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SCIENCE
SOCIAL SCIENCE

Term - I

Volume-2

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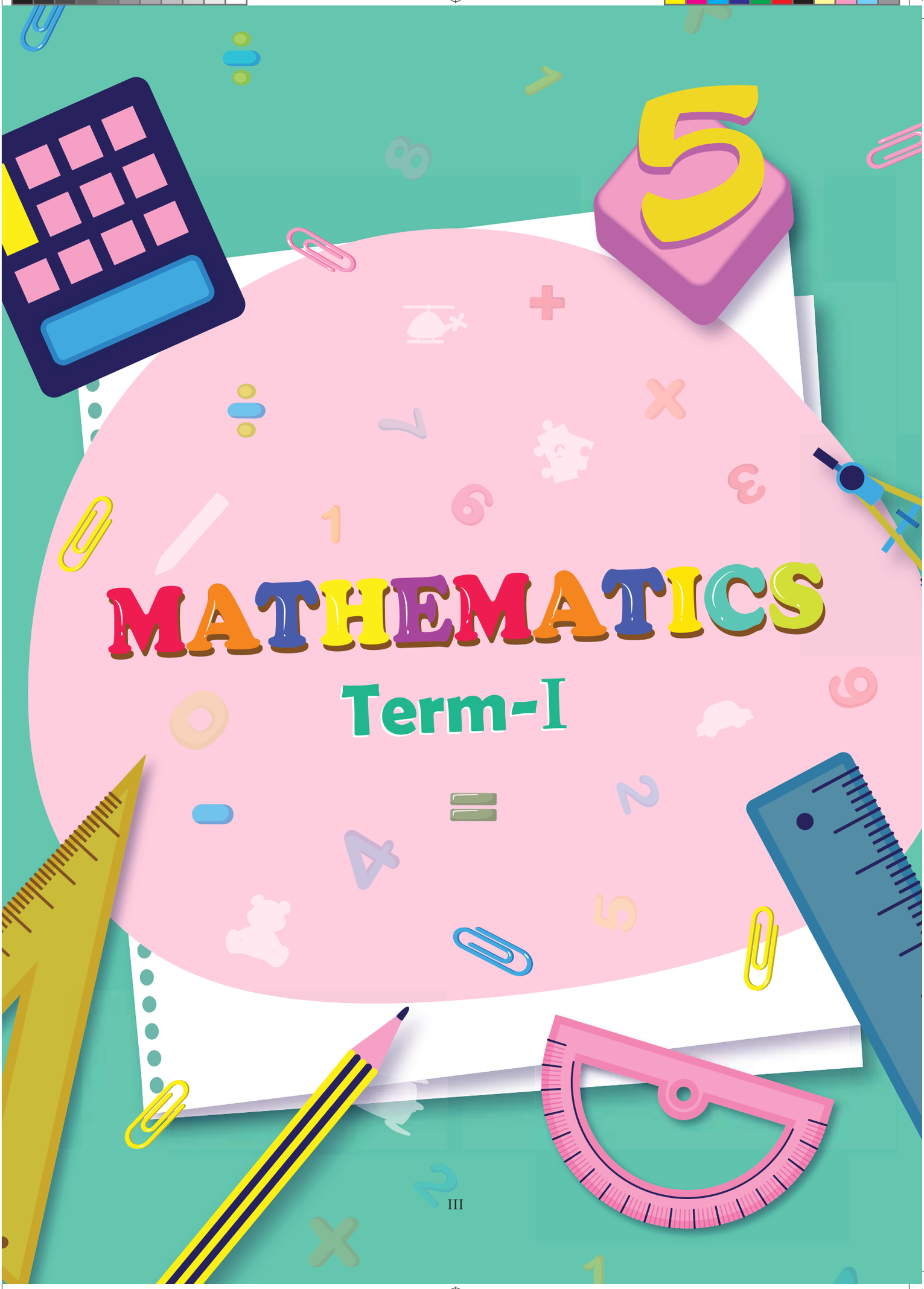

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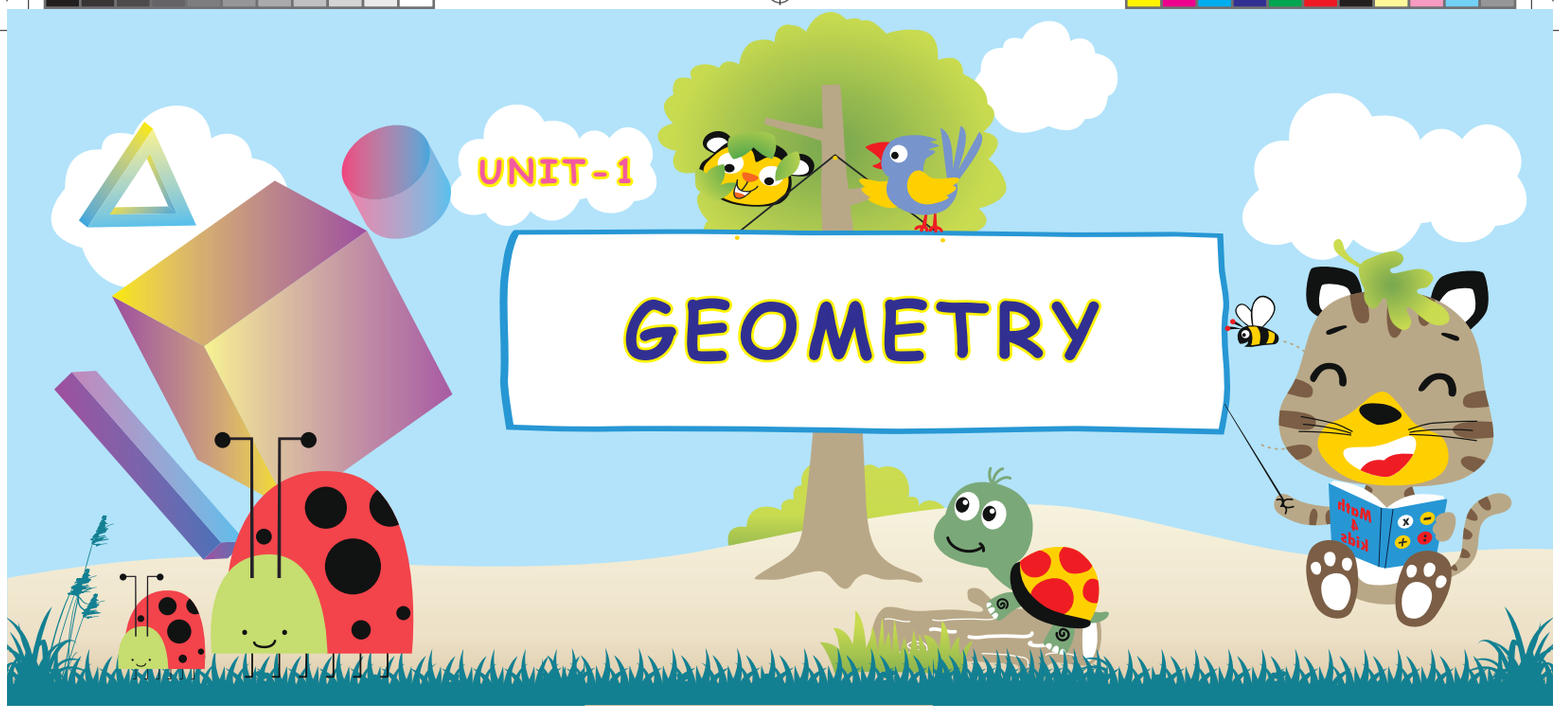


1.1 2 Dimensional Perspective of 3 Dimensional Objects

We can identify 2D and 3D objects in our day-to-day life.

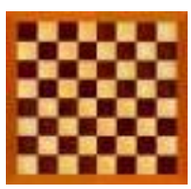


Recall: 2D shapes

Shapes which have two dimensions namely length and breadth are called 2D shapes.

Examples



3-D Shapes

3D Shapes are solid objects that have three dimensions namely length, breadth and height.

Examples

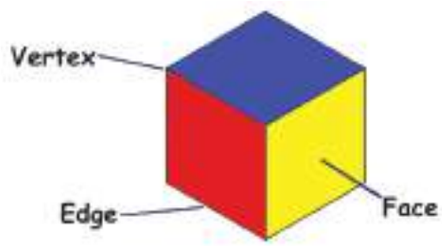


1.1.1 Properties of 3D shapes

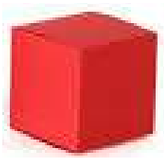
Cube

Properties:

- It is a 3D shape.
- It has six faces.
- All sides are equal.
- It has 8 vertices and 12 edges.



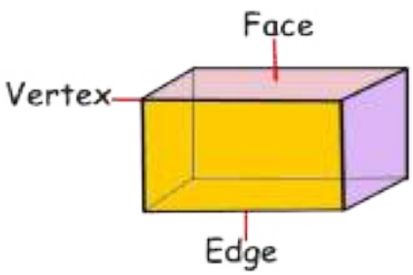
Examples

Cuboid

Properties:

- It is a 3D shape.
- It has six faces.
- It's opposite sides are equal.
- It has 8 vertices and 12 edges.

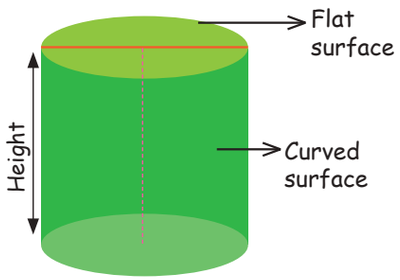


Examples


Cylinder

Properties:

- It is a 3D shape.
- It has two flat surfaces and one curved surface.
- Distance between the two flat surfaces is its height.

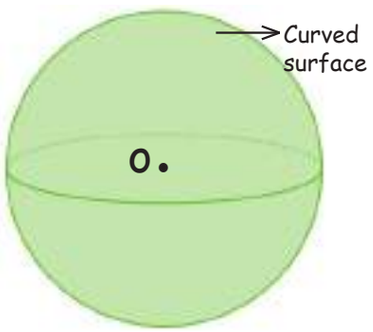


Examples

Sphere

Properties:

- It is a 3D shape.
- It has one curved surface.
- All points on the curved surface are at the same distance from the centre.
- It has no vertices and edges.

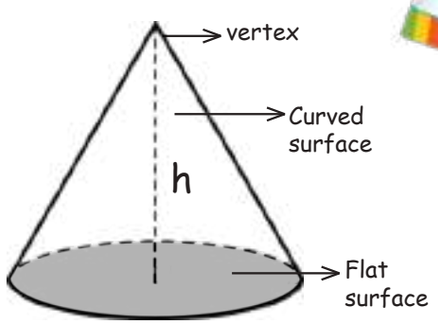


Examples

Cone

Properties:

- It is a 3D Shape.
- It has one flat surface and one curved surface.
- It has one vertex.
- The distance from the top of the cone to the centre of the base is its height.



Examples

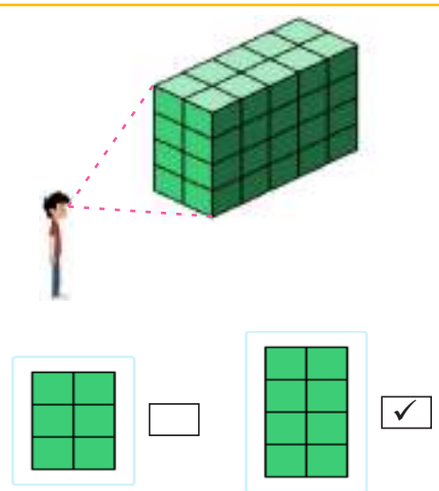
Activity

Observe the 3D objects around you and fill the table.

S. No.	Objects	Shapes	Sides	Corners
1	Dotted cube	Cube	6	8
2				
3				
4				
5				

Observe the 3D shapes and tick the image of the blocks that can be seen from the man's view.

(i)



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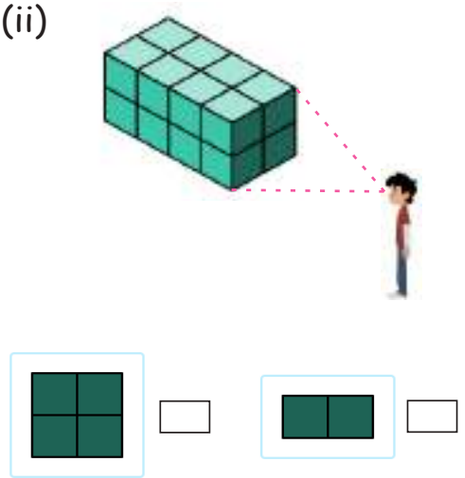

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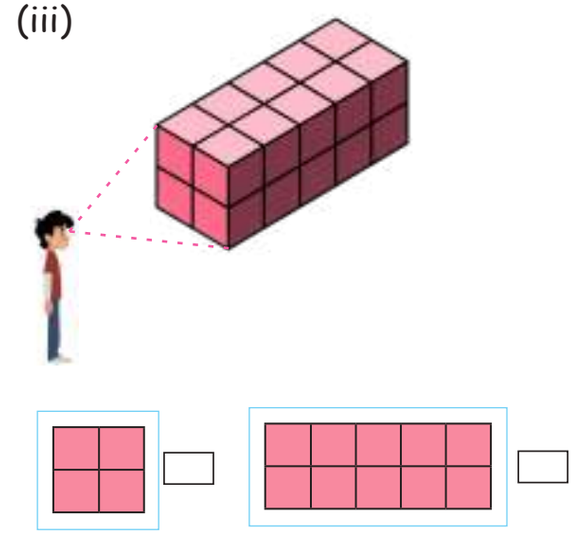

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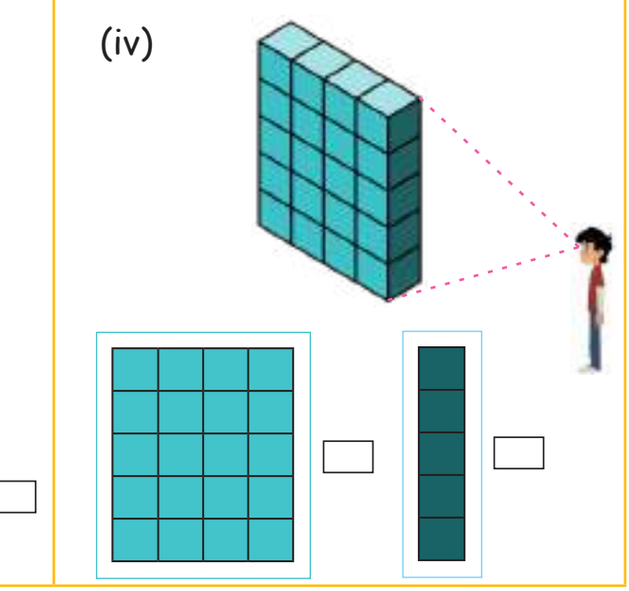


Exercise 1.1

1 Match the following

i) 

ii) 

iii) 

iv) 

v) 

Cuboid

Sphere

Cone

Cylinder

Cube

2 Find whether the given statements are true or false

i) Cube has by 6 square faces.

ii) The height and slant height of the cone are equal

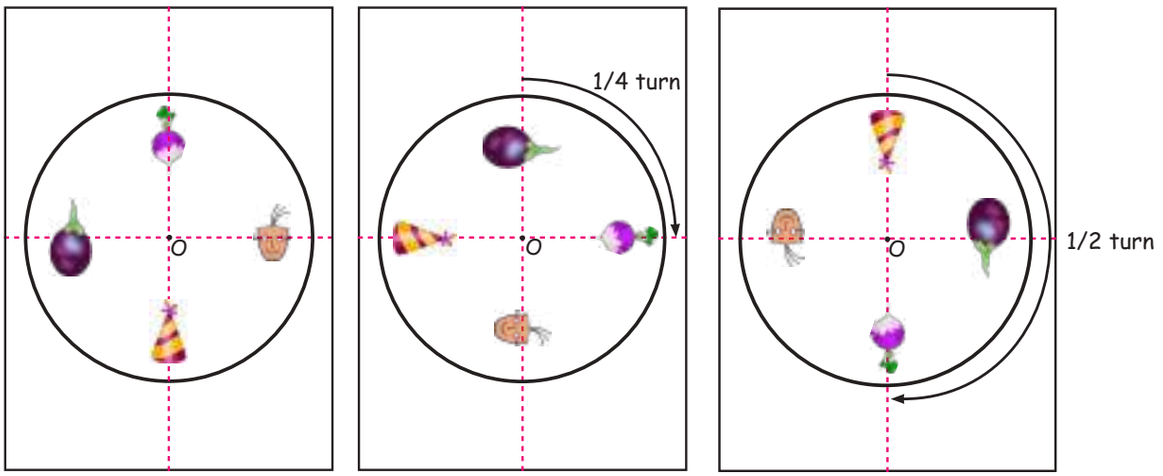
iii) A Cuboid has 7 vertices.

iv) A cylinder has two flat surfaces.

v) Sphere is a 3D Shape.

