ$     iv)  $88^\circ$     v)  $38^\circ$



Write the measures of the supplementary angles of the following angles

- i)  $80^\circ$     ii)  $95^\circ$     iii)  $110^\circ$     iv)  $135^\circ$     v)  $150^\circ$



## 1.2 Fractals

### Definition of Fractals:

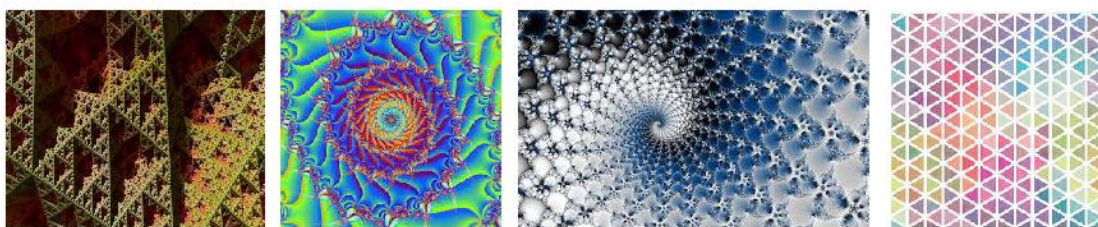
A fractal is a never ending pattern that repeats itself at different scales. This property is called "Self-similarity".

Although fractals are very complex, they are made by repeating a simple process.

Fractals are extremely complex, sometimes infinitely complex - meaning you can zoom in and find the same shapes for ever.

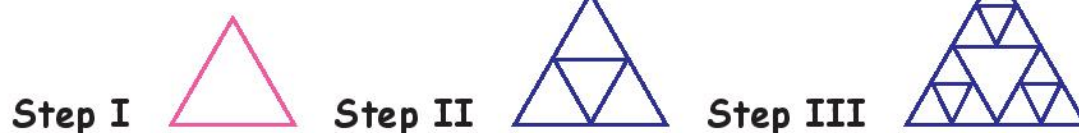
Amazingly, fractals are extremely simple to make.

### Examples



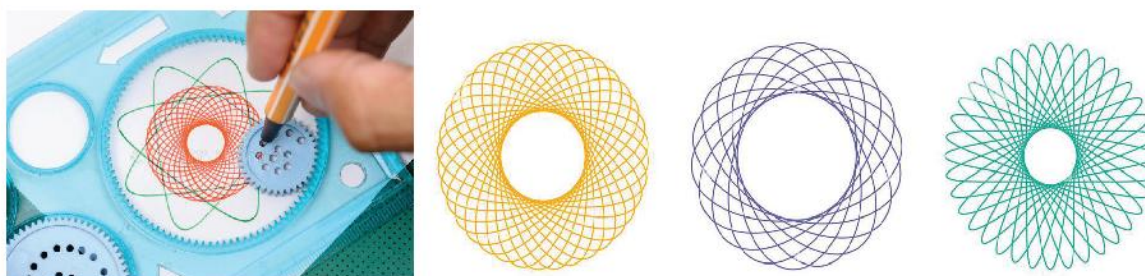
### Activity: 1

Create the given fractal image using matchstick.



### Activity: 2

Create fractals of your own. An example is shown below.





## UNIT-2

# NUMBERS

### 2.1 Introduction of square numbers.

To understand the meaning of square numbers.



4



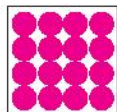
$$2 \times 2 = 4$$

9



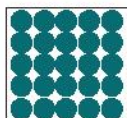
$$3 \times 3 = 9$$

16



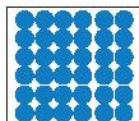
$$4 \times 4 = 16$$

25



$$5 \times 5 = 25$$

36



$$6 \times 6 = 36$$

#### Do you know?

$2 \times 2$  can be written as  $2^2$  which is read as 2 square.

$3 \times 3$  can be written as  $3^2$  which is read as 3 square and so on.

#### Definition:

A square number is the product of a number by itself.

#### Try this

| 1x1 | 2x2 | 3x3 | 4x4 | 5x5 | 6x6 | 7x7 | 8x8 | 9x9 | 10x10 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| 1   | 4   | 9   | 16  | 25  | 36  | —   | —   | —   | —     |





### Activity: 1

A. Count and write the number of boxes:

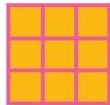
1 X 1



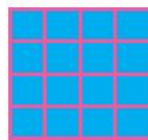
2 X 2



3 X 3



4 X 4



### Activity: 2

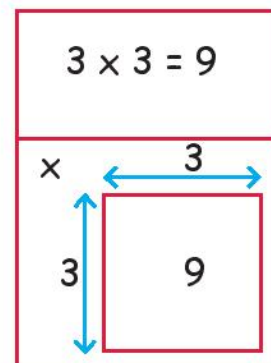
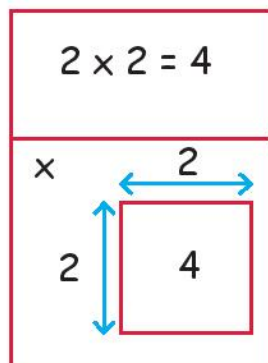
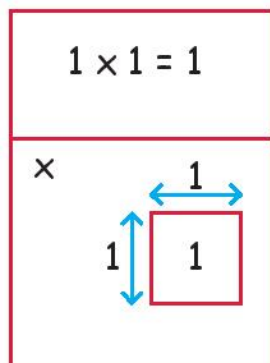
B. Circle and Colour the square numbers:

| X  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  |
|----|----|----|----|----|----|----|----|----|----|-----|
| 1  | ①  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  |
| 2  | 2  | 4  | 6  | 8  | 10 | 12 | 14 | 16 | 18 | 20  |
| 3  | 3  | 6  | 9  | 12 | 15 | 18 | 21 | 24 | 27 | 30  |
| 4  | 4  | 8  | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40  |
| 5  | 5  | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50  |
| 6  | 6  | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60  |
| 7  | 7  | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70  |
| 8  | 8  | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80  |
| 9  | 9  | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90  |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |



### Activity: 3

Let's draw and enjoy: (Using grid sheet or Graph sheet)



### Activity: 4

Teacher shall prepare two sets of cards. One set with numbers 1 to 9 and another set with their square numbers (1, 4, 9, 16,...) and keep them in two separate bowls.

Teacher shall call a child randomly and ask the child to pick a card from first bowl and it has to be shown to the class.

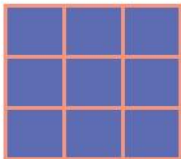
Now the child has to pick the square of that number from the second bowl. If the child finds the correct card that child can be considered as winner.

### Exercise 2.1

I. Answer the following:

1 The square number of 2 is -----

2 The square number of 5 is -----

3  These number of boxes is equal to one square number. The number is -----



4 Which of following number is square number -----

- a. 23    b. 54    c. 36    d. 45

5 What is next square number of 49?

- a. 76    b. 95    c. 64    d. 54

## 2.2 Factors and Multiples

Kavitha brought 12 laddus from her home. She gave one laddu for each friend. She was able to give laddus to 12 friends without any remaining.

If she gives 2 for each, she could give to 6 friends.

If she gives 3 for each, She could give to 4 friends. Like this how can she give laddus so that no laddu would be remaining? She can give each 4, 6, 12.

Numbers that divide 12 without remaining are 1, 2, 3, 4, 6 and 12.

The numbers which can divide a number without leaving a remainder is called its factor.

### Try this

Find the Factors:

Factors of 4 are 1, 2 and 4.

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

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

Factors of 18 are -----

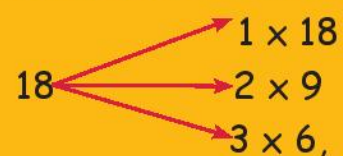
Factors of 20 are -----

Factors of 24 are -----

Factors of 42 are -----

### Another Method

Find the factor of 18:



1, 2, 3, 6, 9 and 18 are the factors of 18.



## 2.3 Composite and Prime Numbers

### Activity: 5

Tick the factors of the following numbers

| Factors |   |   |   |   |   |   |   |   |   |    |
|---------|---|---|---|---|---|---|---|---|---|----|
| Numbers | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 12      |   |   |   |   |   |   |   |   |   |    |
| 20      |   |   |   |   |   |   |   |   |   |    |
| 29      |   |   |   |   |   |   |   |   |   |    |
| 37      |   |   |   |   |   |   |   |   |   |    |
| 44      |   |   |   |   |   |   |   |   |   |    |
| 60      |   |   |   |   |   |   |   |   |   |    |

### Composite Number:

A natural number having more than 2 factors is called a **composite number**.

#### Examples

4, 6, 8, 9, 12, 26, 60,...

### Prime number:

A natural number greater than 1, having only two factors namely one and the number itself is called a **prime number**.

#### Do you know?

2 is the only even prime number.

#### Examples

2, 3, 5, 7, 11, 13, 29, 37,...

## COMMON FACTORS:

The factors that are common in two or more numbers are called as **common factors**.

### Example

The factors of 12, 18 are :

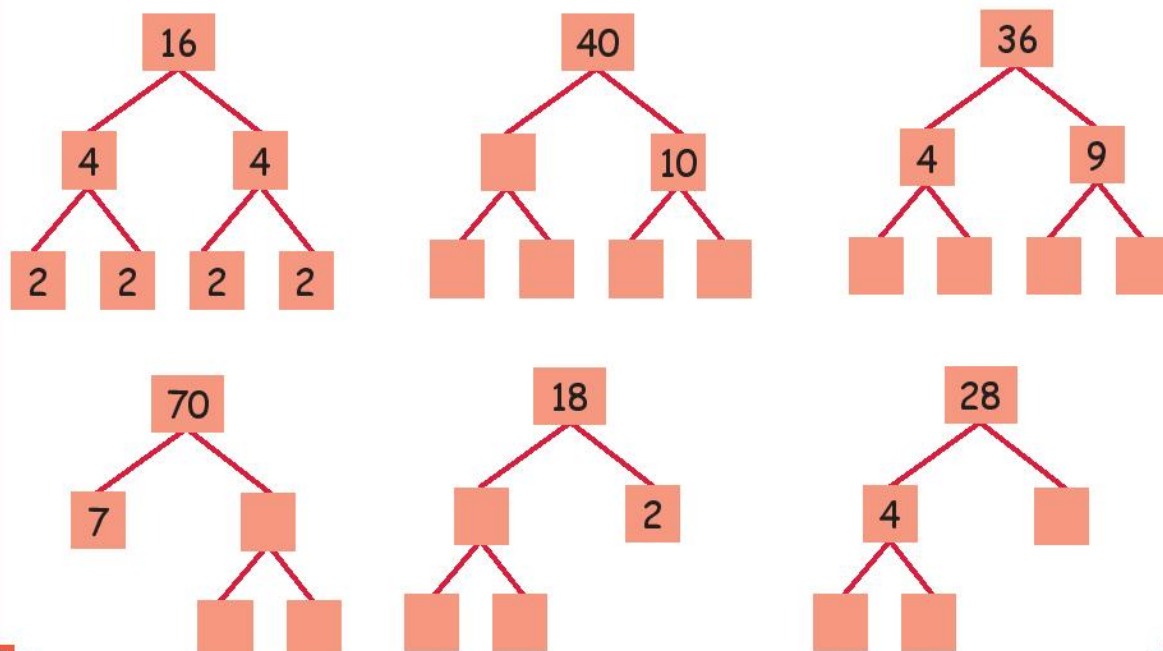
The factors of 12 - 1, 2, 3, 4, 6, 12

The factors of 18 - 1, 2, 3, 6, 9, 18

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

### Activity: 6

Complete the following factor tree:



### Exercise 2.2



Find the common factors for:

(i) 8 and 12

(ii) 24 and 30

(iii) 20 and 30

## 2.4 Least Common Multiple (L.C.M )

L. C. M of two or more given numbers is the smallest number which is divisible by all the given numbers.

### Multiples

How many steps can a rabbit jump if it is jumping 4 steps for 10 times?