1.1.2 Able to explore rotations of familiar 2D Shapes intuitively.

Draw a circle in a chart. Then cut the circle from the chart. Fold it into four equal parts and spread again. Draw or paste four pictures on the circle as shown in the figure.



Fold a paper as shown in the figure and draw lines on it. Fix a pin at the centre and keep the chart on it in such a way that the lines on the paper and circular chart matches. As the chart is rotated the pictures in each quadrant is also rotated. Now we can see the pictures are moving as the chart is rotated on the paper.

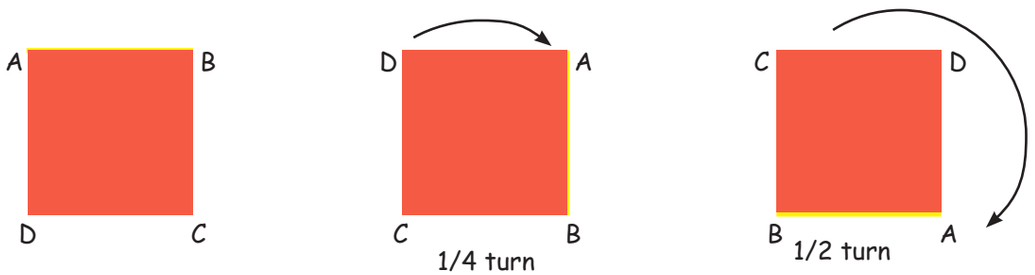
Movement about a fixed point is called rotation. The point O where the pin is fixed is called centre of rotation. We can observe the movement of pictures after every rotation. After one complete rotation, the chart comes back to the starting position.

From this we understand that,

When the round chart is rotated about the centre point the images are rotated accordingly. The point is called as "centre of Rotation".

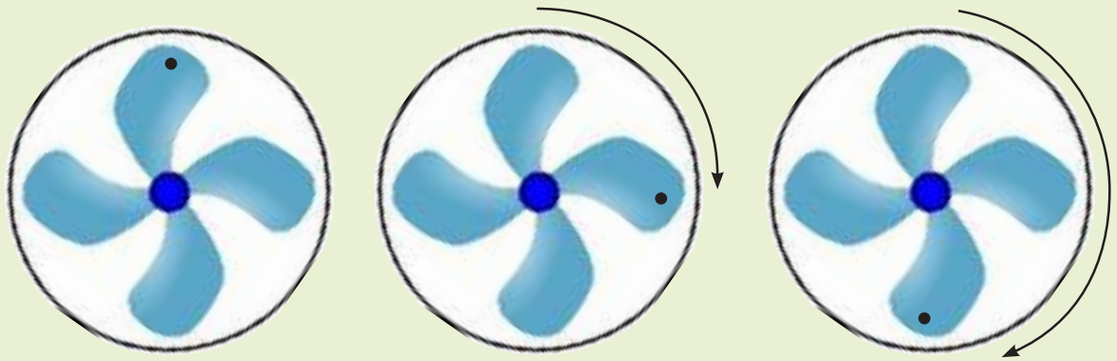
Example

Observe the rotation of the square.



Think

Is there any change in the position of the blades of the four-bladded ventilator fan after rotating 1/4 and 1/2 turn.



Exercise 1.2

1. Among the following shapes, find out which one would look the same after $\frac{1}{4}$ a turn. put a (✓) mark.

2. Among the following letters, find out which one would look same after half turn.

X, H, A, N, B, O, J, I, D, S

3. Find the numbers which will look same on a half-turn.

1 2 3 4 5 0 8

4. How the following numbers are changed after half turn.

i) 8 8 8 8 8 _____

ii) 1 0 1 0 1 _____

iii) 1 1 1 1 1 _____

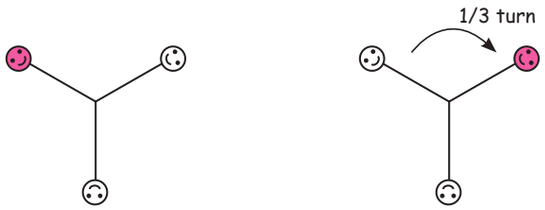
iv) 8 0 8 0 8 _____

Project:

Prepare, a collection of 5 pictures after one fourth and half turns, and show it to your teacher. From the collection, tabulate the pictures that looks the same after one fourth and half rotations.

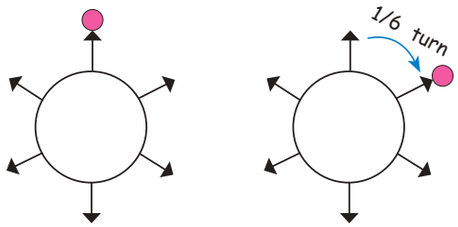
1/3 a turn:

Example: The following picture will look same on 1/3 of a turn.



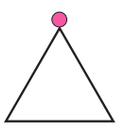
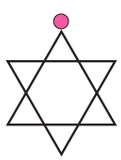
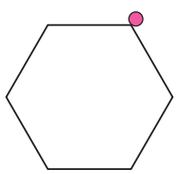
1/6 a turn:

Example: The following picture will look same on 1/6 of a turn.



Practice

1. Observe the following shapes and draw its image after 1/3 of a turn and 1/6 of a turn

S. No.	Shapes	1/3 a turn	Shapes	1/6 a turn
1				
2				

Project:

Collect various numbers, pictures and letters which will look the same after 1/3 a turn 1/6 a turn and show it to your teacher.

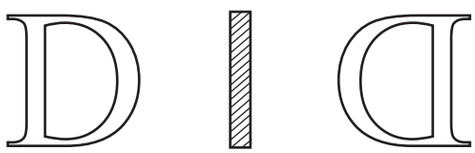
Think

Find the only English alphabet which will not change its shape after $\frac{1}{4}$ a turn, $\frac{1}{2}$ a turn, $\frac{1}{3}$ a turn, $\frac{1}{6}$ a turn rotations.

1.1.3 Reflections of familiar 2D shapes.

Activity

- Write the letter 'D' in bigger size on a white paper now draw a line on the paper using a pencil and place a mirror on the line drawn.
- Observe the image of alphabet 'D' in the mirror.
- Now, 'Ↄ' is the "image". This event is called Reflection.



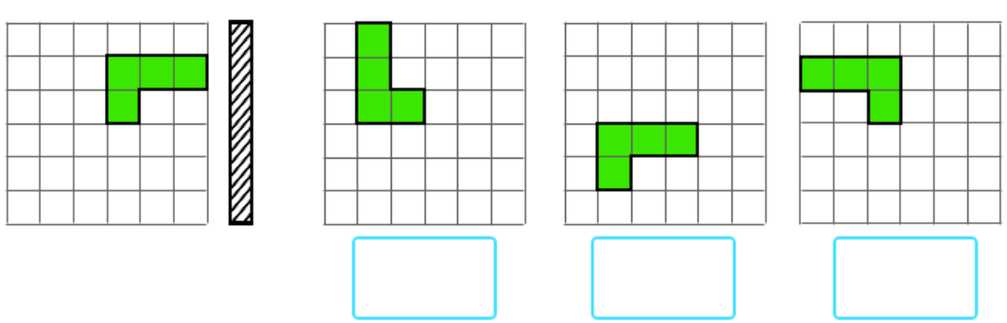
Now remove the mirror. The line drawn using pencil is called as the "reflection axis."

From this we understand that,

- The object and image in the mirror are equal in size.
- The object and image are at equal distance from the reflection axis.
- If direction of the object is left to right, then the direction of the image on the mirror will be from right to left.

Activity

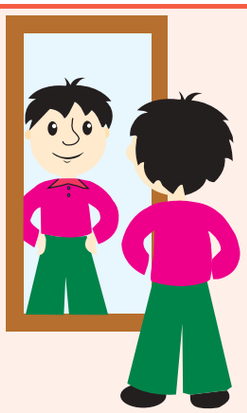
Tick the image that shows the reflection of the given shape.



Try this

Draw some of your favourite shapes and draw its reflection images on a chart and show it to your teacher.

Activity



Stand in front of a mirror and see your image.

Observe your image in the mirror when you move back.
Come front to the mirror again. What do you infer?

1. Your image in the mirror is _____ (bigger, smaller, same size).
2. When you go back, your image moves _____ (backward, forward).
3. The distance between you and mirror and the distance between mirror and your image is _____ (equal, unequal).
4. When you come forward to the mirror, your image moves _____ (forward, backward).
5. When you raise your right hand, the image in the mirror looks like, _____ hand is raising. (right, left).
6. When you raise your left hand, the image in the mirror looks like, _____ hand is raising. (right, left).

Pleasure Time

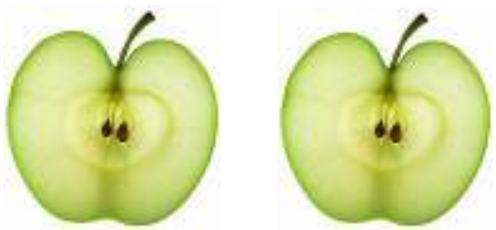
Take a rectangle shaped paper and fold it into two equal parts.
Dip a thread in an ink-pot. Place it inside the folded paper and drag it out. Now open and see the folded sheet. What do you observe?

Are the designs on the both sides of the folded paper looking alike?

Discuss your observations with your teacher.

1.1.4 Symmetry

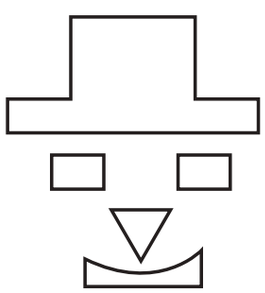
If we cut an apple into two equal halves, we observe that two parts are symmetrical.



Symmetry is an important geometrical concept commonly seen in nature and is used in every field of our life. Artists, manufacturers, designers, architects and others make use of the idea of symmetry.

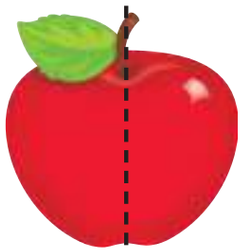
Symmetry refers to the exact match in shape and size between two halves of an object.

When we fold a picture in two halves and if both the halves match exactly equal then we say that the picture is symmetrical.

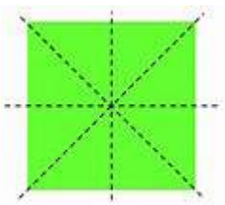


Line of symmetry:

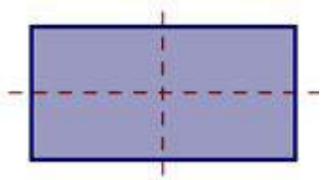
When a line divides a given figure into two parts and both the parts match exactly then we say that the figure is symmetrical about the line. This line is called the line of symmetry or axis of symmetry.



Example



4 lines of symmetry. We can divide a square in 4 ways symmetrically.



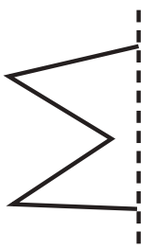
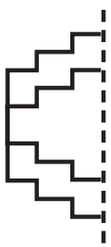
2 lines of symmetry. We can divide a rectangle in 2 ways symmetrically.

Activity

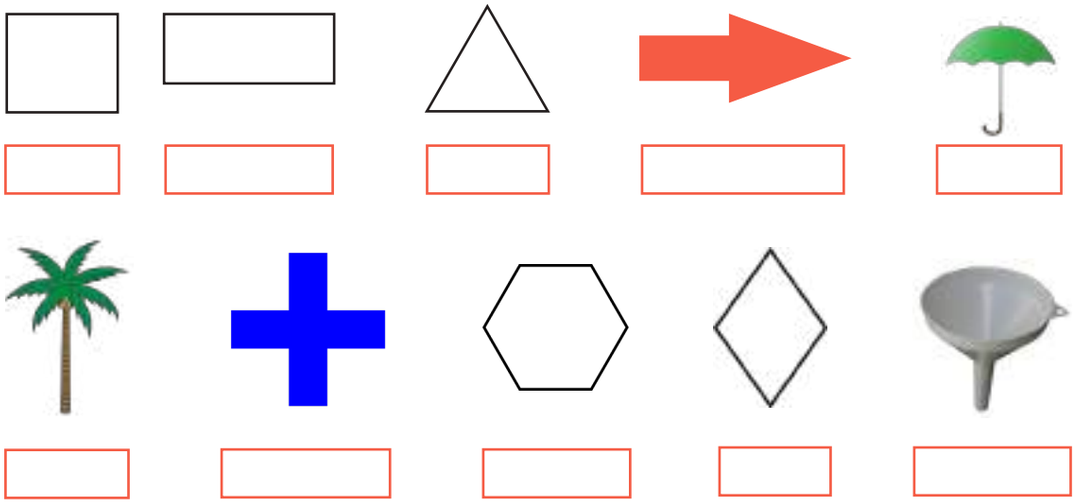
1. List out 2 symmetrical objects that you know.
2. Tick the picture which has symmetry




3. Complete the other half to make the given figure symmetric.

4. Draw the lines of symmetry for the following figures and write the number of lines of symmetry.



Think

1. Can we divide an irregular solid shape symmetrically? Justify your answer.
2. Write the alphabet of English which are not symmetrical.
3. Write the alphabet of English which are symmetrical. Further find whether the symmetry is horizontal and vertical.
4. Circle has many lines of symmetry. Is it true? why?
5. Find three numbers between 1 and 9 which are symmetrical.
6. Find two numbers between 0 and 9 which has two lines of symmetry?

Do you know?

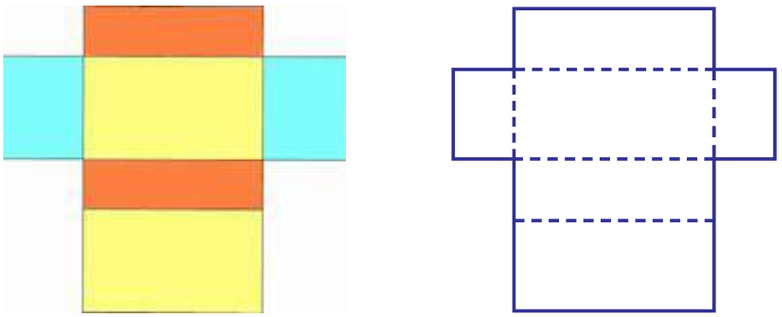
Tajmahal in Agra is a symmetrical monument.

Project:

Write all the 26 letters of English in a chart. Draw the lines of symmetry for symmetrical alphabet. Circle the letters that are not symmetrical.

1.1.5 Making 3D shapes using nets.

Nets of cuboid:



Open out a small box and layout on the white paper.

Teacher: "How many sides are there in a box?'

Student: There are 6 sides.

Teacher: You are correct. Can you assemble it again?

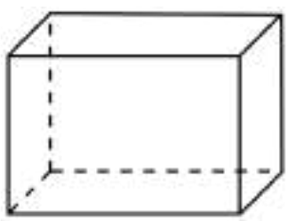
Student: Yes sir.

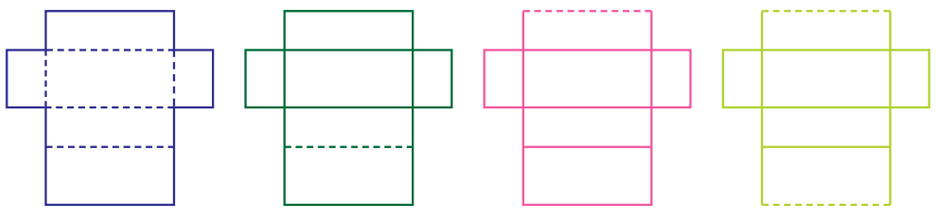
Teacher: Good.

We can describe a net as a two dimensional shapes which can be folded to form a three dimensional figure.

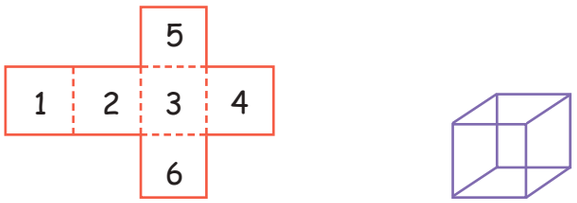
Try this

Find out which of these can be made into a box by folding along the dotted lines. Put a tick mark for the correct options.



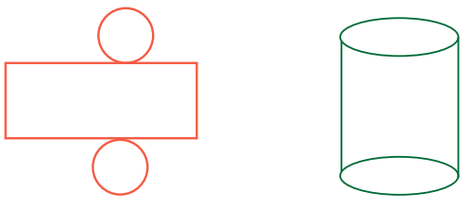


Net of a cube:



Fold squares along the dotted lines to form a cube. Hence six equal squares form the net of a cube.

Net of a cylinder:

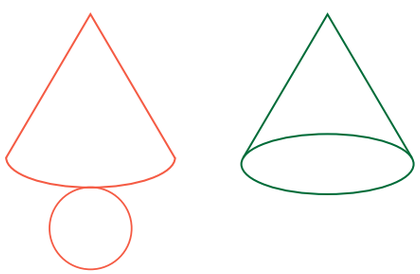


Consider a rectangle and two equal circles. This net forms a cylinder.

Join the two edges of a rectangle along the breadth in such a way that the length of the rectangle forms the boundary of one circle at the top and other circle at the bottom of this figure.

The length of the rectangle forms the boundary of the circle. Both are equal in length.

Net of a cone:

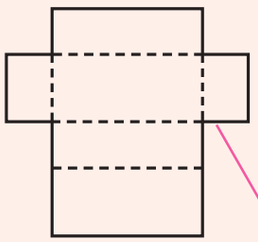
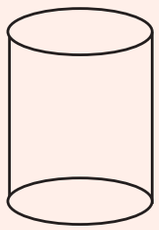
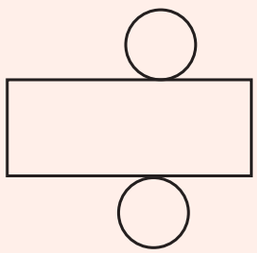
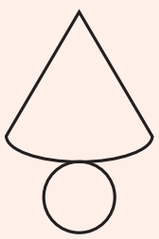
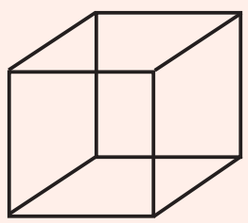
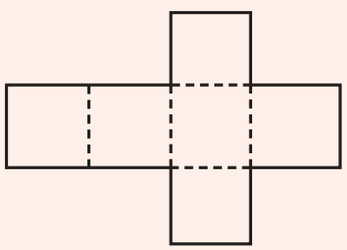
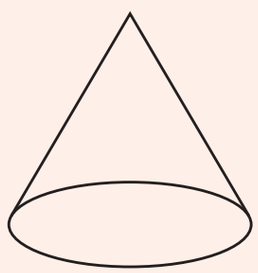


Look at the figure. Join both the sides of the portion of a circle in such way that the arc of the circle falls on the boundary of the circle attached at the bottom.

The length of the arc forms the boundary of the circle. Both are equal in length.

Activity

Match the net with the 3D shape you will get by folding.

1		
2		
3		
4		

1.2 Introduction of Angles

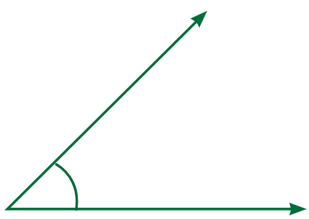
1.2.1 Angles in real life

The angles are used in bridges, buildings, cell phone towers, wings of planes, bicycles, windows and doors.

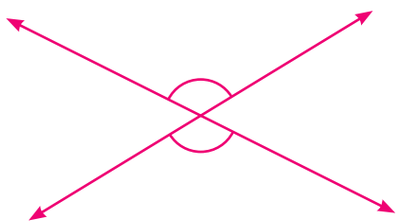



Angle:

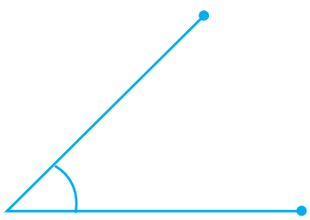
An angle is a shape formed by two line segments or rays starting from a common point (Vertex).



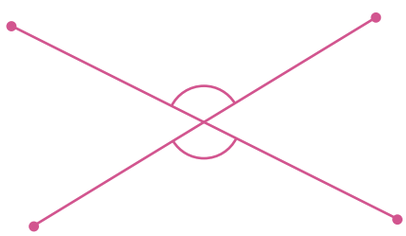
Angle formed by meeting of two rays.



Angle formed by intersection of two lines



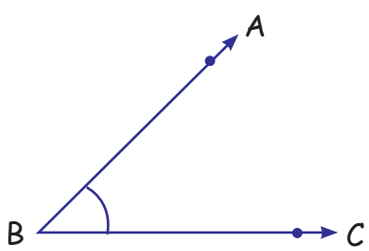
Angle formed by meeting of two line segments.



Angle formed by intersecting of two line segments.

Teacher : What does this picture convey?

Ramu : This picture shows an angle. Does angle have name sir?



Teacher : Yes. Angles have names. Can you see two line segments in this picture? Read the names of that.

Ramu : Sir, This angle has two line segments. Those are BA and BC.

Teacher : Which is the common point of the two line segments?

Ramu : B is the common point.

Teacher : These two line segments make an angle. common point B is the vertex. BA&BC are arms of the angle.

Ramu : Then how can we call the angle in the picture?

Teacher : An angle is mentioned by three alphabets. The centre letter of the angle is called as vertex.

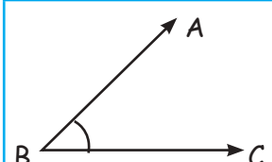
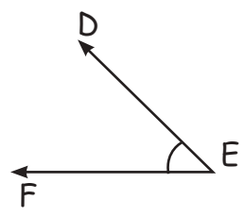
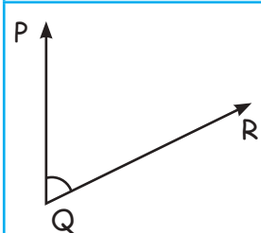
Ramu : Then, ABC is the name of the angle. Am I right sir?

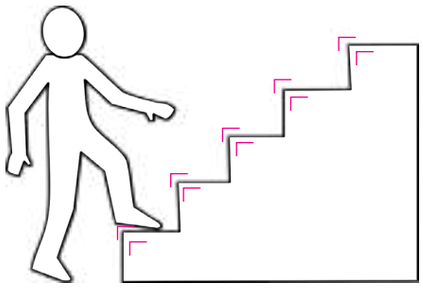
Teacher : Yes, We should mention the angle as angle ABC.

Ramu : Sir, can we write angle CBA instead of angle ABC.

Teacher : Sure. Angle ABC and Angle CBA are same. We use this symbol $\angle$ for mentioning angle.

So we can write angle ABC as $\angle$ ABC.

Picture for angle	Name of the angle	Vertex	Two arms of angle
	$\angle$ABC or $\angle$CBA	B	AB and BC
			
			

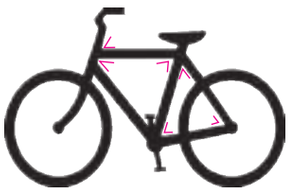


Angle between ground and stair case

Angle between ladder and ground

Angle between branches of a tree

Angle in an electric pole



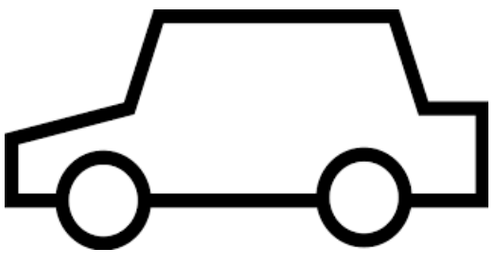
Angle in a bicycle

Angle in a house

Angle in a clock

Find:

Mark the angles formed inside and outside using colour pencils in the given picture.



Activity

Look at the angles formed by your elbow. Draw them as stick picture. Discuss with your teacher and friends.

Project:

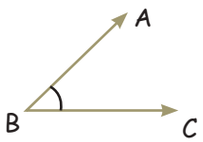
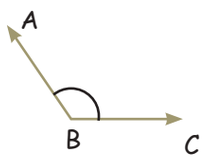
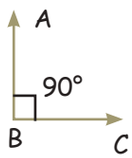
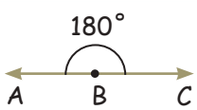
Collect some pictures with angles and paste the same in a chart. Draw and mark the angles using pencil.

Do you know?

The word angle originated from the Greek word "Angilos". It means curved and not straight. Ankle is the place where knee and leg foot is joined.

1.2.2 Types of angles:

We shall classify the angles into various types based on its measurements. Observe the various angles formed in the wooden frame.

Sl. No.	Picture	Type of angles	Measure of the Angle
1		Acute angle	Greater than 0° Less than 90° E.g. 5°, 80°, 2°, 50°
2		Obtuse angle	Greater than 90° Less than 180° E.g. 93°, 170°, 100°, 132°
3		Right angle	Exactly 90°
4		Straight angle	Exactly 180° Combination of two consecutive right angles.

Name the types of angles formed in the following items.

_____

_____

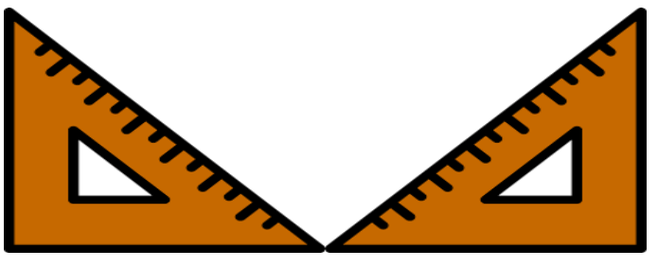
_____

Try this

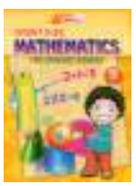
1.2.3 Identify right angles in the environment:

Ram is trying to cut a piece of wood in rectangular shape from a wooden board. Ram used a tool to cut the sides of the rectangle. This device is called as set square.

We can see two set square in our Geometry Box. Both the set squares have 90° measurement.



Examples:

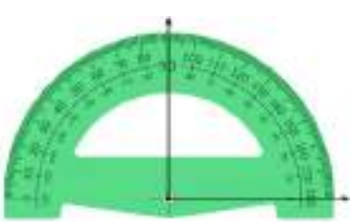


Try this

Draw 5 objects with right angle:

Activity

1. Classify and write the angles as acute, obtuse and right angle.

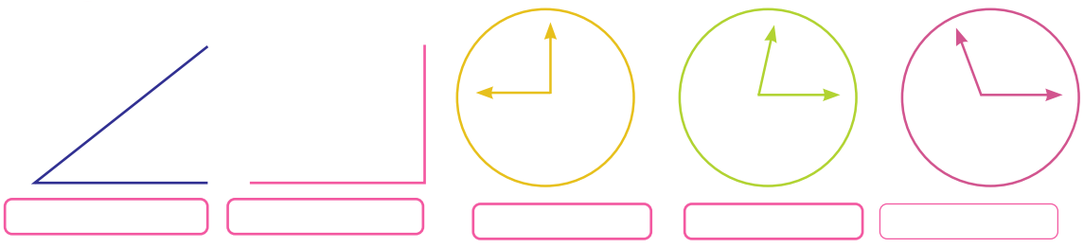


_____ _____ _____

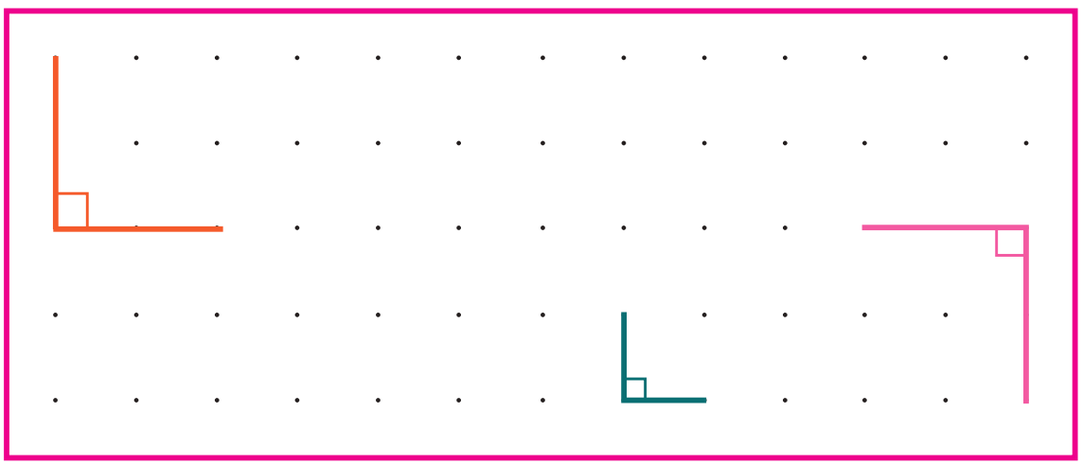
2. Classify the following angles (acute angle, obtuse angle and right angle)

30°, 45°, 60°, 90°, 120°, 130°, 170°, 75°

3. Observe the following pictures and write the name of the angles in their box.



4. Join the dots and draw right angle, acute angle and obtuse angle.



Project (Art and Craft)

1. Form angles of all the types by paper cutting or paper folding and paste them in a chart.

2. Write the names of the flowers, animals and birds in English capital letter and find the types of angles formed in each alphabet.