4, 8, 12, 16, 20, 24, 28, 32, 36, **40**

If we add 4 to each number we will get 40.

### Try this

5, 10, 15, ----, ----, ----, ----,  
-----

### Do you know?

Each number is the first multiple of that number.

There is a relation between the multiples and multiplication table of a number.

### Common Multiples:-

The Multiples that are common to two numbers are their common multiples.

#### Example

Find the common multiples of 9, 12

Multiples of 9 - 9, 18, 27, **36**, 45, 54, 63, **72**, 81, 90,...

Multiples of 12 - 12, 24, **36**, 48, 60, **72**, 84, 96, 108, 120,...

The common multiples of 9, 12 are **36, 72, ...**

#### Example

Find L.C.M of 4 and 6

Multiples of 4 - 4, 8, **12**, 16, 20, **24**, 28, 32, **36**,...

Multiples of 6 - 6, **12**, 18, **24**, 30, **36**, 42, 48, 54,...

Common multiples of 4, 6 are 12, 24, 36,...

L.C.M of 4, 6 is 12.





### Try this

Find L.C.M

1. 10 and 15

2. 8 and 6

3. 4 and 10

4. 6 and 16

### Example

Find L.C.M of 8 and 12

$$\begin{array}{r|l} 2 & 8 \\ \hline 2 & 4 \\ \hline 2 & 2 \\ \hline & 1 \end{array} \quad \begin{array}{r|l} 2 & 12 \\ \hline 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$8 = 2 \times 2 \times 2$$

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

$$\text{L.C.M of } 8, 12 = 2 \times 2 \times 2 \times 3 = 24.$$

Multiply the common factors  
and other Factors of two numbers  
to get its L.C.M

### Do you Know?

If one number is a multiple of another number, then the bigger number is L.C.M and smaller number is H.C.F.

### Example

L.C.M of 4, 16 is 16

H.C.F of 4, 16 is 4

Think it

Can we say the highest common  
multiples for two numbers?

## 2.5 Life Applications of L.C.M

### Example

Raja is a cloth seller. Suja is a Bangle seller both of them started from their native place of trichy for selling. Raja returned after 8 days, suja returned after 6 days, when they will meet at trichy if they started in same day?

**Solution:**

We have to find L.C.M

L.C.M of 8, 6

$$\begin{array}{r|l} 2 & 8 \\ 2 & 4 \\ 2 & 2 \\ & 1 \end{array} \quad \begin{array}{r|l} 2 & 6 \\ 3 & 3 \\ & 1 \end{array}$$

$$8 = 2 \times 2 \times 2$$

$$6 = 2 \times 3$$

$$\begin{aligned} \text{L.C.M of } 8, 6 &= 2 \times 2 \times 2 \times 3 \\ &= 24 \end{aligned}$$

They both will meet 24<sup>th</sup> day at Trichy.

### Exercise 2.3



**Choose the best answer:**

(i) The number divisible by 5 with no remainder

- a. 14                      b. 535                      c. 447                      d. 316

(ii) Pick the number which is not a multiple of 6.

- a. 18                      b. 26                      c. 72                      d. 36

(iii) The common multiple of 4 and 8 among the given number is.

- a. 32                      b. 84                      c. 68                      d. 76

(iv) Factors of 6

- a. 1, 2, 3                      b. 1, 6                      c. 1, 2, 3, 6                      d. 2, 3





(v) Multiple of 9 is

a. 79

b. 87

c. 29

d. 72

**2** Fill in the blanks:

(i) Factors of 7 -----

(ii) The only even prime number is -----

(iii) L.C.M of 4, 12 -----

(iv) L.C.M of 5, 15 -----

(v) The numbers which divides 35 without remainders are -----, -----, -----.

**3** Write down the factors of the given numbers.

(i) 25 (ii) 36 (iii) 14 (iv) 16 (v) 12

**4** Draw a picture of factor tree.

(i) 18 (ii) 33 (iii) 16 (iv) 50

**5** Write down the first 5 multiples of the given numbers.

(i) 7 (ii) 9 (iii) 16 (iv) 11 (v) 21

**6** Find first three common multiples of the given numbers.

(i) 24, 16 (ii) 12, 9 (iii) 24, 36

**7** Find L. C.M of the given numbers.

(i) 12 and 28 (ii) 16 and 24 (iii) 8 and 14 (iv) 30 and 20

**8** Ramya visits the gym five days once and Kavitha visits the gym six days once. In which day will they meet each other?

**9** Arun and shahjahan goes for walking in a circular path of a park in the same direction. Arun takes 6 minutes to complete one round, while shahjahan takes 8 minutes to completed one round. In how many minutes will they meet each other?



# PATTERNS

## 3.1

### Patterns in Geometry



Able to make border strip and tiling

**Tiles:** A tiling of the plane is a collection of subsets of the plane, i.e. tiles, which cover the plane without gaps or overlaps.

#### Example



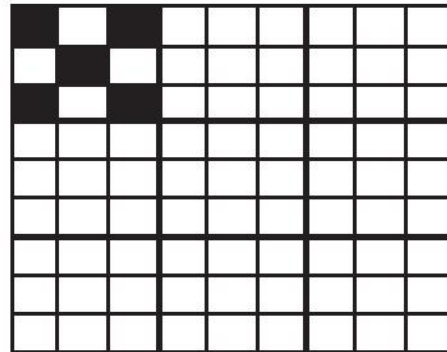
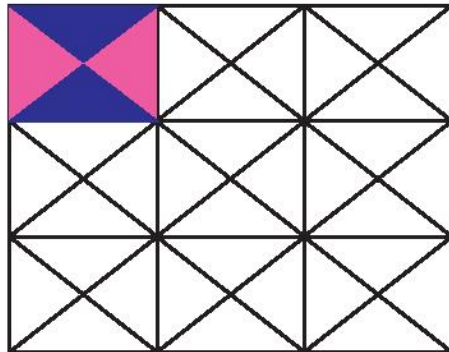
#### Note:

A design can be made of more than one kind of shapes .



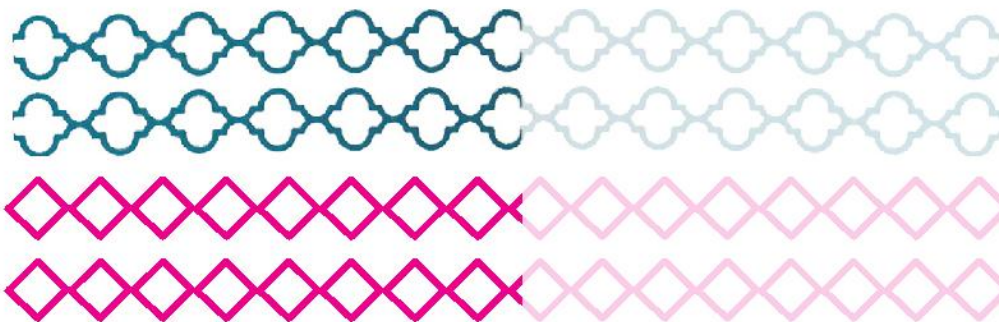
### Activity 1

Continue the pattern as done in first to complete the tile.



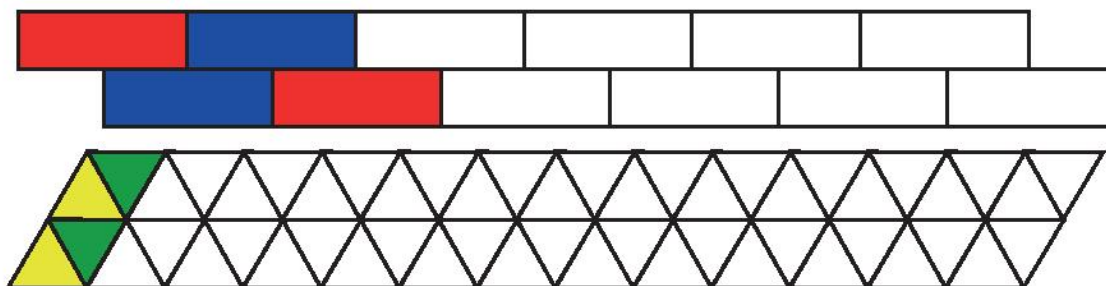
### Activity 2

Continue the border stripe.



### Activity 3

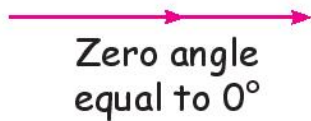
Colour the shapes to complete the pattern.



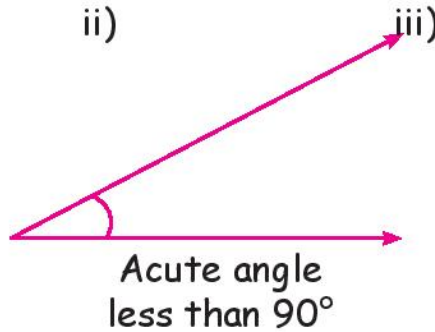
### 3.2 To make patterns of shapes using different number of angles / types of angles

Let us recall the types of angles.

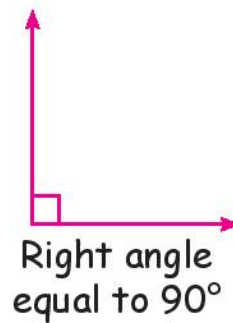
i)



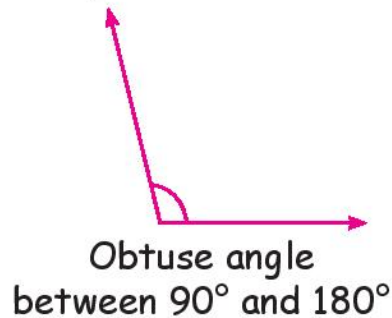
ii)



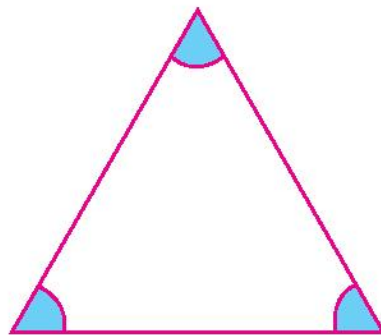
iii)



iv)



v)



Observe the angles formed at the vertex of the following shapes.

This is an equilateral triangle.

It has 3 angles formed at 3 vertices.

The 3 angles are equal in measure and they are equal to  $60^\circ$ .

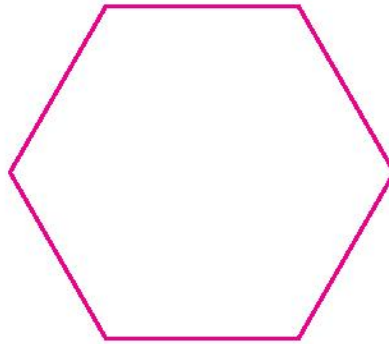
It can be demonstrated as follows.



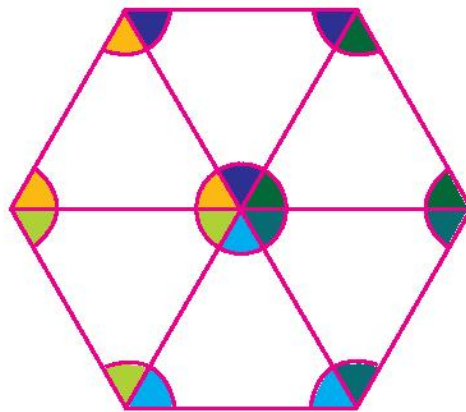




### Finding the angle of a regular hexagon using the equilateral triangle.



We shall find the angles of a regular hexagon using the equilateral triangle. Place the equilateral triangles in a regular hexagon as shown in the figure.

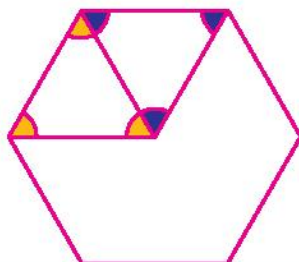


$$\begin{array}{ccccccccc} \triangle & + & \triangle & + & \triangle & + & \triangle & + & \triangle & + & \triangle \\ 60^\circ & + & 60^\circ & + & 60^\circ & + & 60^\circ & + & 60^\circ & + & 60^\circ = 360^\circ \end{array}$$

Angle at the centre of a regular hexagon is  $360^\circ$ .

This is also the angle of a circle.

Angle at each vertex of a regular hexagon is  $120^\circ$



$$\begin{array}{ccc} \triangle & + & \triangle \\ 60^\circ & + & 60^\circ = 120^\circ \end{array}$$

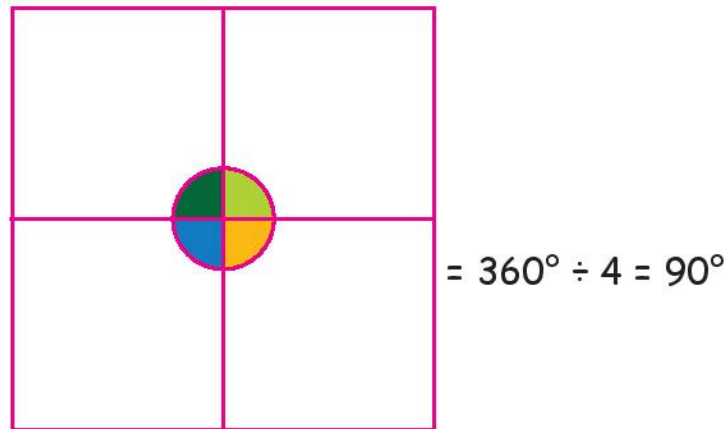




### Finding the angle of a square.

Angle of a circle is  $360^\circ$  ○.

Let us find the angle of square using a circle.



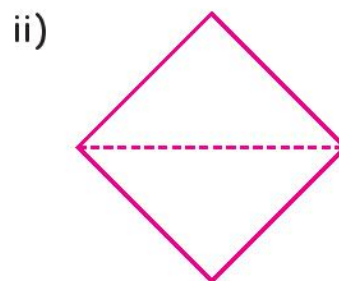
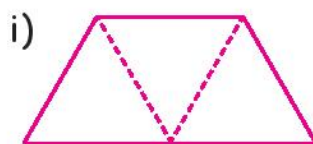
Place 4 squares as shown in the above figure.

The shape formed at the centre is a circle. The angle of circle is  $360^\circ$ .

Now the angle of a square is  $360^\circ \div 4 = 90^\circ$ .

### Exercise 3.1

1 Find the angle of the given shapes using the equilateral triangle.

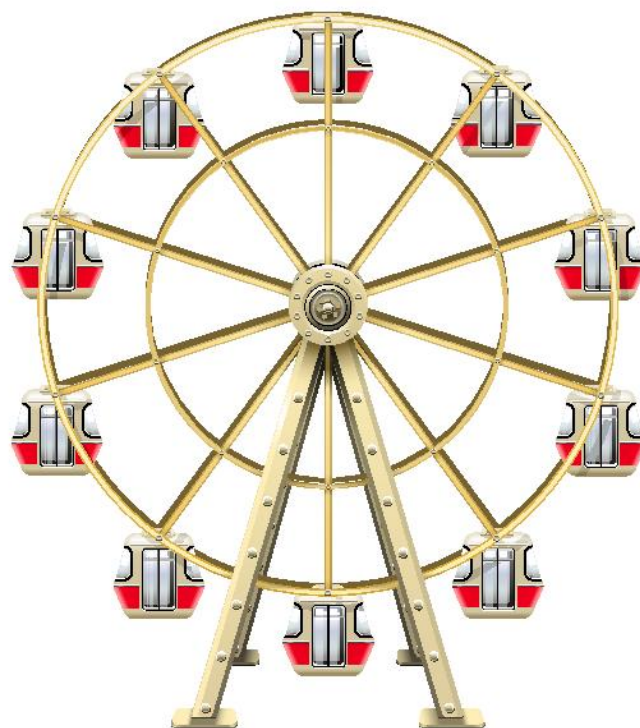


2 Find the angles of a rectangle using a circle.

### 3.3 Rotating angles

#### Giant wheel

Look at the rotation of the giant wheel. Every compartment moves to a position and comes back to the original position.



A clock shows time by the rotation of minute hand and hour hand.  
The minute hand and hour hand of a clock form an angle.  
Observe the various angle formed by the rotation of the hands of the clock.



Right angle



Straight angle



Right angle



Acute angle



Zero angle



Obtuse angle



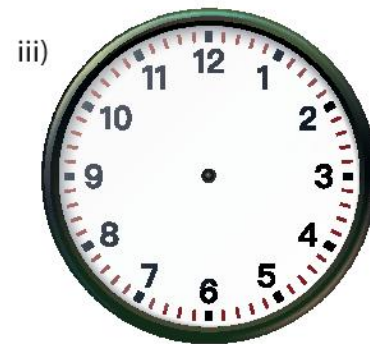
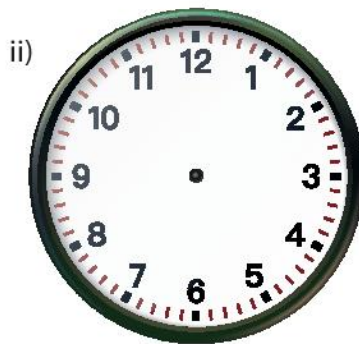
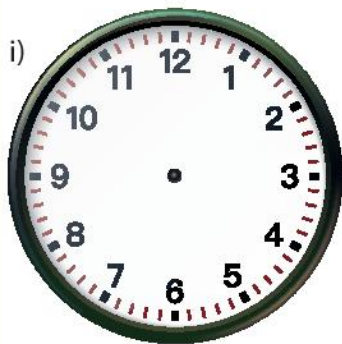


You can note that from 12.00 midnight to 12 noon the hour hand of the clock has completed one rotation. That is, it has completed  $360^\circ$  once. While the minute hand has completed 12 rotations. That is, it has completed  $360^\circ$  twelve times.

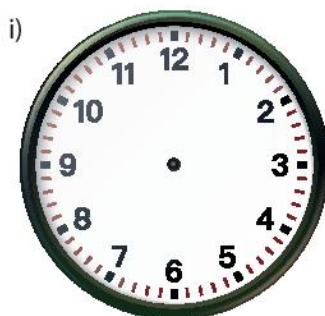
### Exercise 3.2



Mention the time in the clock when the angle is i)  $180^\circ$ , ii)  $90^\circ$ , iii)  $60^\circ$ .

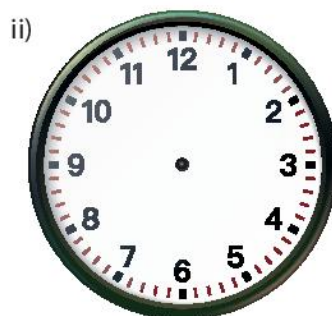


Find the angle made by the hands of the clock at the given time.



11:00

\_\_\_\_\_



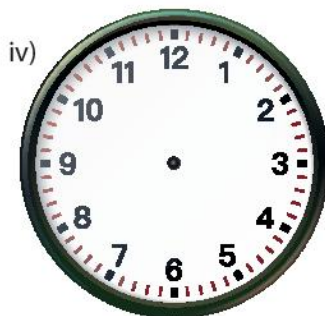
09:00

\_\_\_\_\_



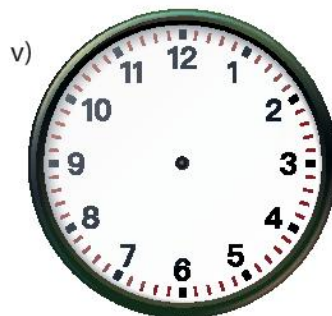
06:00

\_\_\_\_\_



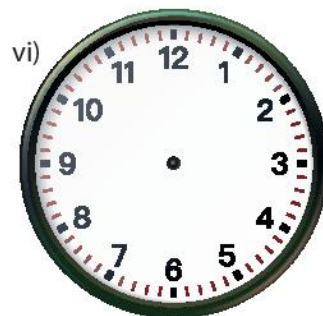
06:10

\_\_\_\_\_



06:45

\_\_\_\_\_



06:30

\_\_\_\_\_



### 3.4 Able to find patterns in a collections of words.

## Example

Observe the words given below.

**few, cop, cut, new, hop, hut, knew, shop, put**

The last two letters of the words follow the pattern **ew**, **op**, **ut**.

## Activity 4

Arrange the given words to form a pattern.

Depth, called, walked, mice, played, pulled, breadth, rice, length, width, price, voice

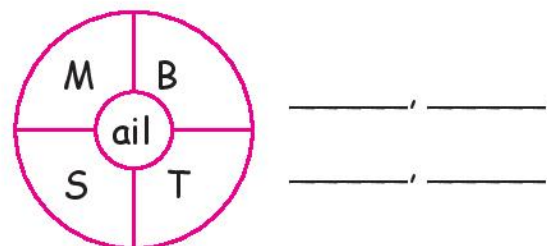
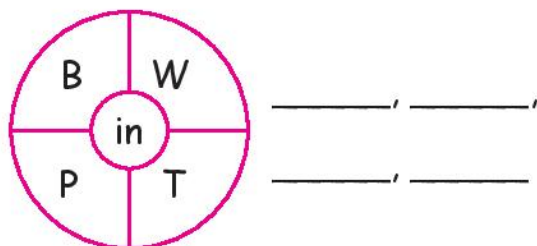
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

## Example

Form the words ending with 'in' and 'ail' to make a pattern.