GIRAFFE

PEACOCK

SUNFLOWER

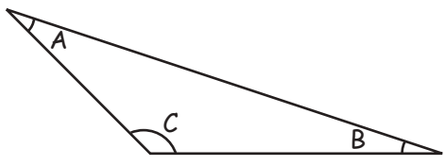
Exercise 1.3

1. The angles below 90° and above 0° are called as _____.

2. The angles below 180° and above 90° are called as _____.

3. _____ angle is formed by combining two consecutive right angles.

4. Which of the following is obtuse angle in ΔABC?.



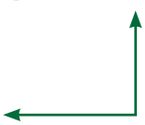
a. $\angle A$ **b.** $\angle B$ **c.** $\angle C$ **d.** None of these

5. Hands of a clock at 2 hours shows _____ angle.

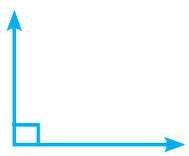
6. Which of the following alphabet has a right angle in it?

a. L **b.** K **c.** Z **d.** N

7. Circle the right angle.

a.  **b.**  **c.**  **d.** 

8. The angle shown in this picture is.



a. more than 120° **b.** Less than 45°

c. more than 180° **d.** 90°

9. The angle formed by the nail cutter is _____.

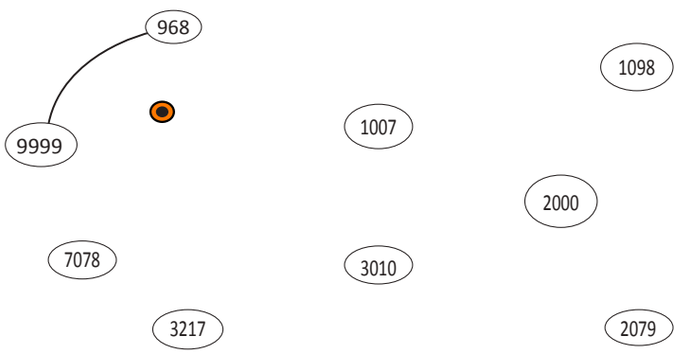
10. Name the angles formed when the vessels are lifted by tongs in kitchen _____.

2.1 Numbers beyond 10,000

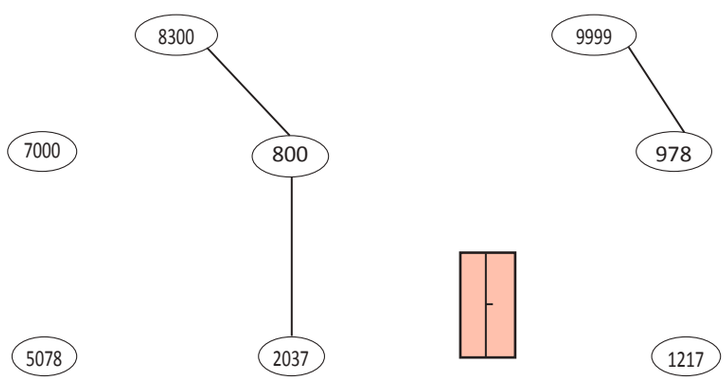
B45GK

Recall:

1. Join the numbers in descending order to complete the picture.



2. Join the numbers in ascending order to complete the picture.



2.1.1 The uses of numbers beyond 10,000 in real life situation.

Introduction

The price of a television is ₹ 18,500, the price of a mobile phone is ₹ 15,250, the price of LPG cylinder is ₹ 975, the price of a wooden cot is ₹ 30,000, the price of a car is ₹ 4,50,000 the price of a bicycle is ₹ 5,250 and the price of a pencil is ₹ 115.

Price of various items is given in the above data. Classify the data as price more than ₹ 10,000 and the price less than rupees ₹ 10,000.

More than ₹ 10,000	Less than ₹ 10,000

We have learnt about numbers upto 10,000 in fourth standard. Now let us know about numbers more than 10,000.

Fill in the table from 10,001 to 10,100

10001	10002	10003	10004	10005	10006	10007	10008	10009	10010
10011							10018		
10021									
10031				10035					
10041						10047			
10051									
10061					10066				
10071									
10081		10083							
10091									10100

Activity 1

Skip count in tens and complete the table.

10010	10020	10030	10040	10050	10060	10070	10080	10090	10100
10110									
10210								10290	
10310									
10410									
10510									
10610		10630							
10710						10770			
10810									
10910									

Exercise 2.1

1 **Fill in the blanks.**

a) 10,101, 10,102, 101,03, _____, _____, _____, _____

b) 10,220, 10,230, _____, _____, _____, 10,270

c) 10,920, _____, _____, _____, 10,960, _____

d) 11,101, 11,102, 11,103, _____, _____, _____, _____

Let us Know

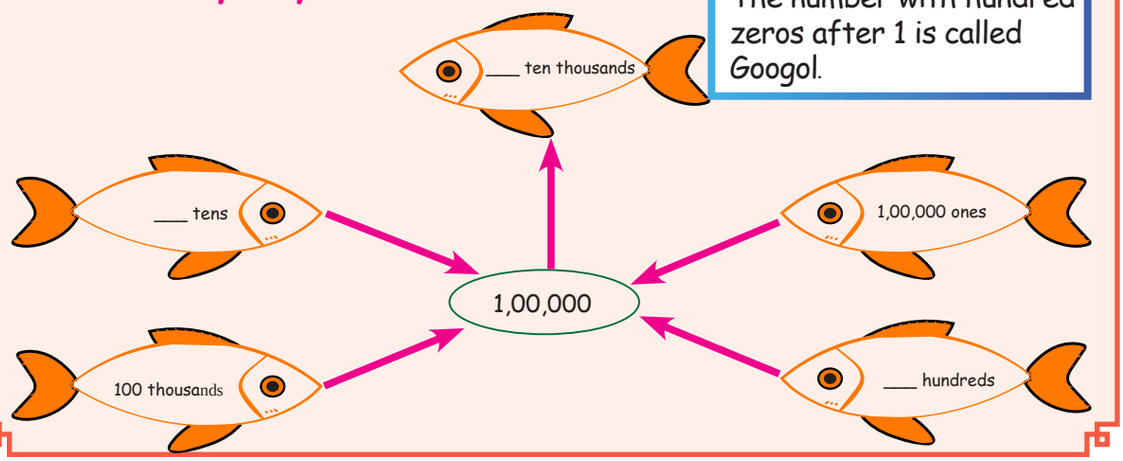
9,999	9,999+1	10,000	Ten thousand
99,999	99,999+1	1,00,000	Lakh
9,99,999	9,99,999+1	10,00,000	Ten lakhs
99,99,999	99,99,999+1	1,00,00,000	Crore

Activity 2

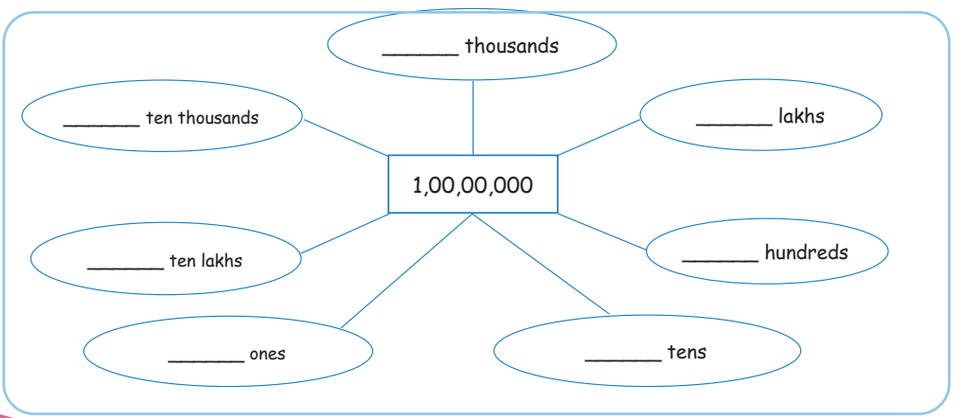
Lakh in many ways

Do You Know?

The number with hundred zeros after 1 is called Googol.



Crore in many ways



2.2 Place Value of Numbers

2.2.1 Importance of commas or periods.

Numbers having 4 or more digits can be read quickly and easily by putting them into groups using commas.

Crores		Lakhs		Thousands		Ones		
T C	C	T L	L	T.Th	Th	H	T	O

In the Indian place value system, ones, tens and hundreds form the first group under "ones" period. Thousands and ten thousands form second group under "thousands" period, lakhs and ten lakhs form the third group under "lakhs" period and crores and ten crores form the fourth group under "crores" period. Each group is seperated by a comma.

1. 99,15,797 2. 2,30,145 3. 1,34,19,922

Exercise 2.2

1. Read the following numbers by placing the commas at appropriate periods and write their number names.

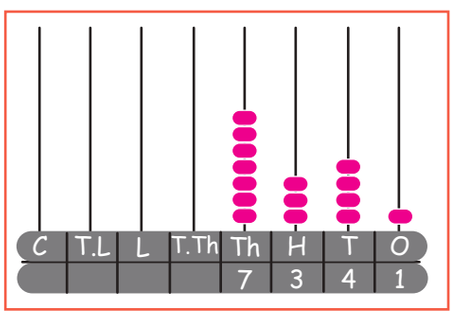
a. 15731997 **b.** 341964 **c.** 29121972 **d.** 347810

2.2.2 Place value chart

Fill in the boxes in the following table.

	Crore	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
In one crore	1	10	100	1,000	10,000	1,00,000	10,00,000	1,00,00,000
In ten lakhs		1						
In a lakh			1					
In ten thousand				1				
In thousand					1			

Example 1



Try this

Add 4 tens 2 thousands to this number 3,45,678.

The abacus shows the number: 7,341.

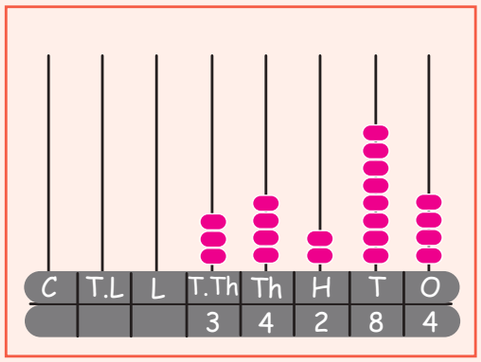
Number name: Seven thousand three hundred and forty one.

Expanded form: 7 thousands + 3 hundreds + 4 tens + 1 one

= 7,000+300 +40 + 1

= 7 x 1,000 + 3 x 100 + 4 x 10 + 1

Activity 1



Try this

How many thousands are there in 34,284?

The Abacus shows the number 34,284

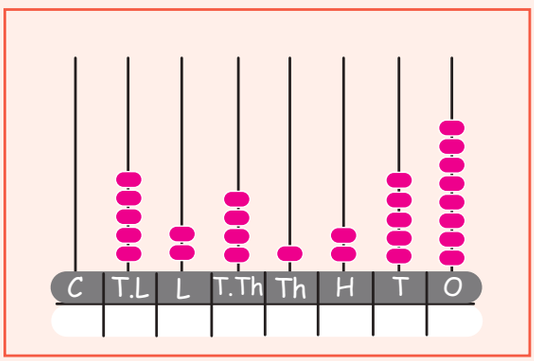
Number name: Thirty four thousand two hundred and eighty four.

Expanded form: 3 Ten thousands + 4 thousands +2 hundreds + 8 tens + 4 ones.

= 30,000 + _____ + 200 + _____ + _____

= 3 x 10,000 + 4 x _____ + 2 x 100 + 8 x _____ + _____ x 1

Activity 2



Try this

How many thousands are there in 3,45,789?

Look at the Abacus and fill in the blanks.

Number:_____

Number name: _____

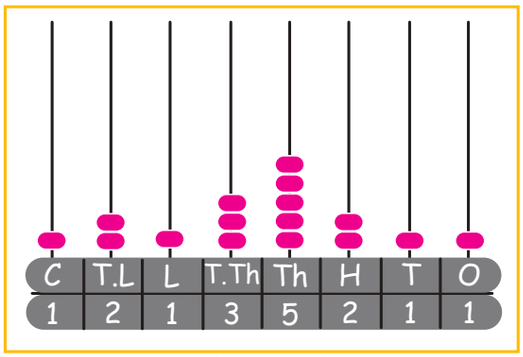
_____

Expanded form: 5 ten lakhs + _____ lakhs + _____

ten thousands +1 _____+ 2 _____ + 5 tens + _____ ones

= 50,00,000 + _____ + 40,000 + _____ + 200 + 50 + 8.

Example 2



Try this

Find the sum of the place values of 2 in 72,26,382.

The Abacus shows the number 1, 21, 35, 211

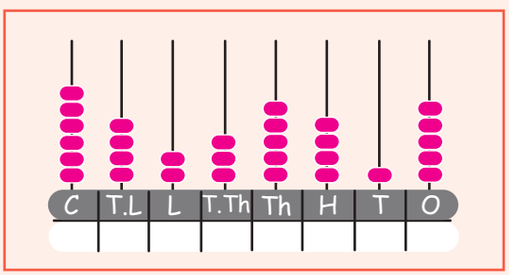
Number name One crore twenty one lakhs thirty five thousand two hundred and eleven.

Expanded form: 1 crore + 2 ten lakhs + 1 lakh + 3 ten thousands + 5 thousands + 2 hundreds +1 ten + 1 one.

= 1,00,00,000 + 20,00,000 + 1,00,000 + 30,000 + 5,000 + 200 + 10 +1

= 1 x 1,00,00,000 + 2 x 10,00,000 + 1 x 1,00,000 + 3 x 10,000 + 5 x 1,000 + 2 x 100 + 1 x 10 + 1

Activity 3



Look at the Abacus and fill in the blanks.

Given number: _____

Number name: _____

_____

Expanded form:

6 crores + _____Ten lakhs + _____ Lakhs +

_____Ten thousands + 5 Thousands + _____Hundreds + 1 Ten + 5 ones.

= 6,00,00,000 + 40,00,000 + _____ + _____ + 5,000 + 400 + _____ + 5

= 6 x _____ + 4 x _____ + 2 x 1,00,000 + 3 x 10,000 + 5 x _____ + _____ x 100 + 1 x 10 + _____ x 1

Example 3

Write the place value and value of each digit for the given number.

4 34, 56 ,789

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

The place value of 9 is ones - 9 x 1 = 9

The place value of 8 is tens - 8 x 10 = 80

The place value of 7 is hundreds - 7 x 100 = 700

The place value of 6 is thousands - 6 x 1,000 = 6,000

The place value of 5 is ten thousands - 5 x 10,000 = 50,000

The place value of 4 is lakhs - 4 x 1,00,000 = 4,00,000

The place value of 3 is ten lakhs - 3 x 10,00,000 = 30,00,000

The place value of 4 is crores - 4 x 1,00,00,000 = 4,00,00,000

Do you Know?

100 lakhs make 1 crore

Activity 4

Write the place value of 7 and 1 for the given numbers.

a. 81,70,453 **b.** 3,46,710 **c.** 5,87,13,946

Exercise 2.3

1. Consider the number 15,478

   a. The place value of 7 is _____.

   b. The place value of 4 is _____.

   c. The place value of 1 is _____.