### Exercise 3.3

- 1** Write down the collection of words by ending with "ENT" and "IGHT"

(i) WENT, SENT, B\_\_\_\_\_, R\_\_\_\_\_, T\_\_\_\_\_

(ii) NIGHT, LIGHT, R\_\_\_\_, S\_\_\_\_, M\_\_\_\_

- 2** Fill in the blanks

(i) C\_\_AT, B\_\_AT, G\_\_AT

(ii) R\_\_D, B\_\_D, W\_\_D





# Measurements



**4.1** Able to apply the four operations in solving problems involving weight.

## Recall

Sort out the following things and write



Need to weigh

No need to weigh  
(Can be counted)



### Let us recall

10 milligram = \_\_\_\_\_ centigram

10 centigram = \_\_\_\_\_ decigram

10 decigram = \_\_\_\_\_ gram

\_\_\_\_\_ gram = \_\_\_\_\_ decagram

\_\_\_\_\_ decagram = 1 hectagram

10 hectagram = \_\_\_\_\_ kilogram

### Weighing Machines:

These are some examples of weighing machines



Simple balance



Analog weighing machine



Digital weighing machine

### Do you know?

1 gram (g) = 1000 milligram (mg)

1 kilogram (kg) = 1000 gram (g)

$\frac{1}{2}$  kilogram (kg) = 500 gram (g)

$\frac{1}{4}$  kilogram (kg) = 250 gram (g)

$\frac{3}{4}$  kilogram (kg) = 750 gram (g)

#### Note:

Generally, we used to write kilogram as kg and milligram as mg in short.

### Activity: 1

Tick the suitable unit to measure the following objects



g/kg



g/kg



g/kg



g/kg



g/kg



g/kg



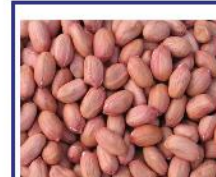
g/kg



g/kg



g/kg



g/kg

## CONVERSION

### Examples

Convert the following into grams.

(i) 2 kg 250 g 1 kg = 1000 g

$$2 \text{ kg } 250 \text{ g} = (2 \times 1000) + 250 \text{ g}$$
$$= 2000 + 250$$

$$2 \text{ kg } 250 \text{ g} = 2250 \text{ g}$$

(ii) 15 kg 30 g

$$15 \text{ kg } 30 \text{ g} = (15 \times 1000) + 30 \text{ g}$$
$$= 15000 + 30$$

$$15 \text{ kg } 30 \text{ g} = 15030 \text{ g}$$

(iii) 3500 mg 1000 mg = 1 g

$$3500 \text{ mg} = 3500 \div 1000 \text{ g}$$
$$= 3 \text{ g } 500 \text{ mg}$$

#### Note:

To convert kilogram into gram multiply the given kilogram by 1000.

#### Note:

To convert milligram into gram divide the given milligram by 1000.

#### Note:

To convert gram into kilogram divide the given gram by 1000.

Try this  
Convert into gram  
1. 2250 mg  
2. 5 kg 400 g

$$\begin{array}{r} 3 \text{ g} \\ 1000 \overline{) 3500} \\ \underline{3000} \phantom{0} \\ 500 \text{ mg} \end{array}$$



### Examples

#### Convert into kilograms

(i) 7500 g

$$1000 \text{ g} = 1 \text{ kg}$$

$$\begin{aligned} 7500 \text{ g} &= 7500 \div 1000 \text{ g} \\ &= 7 \text{ kg } 500 \text{ g} \end{aligned}$$

$$\begin{array}{r} 7 \text{ kg} \\ 1000 \overline{) 7500} \\ \underline{7000} \phantom{0} \\ 500 \text{ g} \end{array}$$

(i) 4250 g

$$\begin{aligned} 4250 \text{ g} &= 4250 \div 1000 \text{ g} \\ &= 4 \text{ kg } 250 \text{ g} \end{aligned}$$

$$\begin{array}{r} 4 \text{ kg} \\ 1000 \overline{) 4250} \\ \underline{4000} \phantom{0} \\ 250 \text{ g} \end{array}$$

Try this  
Convert into kilogram

1. 4000 gram
2. 7350 gram
3. 4750 gram

#### Addition

### Examples

#### Find the sum of the following.

(i) 7 kg 400 g + 5 kg 350 g

|   | kg | g   |
|---|----|-----|
|   | 7  | 400 |
| + | 5  | 350 |
|   | 12 | 750 |

$$7 \text{ kg } 400 \text{ g} + 5 \text{ kg } 350 \text{ g} = 12 \text{ kg } 750 \text{ g}$$





(ii) 14 g 500 mg + 10 g 750 mg

|   | g  | mg  |
|---|----|-----|
|   | 14 | 500 |
| + | 10 | 750 |
|   | 25 | 250 |

Try this

Find the sum of the following:

1. 5 kg 300g + 19 kg 850 g
2. 15 g 450 mg + 14 g 25 mg + 3 g 700 mg
3. 18 kg 750 g + 16 kg 400 g + 3 kg 500 g

$$14 \text{ g } 500 \text{ mg} + 10 \text{ g } 750 \text{ mg} = 25 \text{ g } 150 \text{ mg}$$

### Example

In a market Rahman bought 12 kg 500 g of brinjal, 15 kg 250 g of ladies finger and 17 kg 350 g of onion what is the total weight of vegetables?

Solution:



|                               | kg   | g   |
|-------------------------------|------|-----|
|                               | 12   | 500 |
| Weight of the brinjal =       | 15   | 250 |
| Weight of the ladies finger = | + 17 | 350 |
| Weight of the onion =         | 45   | 100 |
| Total weight =                |      |     |

Total weight of the three vegetables = 45 kg 100 g

## Subtraction

### Examples

Find the difference

(i)  $39 \text{ kg } 500 \text{ g} - 33 \text{ kg } 750 \text{ g}$

| kg   | g   |
|------|-----|
| 39   | 500 |
| - 33 | 750 |
| 5    | 750 |

Difference = 5 kg 750 g

(ii)  $750 \text{ g } 350 \text{ mg} - 350 \text{ g } 225 \text{ mg}$

| g     | mg  |
|-------|-----|
| 750   | 350 |
| - 350 | 225 |
| 400   | 125 |

Difference = 400 g 125 mg

Try this

Subtract the following

- $75 \text{ kg} - 35 \text{ kg } 400 \text{ g}$
- $57 \text{ kg } 750 \text{ g} - 23 \text{ kg } 450 \text{ g}$
- $975 \text{ kg } 400 \text{ g} - 755 \text{ kg } 550 \text{ g}$

### Example

A sack had 25 kg rice. Out of 25kg rice 13 kg 500 g of rice which was used for noon meal. What is the weight of the remaining rice?

**Solution:**



|                         | kg   | g   |
|-------------------------|------|-----|
| Rice in the sack        | 25   | 000 |
| Rice used for noon meal | - 13 | 500 |
| Remaining rice          | 11   | 500 |

Remaining amount of rice in sack = 11 kg 500 g

## Multiplication

### Examples

Write the answer in multiply:

(i)  $7 \text{ kg } 400 \text{ g} \times 3$

|          | kg | g   |
|----------|----|-----|
|          | 7  | 400 |
| $\times$ |    | 3   |
|          | 22 | 200 |

$$7 \text{ kg } 400 \text{ g} \times 3 = 22 \text{ kg } 200 \text{ g}$$

(ii)  $52 \text{ kg } 350 \text{ g} \times 8$

|          | kg  | g   |
|----------|-----|-----|
|          | 52  | 350 |
| $\times$ |     | 8   |
|          | 418 | 800 |

$$52 \text{ kg } 350 \text{ g} \times 8 = 418 \text{ kg } 800 \text{ g}$$

Try this

Multiply the following:

- a.  $7 \text{ kg } 350 \text{ g} \times 7$
- b.  $9 \text{ kg } 750 \text{ g} \times 3$
- c.  $9 \text{ kg } 750 \text{ g} \times 3$
- d.  $45 \text{ kg } 800 \text{ g} \times 6$

### Example

A packet can contain  $3 \text{ kg } 500 \text{ g}$  of sugar, how much amount of sugar can 7 such packets contain?

**Solution:**

|                               | kg   | g              |
|-------------------------------|------|----------------|
| Weight of one packet of sugar | = 3  | 500            |
| Weight of 7 packets sugar     | = 3  | $500 \times 7$ |
|                               | = 24 | 500            |

$$\text{Weight of 7 packets of sugar} = 24 \text{ kg } 500 \text{ g}$$



## Division

### Examples

Divide the following:

(i)  $70 \text{ kg } 350 \text{ g} \div 7$

| kg  | g   |
|-----|-----|
| 10  | 050 |
| 7   | 70  |
| - 7 |     |
| 0   | 350 |
|     | 35  |
| -   | 35  |
|     | 00  |
|     | 00  |
|     | 0   |

$$70 \text{ kg } 350 \text{ g} \div 7 = 10 \text{ kg } 50 \text{ g}$$

(ii)  $66 \text{ g } 720 \text{ mg} \div 6$

| g   | mg  |
|-----|-----|
| 11  | 120 |
| 6   | 66  |
| - 6 |     |
| 06  | 720 |
| - 6 |     |
|     | 7   |
| -   | 6   |
|     | 12  |
| -   | 12  |
|     | 00  |

$$66 \text{ g } 720 \text{ mg} \div 6 = 11 \text{ g } 120 \text{ mg}$$

Try this

Divide the following:

- a.  $7 \text{ kg } 490 \text{ g} \div 7$
- b.  $35 \text{ kg } 650 \text{ g} \div 5$
- c.  $6 \text{ g } 240 \text{ mg} \div 4$
- d.  $150 \text{ g } 750 \text{ mg} \div 15$



### Example

How many packets of 3 kg groundnut cookies can be made from 75 kg of groundnut cookies?

**Solution:**



Total amount of groundnut cookies = 75 kg

Weight of 1 packet of groundnut cookies = 3 kg

Number of packets of 3 kg groundnut cookies =  $75 \div 3$   
= 25 packets

we can separate 75 kg groundnut cookies as 3 kg groundnut cookies in 25 packets.

### Exercise 4.1

**1** Fill in the blanks:

- (i) 7 kg 400 g = \_\_\_\_\_ g
- (ii) 5g 50mg = \_\_\_\_\_ mg
- (iii) 9500 mg = \_\_\_\_\_ g \_\_\_\_\_ mg
- (iv) 15 kg 350 g = \_\_\_\_\_ g
- (v) 6250g = \_\_\_\_\_ kg \_\_\_\_\_ g

**2** Add the following:

- (i) 4 kg 250 g + 3 kg 450 g
- (ii) 75 g 430 mg + 750 g.
- (iii) 97 kg 45 g + 77 kg 450 g + 33 kg 250 g
- (iv) 75 kg 400 g + 30 kg 250 g



**3 Subtract the following:**

- (i)  $40 \text{ kg } 350 \text{ g} - 25 \text{ kg } 200 \text{ g}$
- (ii)  $35 \text{ kg } 850 \text{ g} - 18 \text{ kg } 500 \text{ g}$
- (iii)  $985 \text{ kg } 475 \text{ g} - 275 \text{ kg } 325 \text{ g}$
- (iv)  $700 \text{ kg} - 300 \text{ kg } 500 \text{ g}$

**4 Multiply the following:**

- (i)  $4 \text{ kg } 300 \text{ g} \times 7$
- (ii)  $17 \text{ kg } 750 \text{ g} \times 8$
- (iii)  $25 \text{ kg } 550 \text{ g} \times 4$
- (iv)  $72 \text{ g } 350 \text{ mg} \times 5$

**5 Divide the following:**

- (i)  $99 \text{ kg } 990 \text{ g} \div 3$
- (ii)  $147 \text{ g } 630 \text{ mg} \div 7$
- (iii)  $550 \text{ kg } 220 \text{ g} \div 11$
- (iv)  $484 \text{ g } 384 \text{ mg} \div 4$

**6** What is the total weight of  $7 \text{ kg } 500 \text{ g}$  of cashew nut and  $3 \text{ kg } 350 \text{ g}$  of pista?

**7** Vimal had a sack of cotton seeds weighing  $50 \text{ kg } 350 \text{ g}$ . He used  $7 \text{ kg } 300 \text{ g}$  cotton seeds to feed his cow. How much cotton seed will be remaining after feeding his cow?

**8** A glass bottle can contain  $25 \text{ g } 125 \text{ mg}$  of medicine, how much medicine can 7 such bottles contain?

**9**  $75 \text{ kg } 750 \text{ g}$  of groundnut seed is filled in five bags, how much groundnut seed can a bag contain?



# FRACTIONS AND INTERCONCEPT

## 5.1 Fractions

Fraction is a part of a whole or collection.

### Example 6.1

Given below is a collection of 7 stars, ☆ ☆ ★ ★ ★ ★ ★

How will you represent the shaded and unshaded stars given above as fractions?

### Solution

$$\text{Total stars} = 7$$

$$\text{Shaded stars} = 5$$

$$\text{Unshaded stars} = 2$$

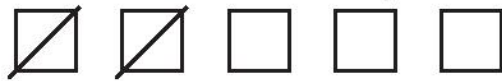
$$\text{Fraction of the shaded stars} = \frac{5}{7}$$

$$\text{Fraction of the unshaded stars} = \frac{2}{7}$$

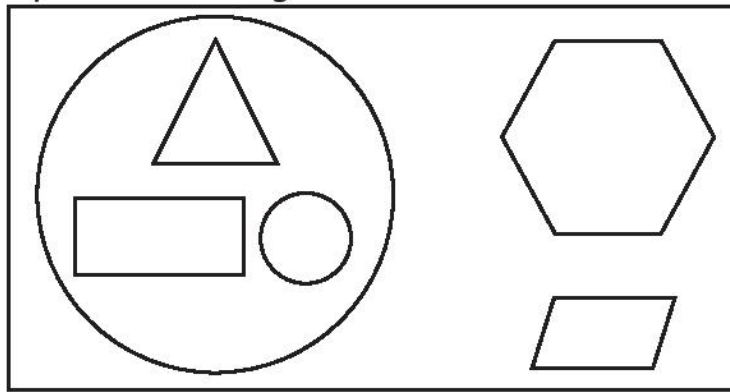


### Try these

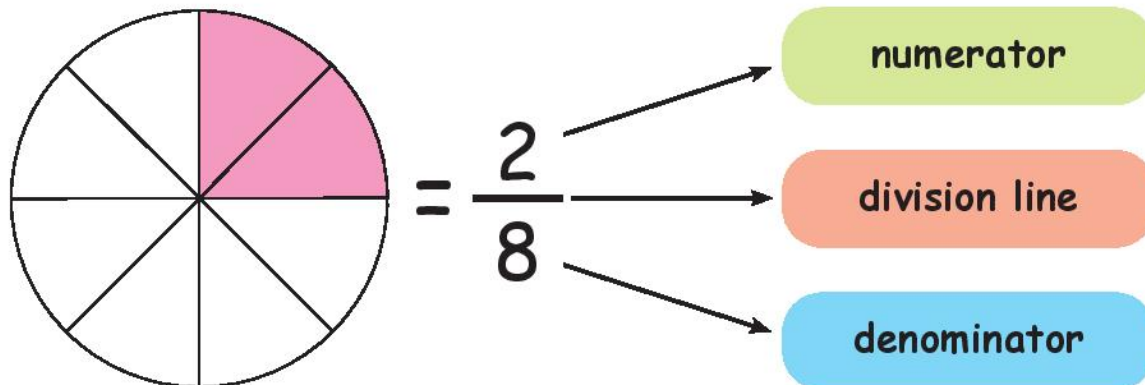
i. Represent the crossed out part as a fraction.



ii. Represent the figures that are outside the circle as a fraction.



To identify the terms like numerator and denominator.



The number above the line represents the numerator and the number below the line represents the denominator.

### Try these

i. In  $\frac{3}{7}$ , \_\_\_\_ is the numerator and \_\_\_\_ is the denominator.

ii. In  $\frac{6}{10}$ , \_\_\_\_ is the numerator and \_\_\_\_ is the denominator.



### To compare different simple fractions

A cake was cut into 8 pieces. Radhika took 6 pieces and Tharun took 2 pieces.

$$\text{Radhika's share} = \frac{6}{8}$$

$$\text{Tharun's share} = \frac{2}{8}$$

Who gets more pieces of chocolate?

Radhika will get more pieces of chocolate.

How do you know that?

By comparing the numerator. Here, Denominator is equal in both the fractions.

Check the Numerator:  $2 < 6$  (or)  $6 > 2$ .

Therefore,

$$\frac{2}{8} < \frac{6}{8} \text{ (or) } \frac{6}{8} > \frac{2}{8}$$

#### Example 5.2

Represent the following figures in fraction, compare them and say which is greater ?

#### Solution

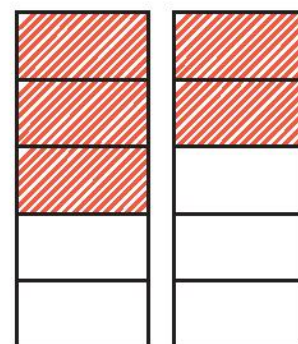
Fraction represented in fig(i) is  $\frac{3}{5}$  and the

fraction represented in fig (ii) is  $\frac{2}{5}$ .

As the denominators in both the fractions are equal, checking the numerator, we get,  $3 > 2$ .

Therefore,

$$\frac{3}{5} > \frac{2}{5}$$



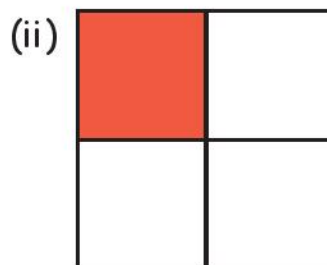
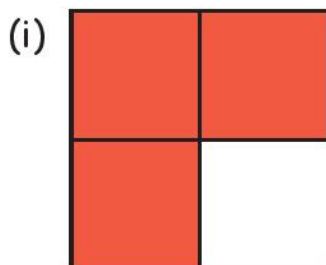
(i)

(ii)



### Example 5.3

Write the following figures in fractions and say which is smaller?



#### Solution

Fraction represented in fig(i) is  $\frac{3}{4}$ .

Fraction represented in fig(ii) is  $\frac{1}{4}$ .

As the denominators in both the fractions are equal, checking the numerator, we get  $1 < 3$ .

Therefore,

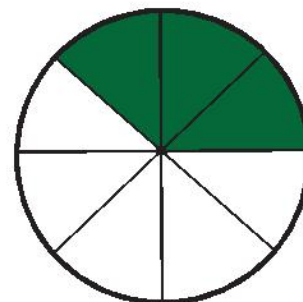
$$\frac{1}{4} < \frac{3}{4}$$

### Types of fractions:

Represent the following figure in fraction.

It is  $\frac{3}{8}$ . In this, 3 is the numerator which is smaller than the denominator, that is,  $3 < 8$ .

This type of fraction is called as proper fraction.



**Proper fraction:** In a fraction, if the numerator is smaller than the denominator, then it is called as a proper fraction

Examples:  $\frac{3}{5}$ ,  $\frac{4}{15}$ ,  $\frac{9}{21}$ .

**Improper fraction:** In a fraction, if the numerator is greater than the denominator, then it is called as an improper fraction.

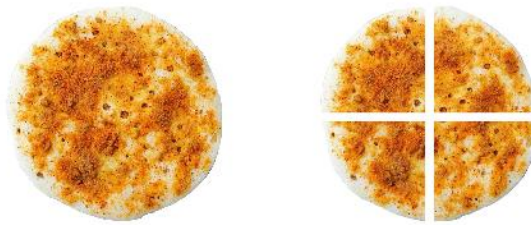
Examples:  $\frac{9}{5}$ ,  $\frac{11}{3}$ ,  $\frac{21}{17}$ .



### Mixed fraction:

Kavitha had five dosas. She wanted to share the dosas among herself and her 3 friends equally. Each one got a dosa. She didn't know how to divide the remaining one dosa equally.

So, she requested her teacher to help. The teacher asked her to divide the remaining 1 dosa into 4 parts, so that each one would get 1 out of 4 parts. Teacher explained her how much did each one of them get out of 5 dosas. That is, each one got 1 and  $\frac{1}{4}$  dosas. i.e  $1\frac{1}{4}$ .



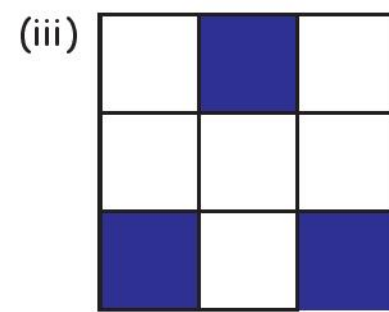
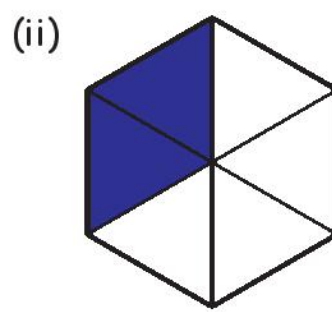
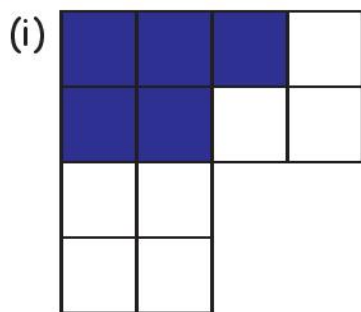
$1\frac{1}{4}$  is called mixed fractions.

A fraction which contains a whole number and a proper fraction is called as a mixed fraction.

In the above situation, 1 is the whole number and  $\frac{1}{4}$  is the proper fraction.

### Exercise 5.1

1 Write the fraction shown by the shaded parts.



2 Write the fractions for the following and find the numerator and the denominator.

- (i) Sheela got 12 marks out of 20 marks in science.
- (ii) Six fruits are rotten out of forty fruits in a basket.
- (iii) In a colony of 50 houses, 17 houses are not occupied.



Find out which is greater in the following fractions.

(i)  $\frac{5}{12}$  and  $\frac{7}{12}$

(ii)  $\frac{22}{48}$  and  $\frac{17}{48}$

(iii)  $\frac{11}{56}$  and  $\frac{27}{56}$



Which is smaller in the following fraction?

(i)  $\frac{10}{42}$  and  $\frac{21}{42}$

(ii)  $\frac{31}{37}$  and  $\frac{15}{37}$



Classify the fractions  $\frac{4}{7}$ ,  $\frac{11}{4}$ ,  $1\frac{3}{5}$ ,  $\frac{9}{12}$ ,  $2\frac{7}{9}$ ,  $\frac{6}{15}$ .

| Proper fraction | Improper fraction | Mixed fraction |
|-----------------|-------------------|----------------|
|                 |                   |                |

## 5.2 Able to reason out in solving problems by comparing Time, Money, Distance



### Recall:

**Teacher:** Hello children,  
Did you all reach the school in time today?

**Children:** Yes, Teacher

**Teacher:** Do you know the relation of distance, time and money?  
Shall we discuss about that?

Prabu, where are you coming from? How much money did you spend for travel? How many kilometres did you travel to reach the school daily?