2. Fill the table with the place value for the following numbers.

Place value	crore	lakhs		thousands		ones		
Numbers	1,00,00,000	10,00,000	1,00,000	10,000	1,000	100	10	1
23,45,172		2	3	4	5	1	7	2
84,701								
2,01,784								
9,04,704			9	0	4	7	0	4
2,07,91,132								
10,07,000								

3. Write the place value of 5 in the following numbers.

a. 287500 **b.** 586012 **c.** 5869732 **d.** 3467859

4. Write the following numbers in standard notation.

a. 30,000 + 3,000 + 300 + 30 +3

b. 2,00,000 + 7,000 +7

c. 80,00,000 + 70,000 + 3,000 +30 +5

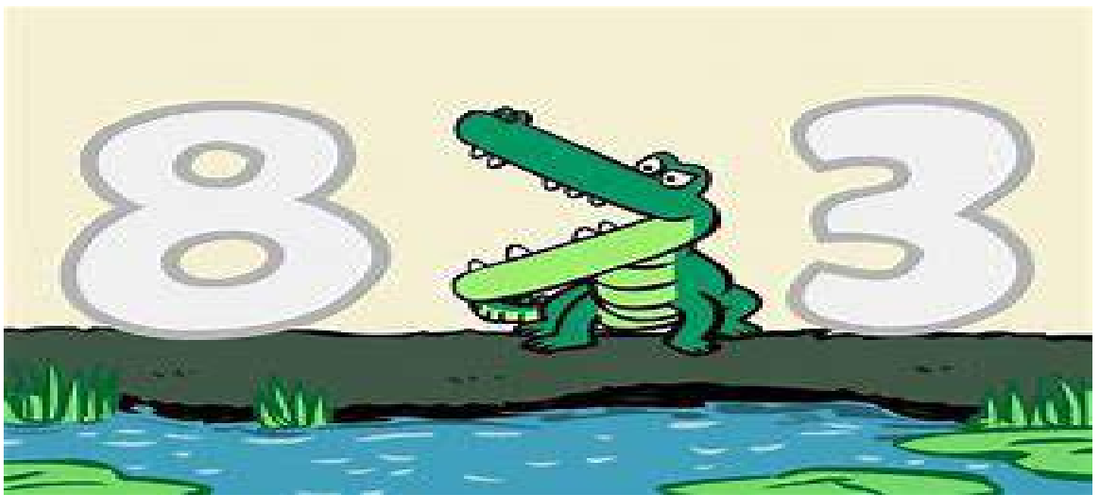
d. 40,00,000 + 400 + 4.

5. Write the following numbers in expanded form.

a. 63,570 **b.** 36,01,478 **c.** 1,45,70,004 **d.** 28,48,387

6. Find the difference between greatest 7 – digit number and smallest 6-digit number.

2.3 Comparison of Numbers.



We use symbols >, < and = to compare any two numbers

Which is **smaller? 20,344** or **3,241**

Number with more number of digits is a **larger number.**

Number with less number of digits is a **smaller number**.

3,241	**<**	**20,344**
4 digits		5 digits

Which is **greater? 73,652** or **56,372**

Here, Both numbers have 5- digits. So the highest digit is to be compared to find the greater number.

T.Th	Th	H	T	O
7	3	6	5	2

T.Th	Th	H	T	O
5	6	3	7	2

Here 7 ten thousands is **greater** than 5 ten thousands.

Hence,

73,652 > 56,372

We read it as, seventy three thousand six hundred and fifty two is **Greater than** fifty six thousand three hundred and seventy two.

Which is **smaller? 54,349** or **53,449**

Since both are five digit numbers and the digits in the ten thousands place are equal, the numbers in the thousands place are to be compared.

T.Th	Th	H	T	O
5	4	3	4	9

T.Th	Th	H	T	O
5	3	4	4	9

When we compare the thousands place, the first number has **4** Thousands and the second number has **3** Thousands so the second number is the **smaller** number.

Hence,

53,449 **<** 54,349

We read it as fifty three thousand four hundred and forty nine is **less than** fifty four thousand three hundred and forty nine.

For example:

a) 54,689 **<** 54,869

b) 75,432 **>** 75,412

c) 45,327 **>** 45,321

Activity

Compare the pairs of numbers given below using < , > and = signs.

1. 3,002 ☐ 8,002

2. 43,731 ☐ 44,371

3. 43,115 ☐ 43,511

4. 13,435 ☐ 13,435

Write the smallest and greatest five digit numbers using the given digits only once.

Example

A) 1,2,3,4,5

Smallest number : 12,345

Greatest number : 54,321

B) 7,6,9,4,8

Smallest number : 46,789

Greatest number : 98,764

Activity

1. **Write the smallest and greatest five digit numbers using the given digits only once.**

   a) 7, 1, 0, 5, 4

   b) 3, 4, 7, 0, 9

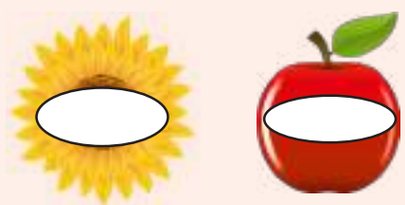
   c) 9, 7, 1, 6, 4

   d) 4, 5, 9, 6, 7

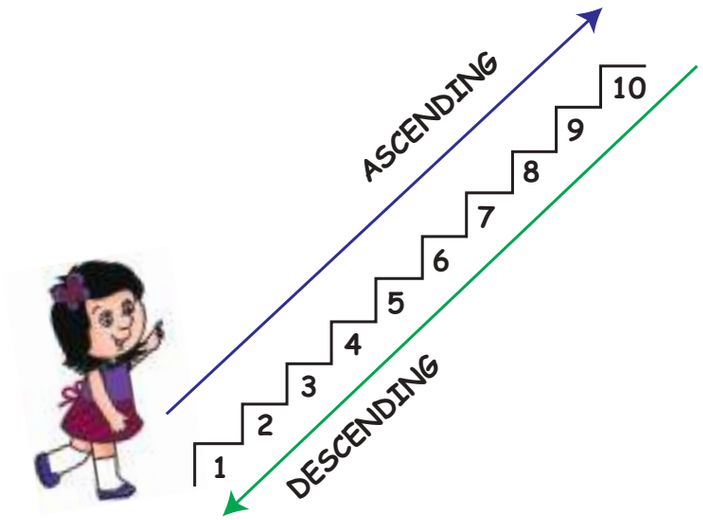
2. **Write the smallest number in the fruit and the greatest number in the flower.**

   a) 45,678, 145, 7,829

   b) 23, 8,873, 88,738, 883



2.4 Ascending and Descending Order of Numbers



Ascending order of numbers is arranging the numbers from the smallest to the greatest.

Example 1

Arrange the given numbers in ascending number

413, 43, 986, 38,490, 8,490

Answer: Ascending order:

43, 413, 986, 8,490, 38,490

Descending order of numbers is arranging the numbers from the greatest to the smallest.

Example 2

Arrange the given numbers in descending order

195, 4,090, 81,343, 95, 9,040

Answer: Descending order:

81,343, 9,040, 4,090, 195, 95

Activity

Arrange the following numbers in the ascending order and descending order.

i) 33,270, 1,078, 137, 27,935

ii) 44,918, 32,113, 23,112, 42,231

iii) 75,343, 30,475, 43,452, 13,055

iv) 733, 34,946, 35,945, 23,745

Exercise 2.4

1 Write the number name

a. 11,000 — Eleven thousand.

b. 34,000 — _____

c. 1,00,000 — _____

d. 98,364 — Ninety eight thousand three hundred and sixty four.

e. 37,689 — _____

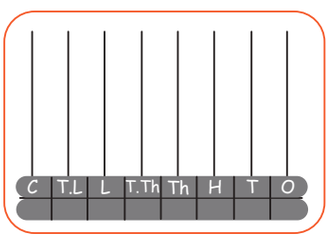
f. 46,763 — Forty six thousand seven hundred and sixty three.

g. 4,00,000 — _____

h. 12,00,000 — _____

2 Answer the following

a. Represent given values in Abacus.
3 Ten crores, 7 crores, 6 ten lakhs, 7 lakhs, 4 tens and 7 ones.



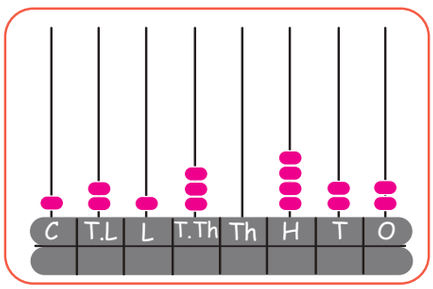
b. Find the place value of 7 and 4 of this number 3,45,78,910

c. Write in numeral

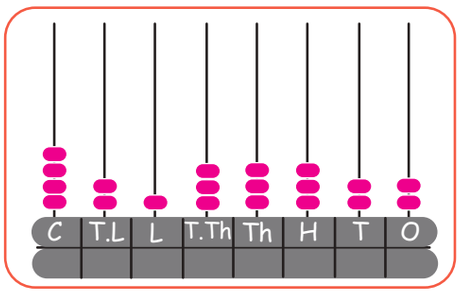
a. One crore forty thousand and four.

b. Sixty four lakhs and three.

d. (i)



(ii)



(i) Write the number names of the numbers represented in the Abacus.

(ii) How many lakhs and hundreds are there in the numbers represented by the Abacus given above

e. Find the sum of greatest 4-digit number and smallest 5-digit number.

f. Write in ascending order and descending order.

i. 33,058, 40,978, 97,879, 81,421, 90,470, 47,224

ii. 99,999, 11,111, 22,222, 33,333, 44,444, 66,666

g. Write in standard form: 7 lakhs+ 5 thousands + 4 tens +3 ones

h. Add 5 thousands and 3 hundreds to this number 1,34,510

i. Subtract smallest 6-digit numbers from greatest 7- digit numbers.

2.5 Numbers and its Operations

2.5.1 Addition

Introduction

"Ananthan come fast". Ananthan's mother called."Bus would come earlier".

Ananthan ran fast happily, "I am here mummy, I am ready" he said. The whole family was very busy because next week they have Ananthan's sister marriage. They have to buy new clothes for their relations and family members.

They finished their purchase and returned back home.

Ananthan asked his father "How much did you spend for our dresses?"

His father said, "Cost of dresses for gents is ₹ 25,050, and for ladies is ₹ 47,025 and for kids ₹ 7,125, and also cost of bride and groom dresses are ₹ 17,500. Now can you tell the total amount.

Ananthan took a paper and pen, he wrote all the amounts one by one according to their place values.

For gents	-	₹ 25050
For ladies	-	₹ 47025
Kids	-	₹ 7125
Groom and bride	+ -	₹ 17500
		₹ 96700

Check whether, the above total amount is correct or not.

Yes, Ananthan did correct, see the cost of kids, ₹ 7,125, There is a vacant place in ten thousand's place. So Ananthan wrote down the numbers one by one according to the place value. We learnt about place values of the numbers, Now we are going to add numbers. Write them one by one as shown below.

1,37,462 + 4,005 + 38 + 56,734.

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

Step 1: Start by adding the ones. We have 19 ones in ones place.

Step 2: We must regrouping 19 ones to 1 ten and 9 ones.

Step 3: Now we can put 1 ten with ten and write 9 in the ones place.

similarly we shall add the digits in other places

Arrange all the given numbers according to their place value.

We can do all the addition problems in this manner.

Note:
When we write the numbers, we can avoid mistakes, by starting from right side, that is from the units place.

Exercise 2.5

1. Find the sum.

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

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

2. Add the following numbers
   - a. 19,732 + 24,105 + 525 + 48
   - b. 2,41,605 + 34,788 + 5,003 + 2,052
   - c. 1,000 + 2,50,787 + 3,574 + 43
   - d. 7 + 65 + 324 + 52,342.

3. Population of five villages in a town panchayat are 980; 3,254; 4,125; 687; 6,786. What is the total population?

4. Ramu bought some household things. The price list is given below. Find the total cost ?

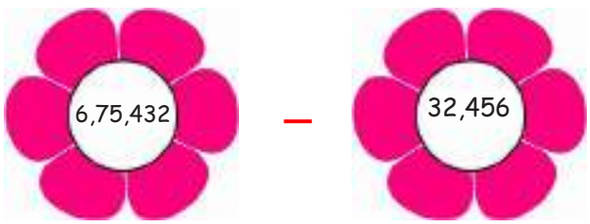
Fan	= ₹ 3,250
Fridge	= ₹ 26,437
Television	= ₹ 18,520
Iron box	= ₹ 940
Cot	= ₹ 15,520

5. A day's sales of different vegetables in a vegetable shop is as follows: Brinjal ₹ 4,500, Tomato ₹ 7,800, Onion ₹ 26,500, Potato ₹ 7,825, and Beetroot ₹ 825. Find the total amount of sales.

2.5.2 Subtraction

We have already learnt how to write the number numbers in their corresponding place values and add them. Now we are going to do the subtraction The process of finding the difference between two numbers or quantities is denoted by a minus sign.

The result of subtracting one number from another number is called the **Difference**



Answer

L	TTH	TH	H	T	O
6	7	5	4	3	2
	3	2	4	5	6
6	4	2	9	7	6

Example

Mathan is working in a construction company. His salary is ₹ 57,385 per month. He spent ₹ 48,500 for his family every month and saved the remaining amount. How much does he save per month?

Answer:

Mathan's Salary	=		₹ 57,385
His expenditure	=	-	₹ 48,500
His savings			**₹ 8,885**

Exercise 2.6

1. Subtract

a. 78,347 (-) 59,475

b. 67,056 (-) 3,748

c. 1,58,376 (-) 47,978

d. 89,700 (-) 4,538

2. Rahul has 3,289 stamps. Ravi has 4,021 stamps. How many more stamps does Ravi have than Rahul?

3. Create the story problem by using the pictures given below:

2.5.3 Multiplication

We have learnt about lattice multiplication in Class IV.
We shall now learn to multiply numbers with place value.

35 students are studying in class 5. The cost of uniform for one student is ₹ 350, How much is the total cost for 35 students?

Here, the number which is multiplied is called multiplicant. The number which multiplies is called multiplier. And answer of the multiplication is called product.

Step1: Multiply by the multiplicant by the digit in ones place of the multiplier.

Step2: Put a star below the one place to hold its place.

Step3: Multiply by the multiplicant by the digit in tens place of the multiplier.

Step4: Add them up

multiplicant multiplier

350 x 35

1750

1050*

12250 product

See the following steps:

O-Ones T-Tens H-Hundreds

Step: 1

```
   O  O
 350 x 35
 ------
    0
```

Multiply the digits in ones place
5 x 0 =0

Step: 2

```
    2
   HT    O
 350 x 35
 ------
   50
```

Multiply the digits in tens place
5 x 5 = 25
carry over 2 to hundreds place.

Step: 3

```
    2
    H    O
  350 x 35
 -------
 1750
```

Now multiply hundred place by digit in ones place.
5 x 3 = 15
15 + 2 = 17

Step: 4

```
 350 x 35
 -------
 1750
   *
```

Put * in ones place. Then multiply the number by digit in ten place as earlier.

Step: 5

```
   O  T
 350 x 35
 -------
 1750
  0*
```

3 x 0 = 0

Step: 6

```
    1
   HT  T
 350 x 35
 -------
 1750
 50*
```

3 x 5 =15
carry over 1 over to the hundreds place.