**Children:** Prabu replied, "I Started 8:30 a.m and spent rupees 8 for 3 kilometres and I have been reaching the school 8:45 a.m regularly".

**Teacher:** So, you have been spending 15 minutes and rupees 8 for 3 kilometres daily.

**Teacher:** Ok, children let us discuss topic about distance, time and money.



## Activities

### 1. Write distance, bus fares and travel time from your town to the nearest cities:

Distance, Time and money are interrelated in our daily life situations. Can you discuss and complete the table given below?

| S. No | Departure location | Going to town | Distance | Time | Bus Charge |
|-------|--------------------|---------------|----------|------|------------|
|       |                    |               |          |      |            |

### 2. Distances are given below from Chennai to Kanyakumari

| City         | Distance [KM] |
|--------------|---------------|
| Chennai      | 0 Km          |
| Tambaram     | 35 Km         |
| Tindivanam   | 128 Km        |
| Villupuram   | 172 Km        |
| Trichy       | 332 Km        |
| Madurai      | 462 Km        |
| Virudunagar  | 520 Km        |
| Tirunelveli  | 624 Km        |
| Kanya kumari | 707 Km        |

#### Let us know

1 mile  $\approx$  1.610 km  
(approx)

Complete the following:

- ▶ The distance between Chennai and Tindivanam \_\_\_\_\_
- ▶ The distance between Chennai and Villupuram \_\_\_\_\_
- ▶ The distance between Chennai and Trichy \_\_\_\_\_
- ▶ The distance between Trichy and Madurai \_\_\_\_\_
- ▶ The distance between Madurai and Tirunelveli \_\_\_\_\_
- ▶ The distance between Chennai and Kanyakumari \_\_\_\_\_
- ▶ The distance between Trichy and Kanyakumari \_\_\_\_\_
- ▶ The distance between Tindivanam and Tirunelveli \_\_\_\_\_
- ▶ The distance between Chennai and Madurai \_\_\_\_\_
- ▶ Which is the longest distance?  
Chennai to Trichy/Chennai to Madurai

### 5.3 Able to Create problems integrating time, money and distance

- ▶ Raju travelled 20 km in 1 hour Dinu travelled 5 km in Half an hour. Who travelled fast?
- ▶ In metro train ₹ 60 charged for Half an hour. Deepa has ₹ 200. How many hours does she travel in metro train?
- ▶ Senthil spent ₹ 80 for 50 km. Gowtham spent ₹ 50 for 30 km. Who travelled at low cost?

From these above questions, we can conclude the relationship between **Time**, **Distance** and **Money**. These are interrelated

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$\text{Distance} = \text{Speed} \times \text{Time}$$

#### Example

If Sabari Walked 5 Hours at a speed of 5Km/Hour, then how much distance did he cover?

$$\begin{aligned}\text{Distance} &= \text{Speed} \times \text{Time} \\ &= 5 \times 5\end{aligned}$$

$$\text{Distance covered by Sabari} = 25 \text{ Km}$$

### Exercise 5.2



Answer the following:

| S.No | Speed      | Time    | Distance |
|------|------------|---------|----------|
| i    | 48 Km/Hour | 2 Hours | _____    |
| ii   | 35 Km/Hour | 3 Hours | _____    |
| iii  | 30 Km/Hour | 5 Hours | _____    |
| iv   | 50 Km/Hour | 4 Hours | _____    |
| v    | 20 Km/Hour | 6 Hours | _____    |



- 2 i. Distance covered in 2 hours at the speed of 20 miles/hour:
- ii. Distance covered in 4 hours at the speed of 65 miles/hour:
- iii. Distance covered in 5 hours at the speed of 48 Km/hour:
- iv. Distance covered in 6 hours at the speed of 80 Km/hour:
- v. Distance covered in 3 hours at the speed of 42 Km/hour:
- 3 If Gopi ran 12 Hours at a speed of 14 Km/Hour, then how much distance did he ran?
- 4 If Raja rides motorcycle for 4 Hours at a speed of 30 Km/Hour, then how much distance did he go?

### Activity 3

#### The distance between Planets and sun

| Planets | Distance from sun (KM) |
|---------|------------------------|
| Mercury | 57909175               |
| Venus   | 108200000              |
| Earth   | 149600011              |
| Mars    | 227940000              |
| Jupiter | 778333000              |
| Saturn  | 1429400000             |
| Uranus  | 2870990000             |
| Neptune | 4504300000             |



Answer the following from the given table:

- ▶ The distance between Earth and Sun is \_\_\_\_\_.
- ▶ \_\_\_\_\_ Planet is in the longest distance from the sun.
- ▶ The Nearest Planet to Sun is \_\_\_\_\_.
- ▶ Arrange the planets in ascending order depending upon the Planets distance from the sun.
- ▶ Arrange the planets in descending order depending upon the Planets distance from the sun.



## 5.4 Relation between Speed, time and Distance

### Example

Raman reached 195 Km at the speed of 65 Km/hr. How much time did he travelled?

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{195}{65} = 3 \text{ Hours}$$

Raman travelled 3 hours

### Exercise 5.3

1 Answer the following:

| S.No | Speed      | Distance | Time (Hours) |
|------|------------|----------|--------------|
| i    | 35 Km/hour | 280 Km   |              |
| ii   | 40 Km/hour | 360 Km   |              |
| iii  | 45 Km/hour | 315 Km   |              |
| iv   | 50 Km/hour | 300 Km   |              |
| v    | 55 Km/hour | 275 Km   |              |

- 2 Wilson reached 240 Km at the speed of 60 Km/hour. How much time did he travelled?
- 3 Anbarasan travelled 350 Km at the speed of 70 Km/hour. Find the time taken for his travel.
- 4 Nazar travelled 360 Km at the speed of 90 Km/hour. Find the time taken for his travel.
- 5 Fathima reached 480 Km at the speed of 120 Km/hour. How much time did she travell?

## 5.5 Relation between Distance and Money

### Example

Akbar spent ₹ 4 per Km for a trip and he travelled 115 Km in that trip. How much is the total cost of the trip?

Cost per kilometre is ₹ 4.

$$\begin{aligned}\text{Cost for 115 kilometre} &= 115 \times ₹ 4 \\ &= ₹ 460\end{aligned}$$

The amount spent by Akbar = ₹ 460

### Exercise 5.4

1 Answer the following:

| S.No | Distance | Money     | Total cost |
|------|----------|-----------|------------|
| i    | 180 Km   | ₹5 per km |            |
| ii   | 220 Km   | ₹8 per km |            |
| iii  | 315 Km   | ₹4 per km |            |
| iv   | 420 Km   | ₹6 per km |            |
| v    | 580 Km   | ₹3 per km |            |

2 Sneha spent ₹ 7 per Km for a trip and she travelled 850 km. How much is the total cost of the trip?

3 Prabhu spent ₹ 9 per Km for a trip and he travelled 580 km. How much is the total cost of the trip?

## 5.6 Use fractions in the context of units of length, time and money

### Length (In fractions)

#### Example

$$2 \text{ Km } 500 \text{ m} = 2 \frac{1}{2} \text{ Km}$$

$$1 \text{ Km } 250 \text{ m} = 1 \frac{1}{4} \text{ Km}$$

$$7 \text{ Km } 750 \text{ m} = 7 \frac{3}{4} \text{ Km}$$

$$8 \text{ Km } 500 \text{ m} = 8 \frac{1}{2} \text{ Km}$$

#### Let us know

$$1 \text{ Km} = 1000 \text{ m}$$

$$\frac{1}{2} \text{ Km} = 500 \text{ m}$$

$$\frac{3}{4} \text{ Km} = 750 \text{ m}$$

$$\frac{1}{4} \text{ Km} = 250 \text{ m}$$



### Time (In fractions)

$$15 \text{ minutes} = \frac{1}{4} \text{ Hour}$$

$$30 \text{ minutes} = \frac{1}{2} \text{ Hour}$$

$$45 \text{ minutes} = \frac{3}{4} \text{ Hour}$$

$$60 \text{ minutes} = 1 \text{ Hour}$$

$$\frac{1}{4} \text{ of } 60 = \frac{60}{4} = 15 \text{ minutes}$$

$$\frac{1}{2} \text{ of } 60 = \frac{60}{2} = 30 \text{ minutes}$$

### Let us know

$$60 \text{ minutes} = 1 \text{ Hours}$$

$$\text{Half part of } 60 \text{ minutes} = 30 \text{ minutes}$$

$$\text{Quarter part of } 60 \text{ minutes} = 15 \text{ minutes}$$

$$\text{Three Quarter part of } 60 \text{ minutes} = 45 \text{ minutes}$$

$$\frac{3}{4} \text{ of } 60 = \frac{180}{4} = 45 \text{ minutes}$$

$$1 \text{ of } 60 = 60 \text{ minutes}$$

### Examples



#### Convert into minutes

a) 2 Hour =  $2 \times 60 = 120$  minutes

$$1 \text{ Hour} = 60 \text{ minutes}$$

b) 3 Hour 20 minutes =  $(3 \times 60) + 20 = 200$  minutes

c) 4 Hour =  $4 \times 60 = 240$  minutes

d) 5 Hour 15 minutes =  $(5 \times 60) + 15 = 300 + 15 = 315$  minutes



#### Convert in to hours

a) 75 minutes = 60 minutes + 15 minutes

$$= 1 \text{ hour} + \frac{1}{4} \text{ hour} = 1 \frac{1}{4} \text{ hour}$$

b) 90 minutes = 60 minutes + 30 minutes

$$= 1 \text{ hour} + \frac{1}{2} \text{ hour} = 1 \frac{1}{2} \text{ hour}$$

### Money [In fractions]

#### Example

In ₹1

$$\frac{1}{4} \text{ part of ₹1} = 25 \text{ paise}$$

$$\frac{1}{2} \text{ part of ₹1} = 50 \text{ paise}$$

$$\frac{3}{4} \text{ part of ₹1} = 75 \text{ paise}$$

$$1 \text{ part of ₹1} = 100 \text{ paise}$$

### Let us know

$$₹1 = 100 \text{ paise}$$

$$\text{Quarter part of ₹1} = 25 \text{ paise}$$

$$\text{Half part of ₹1} = 50 \text{ paise}$$

$$\text{Three quarter part of ₹1} = 75 \text{ paise}$$

$$\text{Full part of ₹1} = 100 \text{ paise}$$





### Example

**In ₹100**

|                                    |                                    |
|------------------------------------|------------------------------------|
| $\frac{1}{4}$ part of ₹ 100 = ₹ 25 | Quarter part of ₹ 100 = ₹ 25       |
| $\frac{1}{2}$ part of ₹ 100 = ₹ 50 | Half part of ₹ 100 = ₹ 50          |
| $\frac{3}{4}$ part of ₹ 100 = ₹ 75 | Three quarter part of ₹ 100 = ₹ 75 |
| 1 part of ₹ 100 = ₹ 100            | Full part of ₹ 100 = ₹ 100         |

### Example

**In ₹2000**

|                                       |                                       |
|---------------------------------------|---------------------------------------|
| $\frac{1}{4}$ part of ₹ 2000 = ₹ 500  | Quarter part of ₹ 2000 = ₹ 500        |
| $\frac{1}{2}$ part of ₹ 2000 = ₹ 1000 | Half part of ₹ 2000 = ₹ 1000          |
| $\frac{3}{4}$ part of ₹ 2000 = ₹ 1500 | Three quarter part of ₹ 2000 = ₹ 1500 |
| 1 part of ₹ 2000 = ₹ 2000             | Full part of ₹ 2000 = ₹ 2000          |