Step: 7

1
H T
350 x 35
1750
+ 1050*
12250

3 x 3 = 9
9 + 1 = 0

Add the numbers to get the product.

2.5.4 Multiply the three digit numbers by two digit numbers

Example 1

Raveena has planted 15 rows of coconut saplings in her garden. Each row has 112 saplings. How many coconut saplings were planted in total?

Number of rows of coconut saplings that Raveena planted = 15

Number of coconut saplings in one row = 112

Total number of coconut saplings planted in 15 rows = 112 x 15

= 1,680

112x 15
560
+ 112*
1680

∴Total number of coconut saplings in her garden is 1,680.

Example 2

Badri sold 1kg of Apple for ₹ 165. Find the total amount of 12 Kgs of Apple?

Cost of 1Kg of Apple = ₹ 165.

Quantity of apple bought = 12 kgs.

Total cost of 12 Kgs of Apple = 165 x 12

= ₹ 1,980

165x 12
330
+ 165*
1980

Exercise 2.7

1 **Multiply:**

a. 473 x 48 **b.** 405 x 19 **c.** 876 x 25 **d.** 854 x 21

e. 417 x 39 **f.** 870 x 28

2 **Answer the following :**

a. There are 55 mangoes in a basket. Cost of one mango is ₹ 15. What is the total cost of 55 mangoes?

b. There are 55 passengers in a bus. Each of them get tickets of ₹ 25. What is the amount collected by the conductor?

c. A classroom has 23 benches, cost of one bench is ₹ 725. What is the total cost of all the 23 benches?

d. There are 675 people living in a village. One person uses 25 L of water daily. How much of water is needed for the village for one day?

e. In a building, there are 26 rooms, cost of painting for one room is ₹ 950. What is the total cost of painting the building?

2.5.5 Division

Sabari is living in Kovalur village, he is a farmer, he has a cow, he gets the milk from it and sell the milk to 8 houses daily. His cow gives 8 litre of milk daily. So it gives 240 litres of milk for 30 days.

If so, how much of milk is bought by each house. In a month Sabari shares 240 L of milk to each 8 houses

So we have to split 240 in 8 parts.

We can find this using long division (or) standard division algorithm.

Step: 1

$$\overline{)\,2\ 4\ 0}$$

We are going to divide 240, so 240 is called as the **dividend**

Step: 2

$$8\overline{)\,2\ 4\ 0}$$

We have to split 240 into 8 equal parts, so 8 is the **divisor**

Step: 3

$$\begin{array}{r} 3 \\ 8\overline{)\,2\ 4\ 0} \\ 2\ 4 \\ \hline \end{array}$$

There are three 8's in 24.

(8 + 8 + 8 = 24)

Write 3 on the top of the line.

3 x 8 = 24

Write the number 24 below 240 as shown.

Step: 4

$$\begin{array}{r} 3\ 0 \\ 8\overline{)\ 2\ 4\ 0} \\ -2\ 4\ \downarrow \\ \hline 0 \end{array}$$

Next bring down the '0' . We can't divide 0 by 8

So, write '0' on the top nearby 3.

So 30 is quotient

It means people in each house has bought 30 litres of milk per month.

Note:

Generally, when we do addition subtraction and multiplication , we start from the unit's place. But when we do division, we have to do in opposite manner. First, we choose the number in digits of highest place value. Here it is the digit in hundred place. Here 2 is smaller than 8 so take the next digit also i.e. 4 in the Ten's place. Now we shall divide 24 by 8.

Example 1

Find Quotient and Remainder 5,369 ÷ 8

```
      6 7 1
   ┌──────
8  │ 5 3 6 9
     -4 8↓
     ------
       5 6
      -5 6↓
      ------
         0 9
       -  8
       ----
         1
```

Note:

Dividend = Divisor x quotient + reminder

Dividend	=	**5,369**
Divisor	=	**8**
Quotient	=	**671**
Remainder	=	**1**

Exercise 2.8

1 **Find quotient and remainder:**

a. 5,732 ÷ 9

b. 4,735 ÷ 5

c. 3,032 ÷ 7

d. 4,321 ÷ 10

e. 2,532 ÷ 4

2 **Answer the following:**

a. 3,057 families are living in a town. The town panchayat decided to split the town into 3 wards. How many families will be there in each panchayat?

b. A water board distributes 2,804 litres daily to a town in 4 lorries. How much of water will each lorry carry?

c. A company gives ₹ 9,330 as salary per day for 6 workers equally. How much salary will each worker get?

2.5.6 Division of 4 digit numbers by 2 digit numbers

We learnt how to divide by a single digit number. Now we are going to learn to divide 4 digit number by 2 digit number.

Children of class 5 were excited on seeing their bus for their picnic. When the teacher asked them to get into the bus, all of them entered the bus with loud cheer. The bus reached Arignar Anna Botanical garden. The class teacher paid ₹ 1,530 as entrance fee for all of the students. If there are 34 students, then what is the entrance fee for one student?

To find the answer, we have to divide the total amount ₹ 1,530 by 34.

1,530 ÷ 34

Step: 1

	Th	H	T	O
34)	1	5	3	0

When divide by 2 digit number, we have to choose first two digit from the dividend.

34) 15

Here 15 is smaller than 34,

So we choose 3 from tens place with 15

34) 153

Step: 2

			4	
34)	1	5	3	0
	-1	3	6	
		1	7	

Now try to divide 153 by 34. Calculate how many 34's in 153.

4 X 34 = 136.

Step: 3

			4	5
34)	1	5	3	0
	-1	3	6	↓
		1	7	0
	-1	7	0	
			0	

On subtracting 136 from 153, we get 17. Now bring down the '0' in the unit place, we have 170.

Calculate how many 34's in 170

5 X 34 = 170

Quotient = 45, Remainder = 0

Therefore, the entrance fee for one student is ₹ 45.

Divide and find the quotient and Remainder.

Example 1

4,925 ÷ 25

Step: 1

```
      1
25 | 4 9 2 5
   -2 5
   ------
     2 4
```

We know that when divide by 2 digit number have to choose first 2 digit from the dividend

Here divide 49 by 25

$25 \overline{)\ 49}$

25 occurs one time in 49

1 x25 = 25

Step: 2

```
      1
25 | 4 9 2 5
   -2 5 ↓
   ------
     2 4 2
```

Subtract 25 from 49 we get 24,
Next write down 2 from the ten's place

Step: 3

```
      1 9
25 | 4 9 2 5
   -2 5 ↓   |
   ------   |
     2 4 2  |
   -2 2 5 ↓ |
   ------   |
       1 7 5
```

Divide 242 by 25
Calculate the number of 25's in 242
9 X 25 = 225
Subtract 225 from 242 we get 17.
Next bring down 5 from unit place.

Step: 4

```
      1 9 7
25 | 4 9 2 5
   -2 5 ↓   |
   ------   |
     2 4 2  |
   -2 2 5 ↓ |
   ------   |
       1 7 5
     - 1 7 5
     -------
           0
```

Now we have 175
Calculate the number of 25's in 175
7 X 25 = 175

Quotient = 197
Remainder = 0

Example 2

A car factory produce 3,750 cars per month (30 days).
Find how many cars were produced per day.

Divide 3,750 by 30 days.

3,750 ÷ 30

Step: 1

```
      1
30 | 3 7 5 0
    -3 0
     ---
       7
```

Choose first 2 digit 37 from the dividend
Divide 37 by 30
Calculate the number of 30's in 37
1 X 30 = 30

Step: 2

```
      1
30 | 3 7 5 0
    -3 0↓
     -----
       7 5
```

Subtract 30 from 37, we get 7
Next bring down the 5 in ten's place

Step: 3

```
      1 2
30 | 3 7 5 0
    -3 0↓
     -----
       7 5
     - 6 0
     -----
       1 5
```

Divide 75 by 30.
Calculate the number of 30's in 75
2 X 30 = 60
Subtract 60 from 75 we get 15

Step: 4

```
      1 2 5
25 | 3 7 5 0
    -3 0↓  |
     -----  |
       7 5  |
     - 6 0↓
     -------
       1 5 0
     - 1 5 0
     -------
           0
```

Next bring down the '0' from unit place.
In 150, calculate how many 30's
5 X 30 = 150

Quotient = 125
Remainder = 0

The remainder is zero in the above example. The remainder can be a non-zero number also.

Example 3

Divide 4,327 by 18 and Write quotient and remainder.

Solution :

```
        2 4 0
    ┌─────────
18  │ 4 3 2 7
    │-3 6
    │-------
    │   7 2
    │ - 7 2
    │-------
    │     7
```

Dividend	=	**4,327**
Divisor	=	**18**
Quotient	=	**240**
Remainder	=	**7**

Exercise 2.9

5PQDT

1 **Answer the following questions:**

a. A cement factory produces 3,750 bags of cements in a month (30 days). How many cement bags were produced in one day?

b. 8,075 mangoes were harvested from a mango garden. 95 mangoes are packed in each package. How many packages will be there?

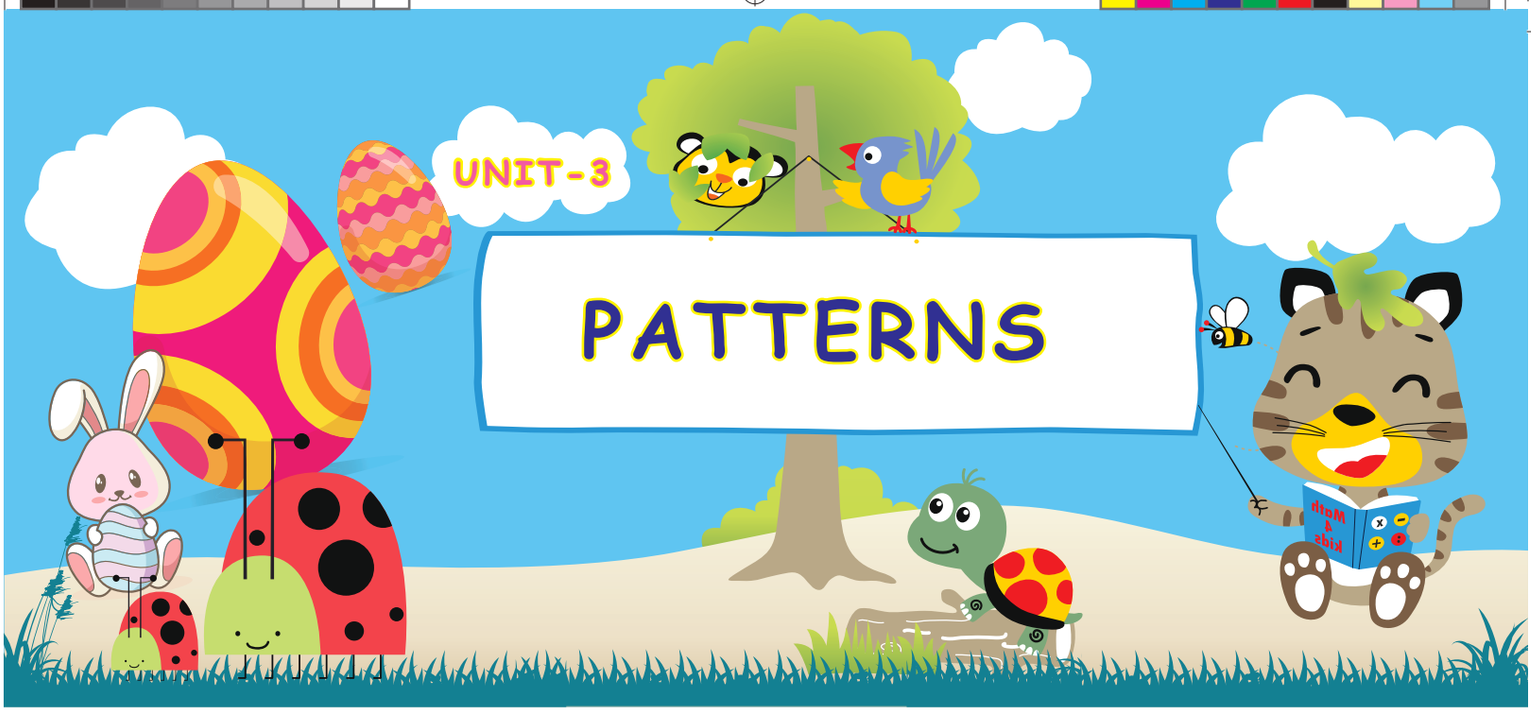
c. 25 families living in a street needed 1625 liters of water per day. How much of water is needed by one family?

d. 6,750 bananas have to be loaded in a tempo van. If 15 bananas are arranged in one basket, then how many baskets will be needed to arrange all the bananas?

2 **Divide the following and find the quotient and remainder.**

a. 4,525 ÷ 15 b. 3,448 ÷ 24 c. 7,342 ÷ 18

d. 3,626 ÷ 37 e.4,872 ÷ 56



3.1 Patterns in Shapes

PMJC7

Look at the image given below. Observe the design

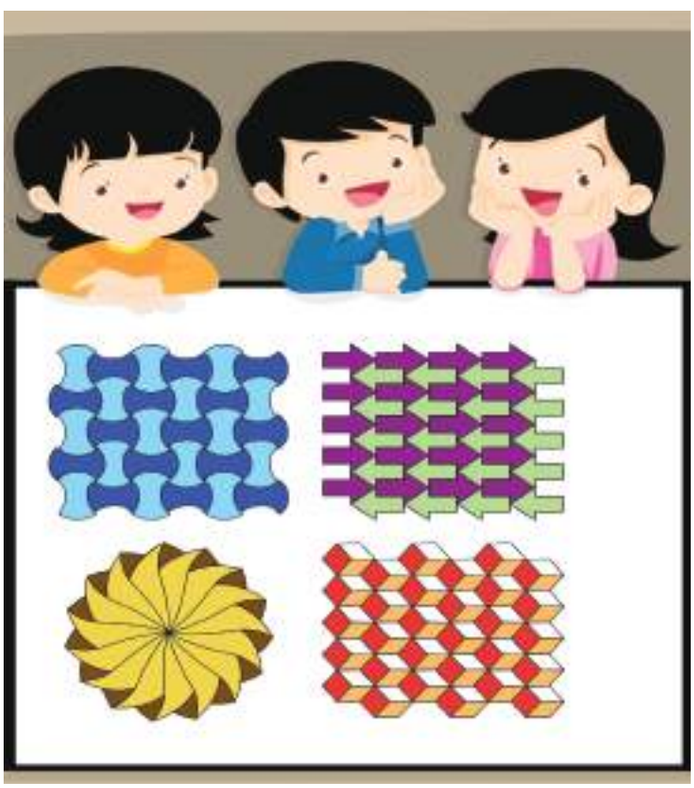
Patterns are present everywhere around us. Patterns are regular and repeated arrangement of colours, shapes, designs, lines etc. on a surface

Example

Observe the patterns in shapes given below.

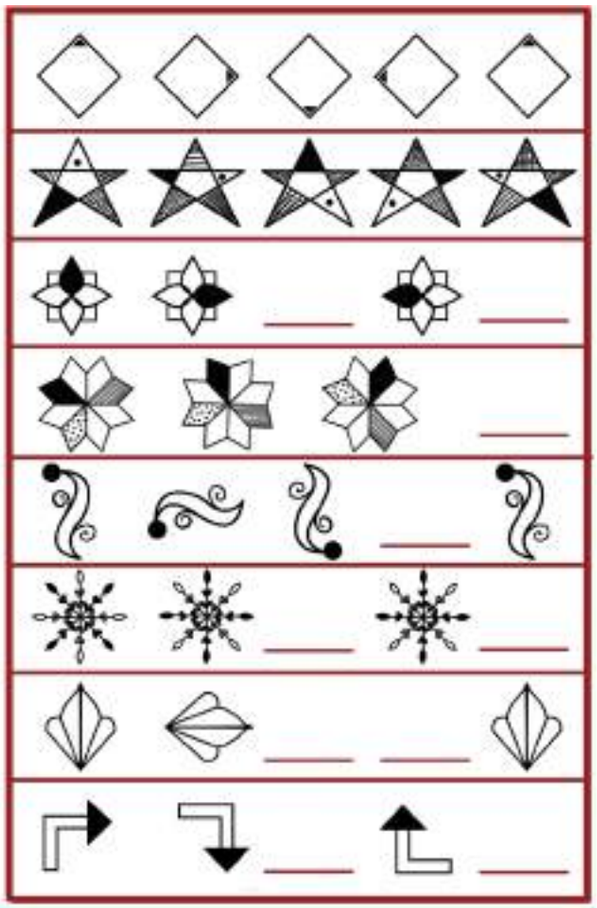
Example

Observe the patterns of shapes given below.



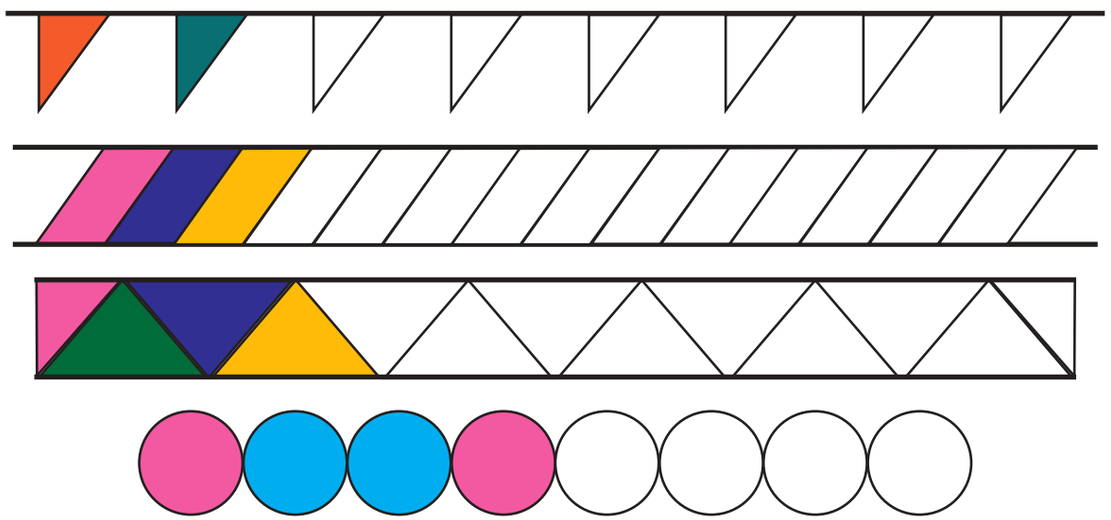
Exercise 3.1

Observe the given patterns and fill in the blanks



Activity

Observe and complete the colour pattern given below:



3.2 Patterns in Numbers

3.2.1 To identify patterns in square numbers and triangular numbers.

Square numbers

Introduction:

In order to find the square of a number we multiply the number by itself. The numbers like 1, 4, 9, 16, 25 ... can be expressed as the product of a number by itself.

$1 \times 1 = 1^2 = 1$

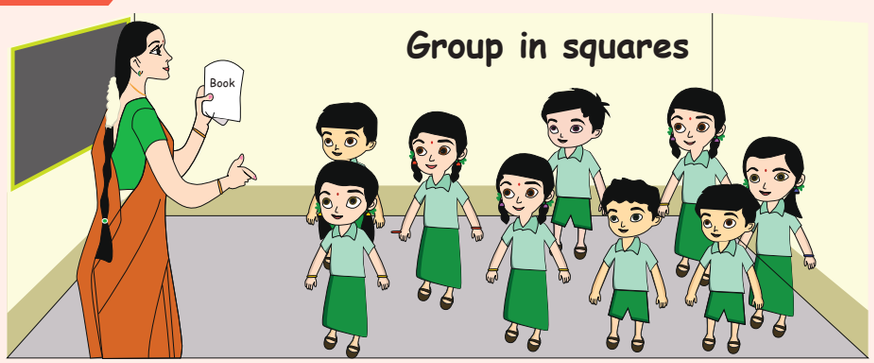
$2 \times 2 = 2^2 = 4$

$3 \times 3 = 3^2 = 9$

$4 \times 4 = 4^2 = 16$ and so on.

When we multiply a number by itself, we get the result as a square number.

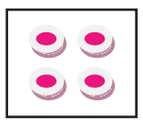
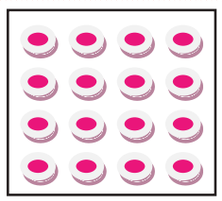
Activity



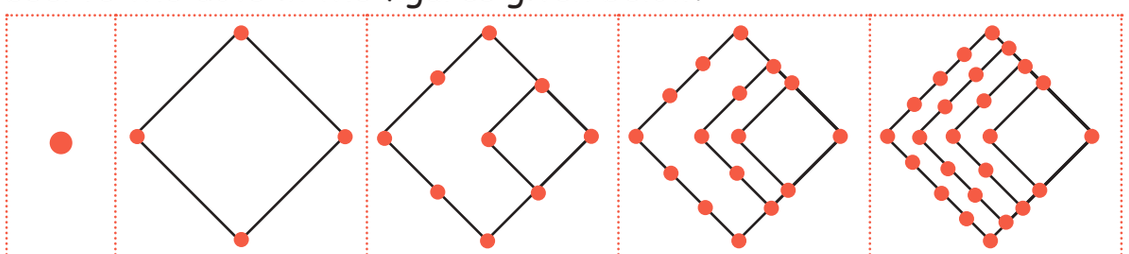
The teacher shall say the square numbers in order. Students should form groups among themselves according to the number said by the teacher. Children without group will not participate in the game further. The teacher shall continue with other numbers.

For example, if the teacher say 4, if 33 students are in a class. All the students shall create groups of 4 each in the shape of a square. One student will remain without a group.

A number that can be shown using a pattern of dots in a square using flowers or small balls will be a square number. We can arrange the dots by counting numbers as given below, that will make a square shape.

1 x 1 = 1	
2 x 2 = 4	
3 x 3 = 9	
4 x 4 = 16	

Observe the dots in the figures given below.



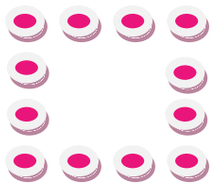
1	4	9	16	25

Do you know?

Square number	Sum of digits of the square number
$1^2 = 1$	1
$(11)^2 = 121$	$1 + 2 + 1 = 4 = 2^2$
$(111)^2 = 12321$	$1 + 2 + 3 + 2 + 1 = 9 = 3^2$
$(1111)^2 = 1234321$	$1 + 2 + 3 + 4 + 3 + 2 + 1 = 16 = 4^2$

Let us know

Joshua formed a square using 12 bindis.
Is 12 a square number?



No, because there are so many gaps in the square.
So the number 12 is not a square number.

Do yourself

1. Count and write the numbers of tiles :

Figure					
Number of Tiles					

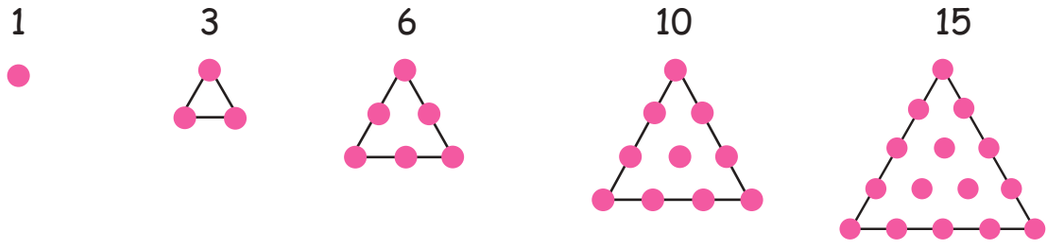
2. Circle the square numbers

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

Triangular Numbers

Triangular numbers are series of numbers obtained by summation of the consecutive natural numbers.

A number that can make a triangular dot pattern.



We can find the next number of the sequence of triangular numbers by adding another row of dots and counting all the dots placed previously.

The first triangle has just 1 dot.

The second triangle has another row with 2 extra dots, making 1+2=3

The third triangle has another row with 3 extra dots, making 1+2+3=6

so, the fourth has 1+2+3+4=10. And the series goes on,

Here 1, 3, 6, 10, 15, ... are called triangular numbers.

Note

Picture form of triangular numbers can make an equilateral triangle or a right angled triangle.

Do you know?

What is the relationship between triangular numbers and natural numbers?

$1 = 1$

$1 + 2 = 3$

$1 + 2 + 3 = 6$

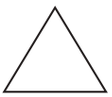
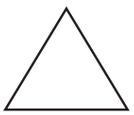
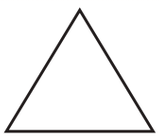
$1 + 2 + 3 + 4 = 10$

$1 + 2 + 3 + 4 + 5 = 15$ → Triangular numbers

The sum of series of consecutive natural numbers make the triangular numbers

Do yourself

Make the triangle shapes in the form of series of the triangular numbers using seeds.

				
1	3	6	10	15

Exercise 3.2

RJS7F

a. Answer the following:

1. Square of the number 7 is _____

   a. 14 b. 49 c. 21 d. 28

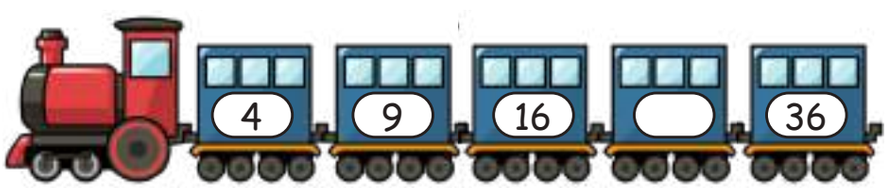
2. 64 is the square number of _____

   a. 4 b. 16 c. 8 d. 32

3. Is 24 a square number? _____

4. A number multiplied by _____ is called its square number.

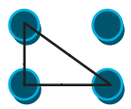
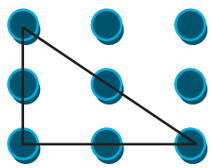
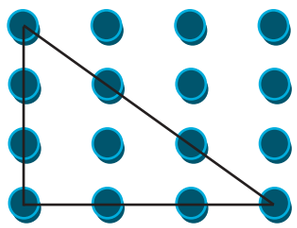
5. Fill in the blank box.



6. 1, 3, 6, _____, 15, _____, 28

Do you know?

The result of the sum of two triangular consecutive numbers is a square number.

1 + 3 = 4	
3 + 6 = 9	
6 + 10 = 16	

3.2.2 Relationship between consecutive square numbers and odd numbers.

We have already learnt about the relationship between square numbers and triangular numbers.

Now we are going to know the relationship between consecutive square numbers and odd numbers.

When we add the consecutive odd numbers from 1, we will get the square numbers.

1	=	1
1 + 3	=	4
1 + 3 + 5	=	9
1 + 3 + 5 + 7	=	16
1 + 3 + 5 + 7 + 9	=	25

Square numbers

Note:

1 is the common number among square numbers and triangular numbers.

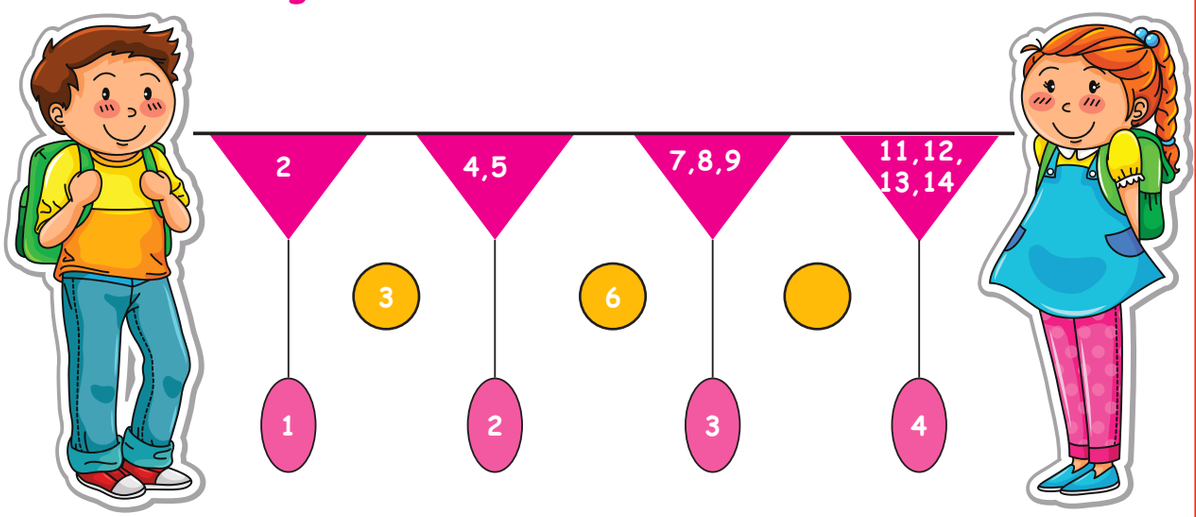
Try this

a. 1 + 3 + 5 + 7 + 9 + 11 = 36 = 6 x 6 = 6^2

b. 1 + 3 + 5 + 7 + 9 + 11 + 13= ____ = ____ = ____

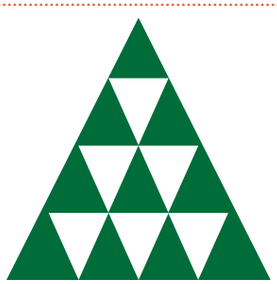
c. 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 = ____ = ____ = ____

Find the missing number!



Relationship between Square numbers and Triangular numbers

When we add two consecutive triangular numbers we get perfect square numbers.

			
Green : 1	3	6	10
White : 0	1	3	6
Sum : 1+0=1	3+1=4	6+3=9	10+6=16

The sum of green and white triangles denotes the square number.

Do you Know?

'36' is a triangular number and also a square number.

4.1 Length

68W4U

4.1.1 Life oriented problems based on length.

Introduction

In day to day life, we measure many small things by standard and non standard units. But how can we measure the distance.

The metric measurements are used to measure the length and distance.

I am Banu. I would like to measure:

1. What is the length of the table?
2. How tall am I?
3. How far is my school from my home?

How do I measure it? What kind of measurements are they?

Ponni explained Banu that answers for the questions such as how long, how tall and how far set examples of length.

a. Millimetre (mm):

Small unit of length is called millimetre.A millimetre is about the thickness of a plastic id card. Or about the thickness of 10 sheets of paper on top of each other.

Millimetre is the smallest measurement!

S.No.	Name of the object	Thickness in mm
1.	Cell phone	
2.	Maths Book	
3.	Eraser	

b. Centimetre:

1 Centimetre is equal to 10 millimetres.

If you have an object of 10 millimetre length then you can say it as 1 centimeter.