### Exercise 5.5



**1** Convert the following into kilometres [ In fraction ]

(i) 3 Km 500 m =

(ii) 25 Km 250 m =

(iii) 17 Km 750 m =

(iv) 35 Km 250 m =

(v) 45 Km 750 m =

**2** Convert into Hours : [ In fraction ]

(i) 30 minutes

(ii) 2 hours 15 minutes

(iii) 3 hours 45 minutes

(iv) 1 hour 30 minutes

(v) 4 hours 15 minutes



Convert into minutes:

(i)  $2 \frac{1}{4}$  Hours

(ii)  $2 \frac{1}{2}$  Hours

(iii)  $3 \frac{3}{4}$  Hours

(iv) 11 Hours

(v)  $5 \frac{1}{2}$  Hours



Match the following:

(i)  $\frac{1}{2}$  part of ₹ 1 - ₹ 100

(ii)  $\frac{1}{4}$  part of ₹ 4 - 50 paise

(iii)  $\frac{1}{2}$  part of ₹ 10 - ₹ 75

(iv)  $\frac{3}{4}$  part of ₹ 100 - ₹ 1

(v)  $\frac{1}{2}$  part of ₹ 200 - ₹ 5



Write the  $\frac{1}{4}$ ,  $\frac{1}{2}$  and  $\frac{3}{4}$  parts of the following:

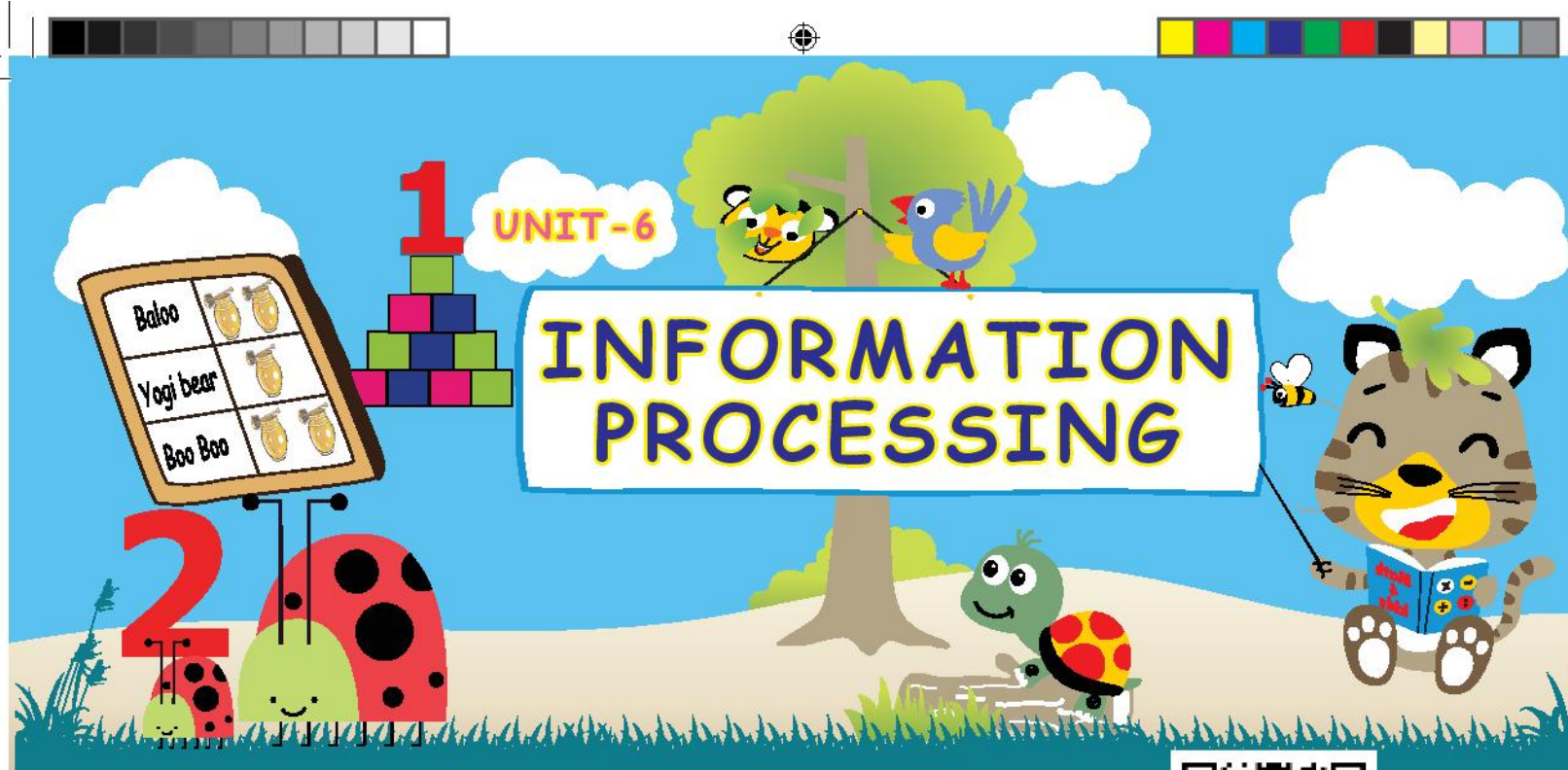
(i) ₹ 200

(ii) ₹ 10,000

(iii) ₹ 8,000

(iv) ₹ 24,000

(v) ₹ 50,000



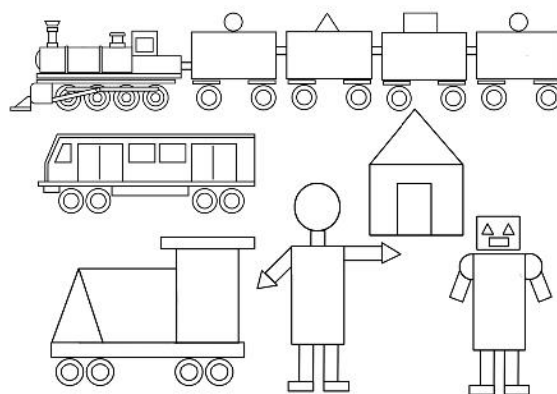
## 6.1 Modelling

A way of introducing the mathematical concept.

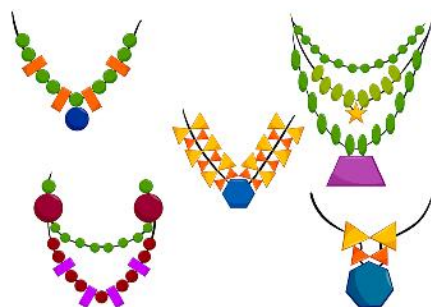
**Modelling** is an activity like drawings as sketches, Physical models, computer programmes or mathematical formulas.

Let us see the following models using the different shapes such as circles, rectangles and triangles.

Geometrical shaped objects.



Let us see artistic chains with different coloured beads.



**Try this**

How many squares are there?





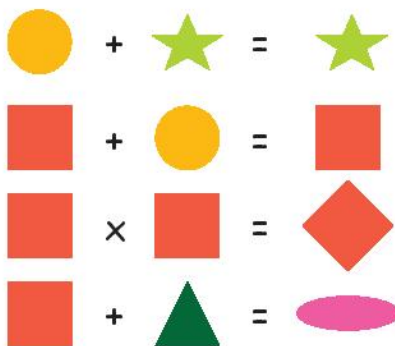


### Activity: 1

|                     |    |  |  |
|---------------------|----|--|--|
| Figures             |    |  |  |
| Number of Triangles | 12 |  |  |
| Number of Squares   | 6  |  |  |

### Activity: 2

The following shapes are drawn instead of numbers 0, 1, 2, 3, 4, 5. Shall we find the number of each shapes.



|  |   |                                |
|--|---|--------------------------------|
|  | = | <input type="text" value="1"/> |
|  | = | <input type="text"/>           |
|  | = | <input type="text"/>           |
|  | = | <input type="text" value="5"/> |
|  | = | <input type="text"/>           |
|  | = | <input type="text"/>           |
|  | = | <input type="text"/>           |

### Let us know

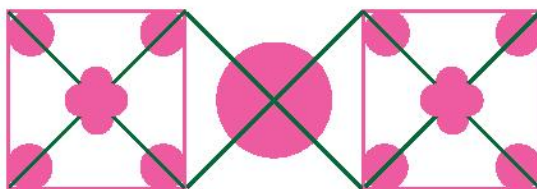
In a street, there are two times Cats as Dogs.

D - Dog, C - Cat

It is represented as  $D = 2C$ .

### Activity: 3

Complete the following



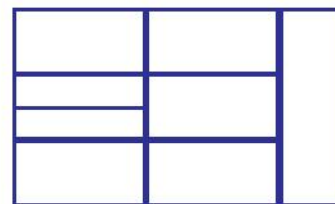
Number of circles \_\_\_\_\_

Number of Triangles \_\_\_\_\_

Number of Squares \_\_\_\_\_

### Try this

How many rectangles are there in this diagram?



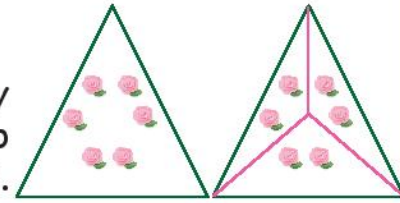


### Example

#### Birthday triangle Cake

The given figure is a triangle shaped birthday cake, this was bought by the parents to celebrate the birthday of a three year child.

There are six flowers in the cake, you have to divide this cake into three equal parts so as to have two flowers in each part. There should not be more than three cuts.



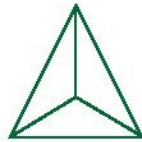
### Exercise 6.1



#### 1 Choose the correct answer:

(i) Which shape have 6 triangles?

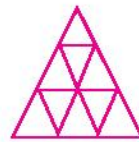
(a)



(b)



(c)



(d)



(ii) Find which garland has made up of 12 beads?

(a)



(b)



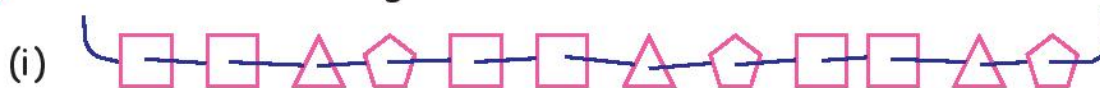
(c)



(d)



#### 2 Answer the following:



4, 4, 3, 5, 4, 4, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

(ii) 1, 1, 2, 3, 5, 8, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

#### 3 If $\triangle = 3$ $\square = 4$ $\pentagon = 5$ , then

(i)  $\triangle + \square + \pentagon + \triangle - \square =$

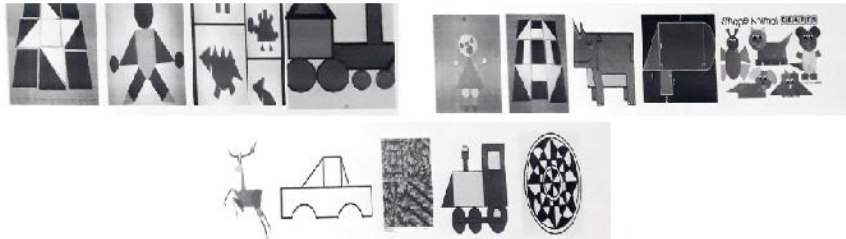
(ii)  $\square\square - \triangle\triangle =$



### Activity: 4

#### Paper Cutting

Ask the children to make different types of pictures by using cutouts of , ,  and  of different sizes.



### Activity: 5

Children can create the artistic chain with different coloured beads, this will help the learners to solve maths related questions very easily.



### Activity: 6

Chains made up of various coloured beads are given. Try to make chains using various pattern.



## 6.2 Able to split bigger task into smaller known task

### Situation 1

Karkuyil and Kayalvizhi are sisters. Their mother asked them to arrange their cupboards. Karkuyil arranged her cupboard within 10 minutes while Kayalvizhi could not







arrange them. When Kayalvizhi asked Karkuyil about this, she told her that she had split the task of arranging the cupboards in two smaller tasks namely,

1. Sorting the things and
2. Keeping the things in shelves

Karkuyil could complete the work in less time easily.

### Situation 2



Mugilan is the secretary of the Math club in his school. The principal of the school has announced for a quiz competition and Mugilan is given the incharge of arranging for the competition.

Write the tasks to be done by Mugilan.



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### Activity: 7

#### Consider the situation

Vizhyan's birthday is on Wednesday. His father asked his sister Poovizhi to arrange for the party. She is happy to do it but does not know how to arrange for the party. Her father suggested her to first break the event into smaller tasks and complete those tasks one by one. Poovizhi thought that this way she could easily arrange for the party. If you are Poovizhi what would be tasks you will plan for. Write the smaller tasks which you will arrange.

#### Solving a multiplication problem involving 2 three digit numbers.

Let us split the task of multiplying 2 three digit numbers into the following steps.

Multiplying 2 three digit numbers can be done easily if we do it step by step.

**Step 1** - Multiplying the ones digit with the first number



$$\begin{array}{r} 567 \times 253 \\ \hline 1701 \end{array}$$

**Step 2** - Multiplying the tens digit with the number

$$\begin{array}{r} 567 \times 253 \\ \hline 2835 \end{array}$$

**Step 3** - Multiplying the hundreds digit with the first number

$$\begin{array}{r} 567 \times 253 \\ \hline 1134 \end{array}$$

**Step 4** - Add all the results of step 1, step 2 and step 3 to find the multiplication of

$$\begin{array}{r} 567 \times 253 \\ \hline 1701 \\ 2835 \\ 1134 \\ \hline 143451 \end{array}$$

## Exercise 6.2



Find the product of the following numbers:

- (i)  $234 \times 765$     (ii)  $908 \times 512$     (iii)  $481 \times 503$

To enable how to find out easy and difficult ways to solve tasks and justify with reason.

### Situation

Kavitha and Bavitha were planning for a picnic with their family. Kavitha said it would be better to pre book a taxi for sightseeing before reaching the spot while Bavitha preferred to hire a taxi after reaching the spot.

Whose idea is better?

Suggest other ways also for planning the picnic.





### Activity: 8

Arranging 50 books orderly by number on them in 5 hours

Ezhilan and Iniyar has been asked to arrange two sets of fifty books each in two book shelves of a library. The books were numbered from 1 to 50 and there are 5 shelves in each cupboard



Ezhilan arranged 10 books in each shelf at once while Iniyar placed 1 book at a time in each of the 5 shelves.



Which is the easy way to complete the work and who will arrange the books quickly?

### Factor Bingo

Here is a Board of numbers

|    |    |    |    |
|----|----|----|----|
| 2  | 28 | 36 | 4  |
| 12 | 16 | 5  | 10 |
| 9  | 14 | 6  | 8  |
| 3  | 20 | 7  | 40 |

The teacher gave a number board to Imayan and Varman. Then, he asked them to pick out the factors of the numbers 36, 28 and 40 from the number board.

Imayan used different notations for each number. He circled the factors of 36, drew triangles for the factors of 28 and drew squares for the factors of 40. But, Varman circled the factors of all the three numbers. Whom do you think will complete the task of picking out the factors of each number easily? Justify your answer.

### Activity 9

Sort the factors of 40, 72 and 75 from the number board given below.

|    |    |    |    |    |
|----|----|----|----|----|
| 1  | 40 | 20 | 12 | 25 |
| 2  | 15 | 18 | 6  | 36 |
| 5  | 7  | 10 | 3  | 72 |
| 24 | 4  | 8  | 9  | 75 |



## Answers

### Geometry

#### Exercise 1.1

1. i)  $45^\circ$     ii)  $60^\circ$     iii)  $18^\circ$     iv)  $2^\circ$     v)  $52^\circ$   
 2. i)  $100^\circ$     ii)  $85^\circ$     iii)  $70^\circ$     iv)  $45^\circ$     v)  $30^\circ$

### Numbers

#### Exercise 2.1

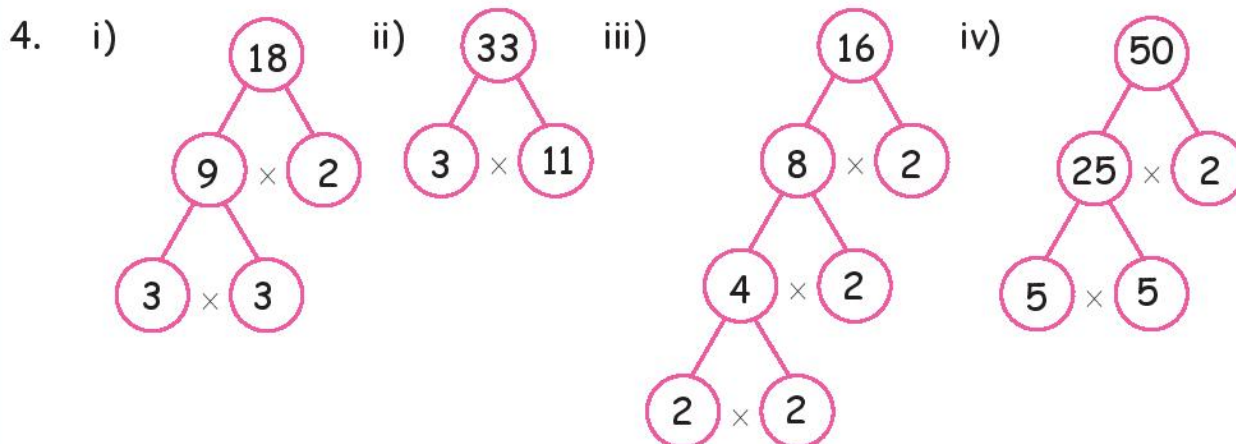
1. 4    2. 25    3. 9    4. c. 36    5. c. 64

#### Exercise 2.2

- i) 1,2,4    ii) 1,2,3,6    iii) 1,2,5,10

#### Exercise 2.3

1. i) b.535    ii) b. 26    iii) a. 32    iv) c. 1,2,3,6    v) d. 72  
 2. i) 1,7    ii) 2    iii) 12    iv) 15    v) 1,5,7  
 3. i) 1,5,25    ii) 1,2,3,4,6,9,12,18,36    iii) 1,2,7,14    iv) 1,2,4,8,16  
 v) 1,2,3,4,6,12



5. i) 7, 14, 21, 28, 35    ii) 9, 18, 27, 36, 45    iii) 16, 32, 48, 64, 80  
 iv) 11, 22, 33, 44, 55    v) 21, 42, 63, 84, 104  
 6. i) 48, 96, 144    ii) 108, 216, 324    iii) 864, 1728, 2592  
 7. i) 84    ii) 48    iii) 56    iv) 60  
 8. 30<sup>th</sup> day    9. 24 minutes



## Patterns

### Exercise 3.3

1. i) BENT, RENT, TENT                      ii) RIGHT, SIGHT, MIGHT  
2. i) COAT, BOAT, GOAT                      ii) RED, BED, WED

## Measurement

### Exercise 4.1

1. i) 7400g    ii) 5050mg    iii) 9g 500mg    iv) 15350g    v) 6kg 250g  
2. i) 7kg 700g    ii) 825g 430mg    iii) 207kg 745g    iv) 105kg 650g  
3. i) 15kg 150g    ii) 17kg 350g    iii) 710kg 150g    iv) 399kg 500g  
4. i) 30kg 100g    ii) 142kg    iii) 102kg 200g    iv) 361g 750mg  
5. i) 33kg 330g    ii) 21g 90mg    iii) 50kg 20g    iv) 121g 096mg  
6. 10kg 850g    7. 43kg 50g    8. 175g 875 mg    9. 15kg 150g

## Interconcept

### Exercise 5.1

1. (i)  $\frac{5}{12}$     (ii)  $\frac{6}{40}$     (iii)  $\frac{3}{9}$     3. (i)  $\frac{7}{12}$     (ii)  $\frac{22}{48}$     (iii)  $\frac{27}{56}$   
2. (i)  $\frac{12}{20}$     (ii)  $\frac{34}{40}$     (iii)  $\frac{17}{50}$     4. (i)  $\frac{10}{42}$     (ii)  $\frac{15}{37}$

### Exercise 5.2

1. i) 96Km    ii) 105Km    iii) 150Km    iv) 200Km    v) 120Km  
2. i) 40 miles    ii) 260 miles    iii) 240Km    iv) 480Km    v) 126Km  
3. 168Km    4. 120Km

### Exercise 5.3

1. i) 8 hours    ii) 9 hours    iii) 7 hours    iv) 6 hours    v) 5 hours  
2. 4 hours    3. 5 hours    4. 4 hours    5. 4 hours

### Exercise 5.4

1. i) ₹ 900    ii) ₹ 1760    iii) ₹ 1260    iv) ₹ 2520    v) ₹ 1740  
2. ₹ 5950    3. ₹ 5220



### Exercise 5.5

1. i)  $3\frac{1}{2}$  Km    ii)  $25\frac{1}{4}$  Km    iii)  $17\frac{3}{4}$  Km    iv)  $35\frac{1}{4}$  Km    v)  $45\frac{3}{4}$  Km

2. i)  $\frac{1}{2}$  hours    ii)  $2\frac{1}{4}$  hours    iii)  $3\frac{3}{4}$  hours    iv)  $1\frac{1}{2}$  hours    v)  $4\frac{1}{4}$  hours

3. i) 135 min.    ii) 150 min.    iii) 225 min.    iv) 660 min.    v) 330 min.

4. (i)  $\frac{1}{2}$  part of ₹ 1    -    50 paise

(ii)  $\frac{1}{4}$  part of ₹ 4    -    ₹ 1

(iii)  $\frac{1}{2}$  part of ₹ 10    -    ₹ 5

(iv)  $\frac{3}{4}$  part of ₹ 100    -    ₹ 75

(v)  $\frac{1}{2}$  part of ₹ 200    -    ₹ 100

5. i) ₹ 50, ₹ 100, ₹ 150    ii) ₹ 2,500, ₹ 5,000, ₹ 7,500    iii) ₹ 2,000, ₹ 4,000, ₹ 6,000    iv) ₹ 6,000, ₹ 12,000, ₹ 18,000    v) ₹ 12,500, ₹ 25,000, ₹ 37,500.

### Information Processing

#### Exercise 6.1

1. i) (b)     ii) (c) 

2. i) 3,5,4,4,3,5    ii) 13,21,34,55

3. i) 11    ii) 11

#### Exercise 6.2

1. (i) 1,79,010    (ii) 4,64,896    (iii) 2,41,943