1 Centimetre = 10 millimetres

We can use millimetres or centimetres to measure how tall we are, or how wide a table is.

Banu, can you please mark 5mm in the scale?

Mark 4mm in red colour and 10mm in Green colour?

10 millimetre = 1 centimetre
10 centimetre = 1 decimetre
10 decimetre = 1 metre
10 metre = 1 deca metre
10 deca metre = 1 hecta metre
10 hecta metre = 1 killo metre

Mark 1cm and 3mm (1 cm 3 mm)?

S.No.	Length to be measured	Length in cm
1.	Composition Note	
2.	Your height	
3.	Geometry box	

c. Metre

A metre is equal to 100 centimetres

Metres are used to measure the length of a house or the length of a playground.

1 Metre = 100 centimetres

A Measuring tape has centimetre and metre units marked on it. Measuring tapes are useful for measuring lengths of cloth, large household objects like furniture and rooms.

S. No.	Length to be measured	Length in metre
1.	Length of classroom	
2.	Distance between school entrance and your classroom	

d. Kilometre

When you need to get from one place to another, you can measure that distance using kilometres. A kilometre is equal to 1,000 metres.

The distance from one city to another or how far a plane travels is measured using kilometres.

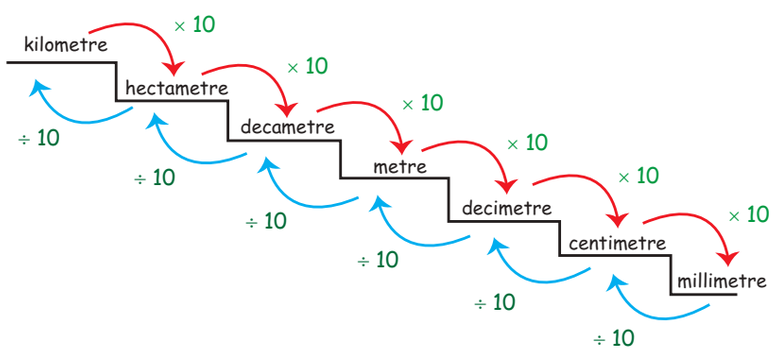
We can ride two wheeler/ Four Wheeler to go from one place to the other. The distance travelled is measured using odometre.

1 Kilometre = 1000 metres

S.No.	Distance to be calculated	Distance in Km
1.	School – your home	
2.	School – your taluk head quarters	
3.	School – your District head quarters	

Note:
Collection of above data can be done with the help of your elders.

4.2 Conversion of units



Let us know

To convert upper unit into lower unit the number should be multiplied.

To convert lower unit into upper unit the number should be divided.

100 centimetre = 1 metre

$\frac{1}{2}$ metre = 50 centimetre

$\frac{1}{4}$ metre = 25 centimetre

$\frac{3}{4}$ metre = 75centimetre

1000 metre = 1 kilometre

Activity

Measure the things by using tape and scale.

S.No.	Name of the object	Length			
		Km	Metre	Cm	mm
1.	Your shoulder length				
2.	Your height				
3.	Thickness of the chess board				
4.	Distance between your house and your uncle's house				

Example 1

Convert into millimetre

(i) 70 cm

70 cm = 70 x 10 mm 1 cm = 10 mm

=700 mm

(ii) 65 cm 6 mm = (65 x 10) + 6 mm

= 650 + 6

= 656 mm

(iii) 7 m

7 m = (7x1000) mm 1 m = 1000 mm

= 7000 mm

Note:

1. To convert metre into millimetre multiply the given metres by 1000.
2. To convert centimetre into millimetre multiply the given centimetre by 10.

Try this

Convert into millimetres

1. 90 cm
2. 5 cm 8 mm
3. 5 m 9 mm

Example 2

Convert into centimetres

(i) 5 m

5 m = (5 x 100) cm

= 500 cm

(ii) 7 m 40 cm

7 m 40 cm = (7 x 100) + 40 cm

= 700 + 40

= 740 cm

(iii) 110 mm

110 mm = 110 ÷ 10 cm

= 11 cm

Note:
To convert metre into centimetre multiply the given metres by 100

Try this

Convert into centimetres

1. 8 m 2. 6 m 4 cm 3. 80 mm

```
   11
10 | 110
     10
   ---
     10
     10
   ---
      0
```

Example 3

Convert into metre

(i) 7 km 50 m

1 km = 1000 m

7 km 50 m = (7 x 1000) + 50 m

= 7000 + 50

= 7050 m

(ii) 850 cm

850 cm = 850 ÷ 100 m

= 8 m 50 cm

(iii) 2005 mm

2005 mm = 2005 ÷ 1000 m

= 2 m 5 mm

Note:
1. To convert kilometre into metre multiply the given kilometre by 1000.
2. To convert millimetre into metre divide the given millimetre by 1000.

```
    8 m
100 | 850
      800
    ---
     50 cm
```

```
     2 m
1000 | 2005
       2000
     ----
        5 cm
```

Try these

Convert into metre

1. 8 km 400 m 2. 900 cm 3. 3500 mm

Example 4

Convert into kilometre

(i) 9000 m 1000 m = 1 km

9000 m = 9000 ÷ 1000 m

= 9 km

```
        9 km
1000 | 9000
       9000
       ----
          0 m
```

(ii) 2300 m

2300 m = 2300 ÷ 1000 m

= 2 km 300 m

```
        2 km
1000 | 2300
       2000
       ----
        300 m
```

Note:
To convert metres into kilometres divide the given metres by 1000.

Try these

Convert into kilometre

1. 5430 m
2. 7500 m
3. 8000 m

4.3 Addition in measurements

Example 1

1. Find the sum of the following.

(i) 7 m 25 cm + 15 m 50 cm

	m	cm
	7	25
+	15	50
	22	**75**

Sum = 22 m 75 cm

Step:1 Start from centimetre
25 cm + 50 cm = 75 cm

Step:2 Add metres
7 m + 15 m = 25 m

(ii) 5 km 700 m + 12 km 450m

	km	m
	❶	
	5	700
+	12	450
	18	**150**

Sum = 18 km 150 m

Step:1
Add metres 700 + 450 = 1150

Step:2
Convert metre into kilometre
1150 ÷ 1000 = 1 km 150 m

Step3:
Add 1 km to the km column
1 km + 5 km + 12 km = 18 km
1 + 5 + 12 = 18

Example 2

2. The length of three ropes are 1 m 20 cm, 2 m 15 cm and 1 m 25 cm. What is the total length of the three ropes?

Solution:

		m	cm
The length of the first rope	=	1	20
The length of the second rope	=	2	15
The length of the third rope	=	+ 1	25
Total length of ropes		**4**	**60**

Total length of the ropes = 4 m 60 cm

4.4 Subtraction in measurements

Example 1

Find the difference

(i) 75 km 500 m – 40 km 250 m

	km	m
	75	500
-	40	250
	35	**250**

Difference = 35 km 250 m

(ii) 55 m 75 cm – 23 m 40 cm

	m	cm
	55	75
-	23	40
	32	**35**

Difference = 32 m 35 cm

Try this

Subtract the following

1. 1075 km 400 m – 27 km 350 m
2. 250 m 25 cm – 127 m 18 cm
3. 27 km 900 m – 18 km 850 m

Example 2

Kannan bought 90 m 80 cm of cloth .He used 43 m 75 cm of cloth to stich the uniform how much cloth is left with him?

Solution:

		m	cm
The total length of cloth	=	90	80
The length of the cloth used to stich uniform	=	43	75
The length of the cloth remaining	=	47	05

The length of the cloth remaining is 47 m 05 cm.

4.5 Multiplication in measurements

Example 1

(i) 12 km 225 m x 6

	km	m
	12	225
x		6
	73	**350**

225m x 6 = 1350m
= 1km 350m

12 km 225 m x 6 = 73 km 350 m

(ii) 75 m 15 cm x 5

	m	cm
	75	15
x		5
	375	**75**

75 m 15 cm x 5 = 375 m 75 cm

Try these

a. 7m 20cm x 6
b. 15m 75cm x 5
c. 15km 200m x 4
d. 35km 500m x 5

Example 2

The length of a ribbon is 4 m 25 cm. Find the total length of three ribbons.

Solution:

Length of one ribbon = 4 m 25 cm

Length of three ribbons = 4 m 25 cm x 3 = 12 m 75 cm

Length of three ribbons = 12 m 75 cm

4.6 Division in measurements

Example 1

(i) 84 m 40 cm ÷ 4

	m	cm
	21	10
4	84	40
	- 8	
	4	
	- 4	
		4
	-	4
		0

84 m 40 cm ÷ 4 = **21 m 10 cm**

(ii) 360 km 540 m ÷ 9

	km	m
	40	060
9	360	540
	-36	
	0	54
	-	54
		0

Answer = **40 km 060 m**

Try these

a. 750 m 45 cm ÷ 5 b. 49 km 630 m ÷7 c. 770 km 550 m ÷ 11

Example 2

If a cloth of length 8 m 60 cm is cut into 4 equal pieces then, what is the length of one piece of cloth?

Solution:

Length of the cloth = 8 m 60 cm

Length of one piece of cloth = 8 m 60 cm ÷ 4

Length of one piece of cloth = 2 m 15 cm

Length of one piece of cloth = **2 m 15 cm**

	m	cm
	2	15
4	8	60
	-8	
		6
		-4
		20
		-20
		0

Exercise 4.1

1 **Fill in the blanks.**

a. 7 m 5 cm = _____cm

b. 326 m = _____cm

c. 5 km 30 m = _____m

d. 505 mm = _____cm _____mm

e. 650 cm = _____m _____cm

2 **True or False**

a. 600 m is 6 mm.

b. 7000 m is 7 km.

c. 400 cm is 4 km.

d. 770 mm is 77 cm.

e. 9000 m is 90 mm.

3 **Find the sum of the following.**

a. 17 m 45 cm + 52 m 30 cm

b. 75 km 400 m + 37 km 300 m + 52 km 750 m

c. 4 cm 8 mm + 5 cm 9 mm

4 **Subtract the following.**

a. 15 km 450 m - 13 km 200 m.

b. 750 m 840 mm -370 m 480 mm.

c. 5 km 400 m - 3 km 350 m

5 **Multiply the following.**

a. 350 m 45 cm x 7

b. 25 km 300 m x 6

c. 37 m 350 mm x 8

6 **Divide the following.**

a. 950 km 800 m ÷ 5

b. 49 m 770 mm ÷ 7

c. 172 m 48 cm ÷ 4

7 **Answer the following.**

a. Saravanan had chosen to drive his vehicle from puducherry to Chennai for a distance of 165 Km. While starting his vehicle, the odometre showed 000157 Km, Find the reading of the odometre, when he reaches Chennai?

b. Karthik Raja decided to travel from A. He moves 1Km in east to reach B. Then he goes 2Km towards north and reaches C. Then he goes 1 Km towards west and reaches D. If he goes 2Km towards South, Where would he reach? Draw a diagram and justify. Also find out the total distance travelled by him.

c. Sangeetha has just finished building a new house with garden area. She measured the garden area and found it to be 6m x 6m. Suppose she has to put a pole every 1m, how many poles are required? Each pole is of height 1.5m from the ground. What should be the total length of the fencing material to fence the garden?

d. One student needs 1m 25 cm cloth to stich a shirt. What is the total length of cloth needed to stitch a class of 22 students?

f. The distance from village A to village B is 3 km 450 m. The distance from village B to village C is 5 km 350 m. What will be the total length of the road, if the road is laid from village A to village C?

Try this

Create the life oriented problem by using the pictures given below.




Recall

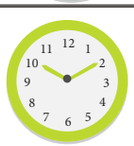
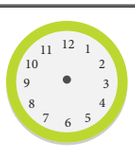
Draw the hour hand and write the time.

K19M6

When did you go to bed yesterday?_____

When will you get up in the morning? _____

When will you go to school? _____

Look at the clock given and write the time	Draw hands in the Clocks to show time
 ( )	11:40 
 ( )	04:55 
 ( )	01:40 

5.1 Railway time

We are using 12 hours clock generally. We use railway time in railway station, Defence department, television and internet. We cannot see or hear the a.m. or p.m. in any train time table or announcement because the railway time represents time in 24 hours.

Generally railway times are written in 4 digits. The first two digits show the hour and the last two digits show the minutes.

24-Hours Clock

We can write,

Mid night 12 hour is 00:00 hour or 24 hours		Noon 12 O'Clock – 12:00 hours
9. a.m. – 09:00 O'clock		1. p.m. – 13:00 hours (12+1) hours

While converting the 12 hour time to 24 hour time during p.m. we should add 12 to hours and keep the minutes same.

5.2 Normal time and Railway time

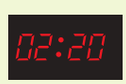
12 hours Clock	24 hours Clock	12 hours Clock	24 hours Clock
12 Mid night	00:00 hours or 24:00 hours	12:01 p.m.	12:01 hours
0:20 a.m.	00:20 hours	12:59 p.m.	12:59 hours
0:49 a.m.	00:49 hours	1:00 p.m.	13:00 hours
1:00 a.m.	01:00 hours	4:00 p.m.	16:00 hours
4:00 a.m.	04:00 hours	5:20 p.m.	17:20 hours
5:30 a.m.	05:30 hours	9:45 p.m.	21:45 hours
11:15 a.m.	11:15 hours	11:30 p.m.	23:30 hours
12:00 Noon	12:00 hours	12 Mid night	00:00 hours or 24:00 hours

Try these

Normal time	Railway time
1. 3:30 a.m.	_____ hours
2. 4:15 p.m.	_____ hours
3. _____	12:50 hours
4. _____	20:15 hours
5. 12:25 p.m.	_____ hours
6. 01:55 p.m.	_____ hours

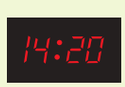
24 hour Clock 12 hour Clock

2:20 a.m.



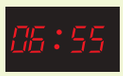
Mid night 2 hours 20 minutes

2:20 p.m.



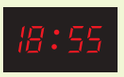
After noon 2 hours 20 minutes

6:55 a.m.



Morning 6 hours 55 minutes

6:55 p.m.

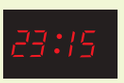


Evening 6 hours 55 minutes

11:15 a.m.

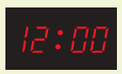
Morning 11 hours 15 minutes

11:15 p.m.



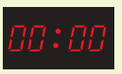
Night 11 hours 15 minutes

12:00



Noon 12 hours

12:00



Mid night 12 hours

Try these

Write a.m. or p.m.

1. Ravi starts the school at 8:45 ___
2. Ramya eats lunch at 1:00___
3. Akila sees the moon at 8:20_____
4. Kavi goes to the bed at 9:00____
5. The sun rises at 6:10____

5.3 Use addition and subtraction in finding time interval

Addition

Example 1

Add : 4 hours 30 minutes and 2 hours 45 minutes

	Hours	Minutes
	4	30
+	2	45
	6	75
	7	15

75 minutes = 1 hour 15 minutes

7 Hour 15 minutes

Example 2

Krishna goes to his village. He travels 4 hours 35 minutes in bus and 1 hour 55 minutes in Two-Wheeler. What is the total time of his travel?

			Hours	Minutes
Travel in bus	=		4	35
Travel in Two-Wheeler	=	+	1	55
			5	90
Total time	=		6	30

90 minutes = 60+30 minutes
60 minutes = 1 hour
30 minutes = 30 minutes
∴ 5+1 = 6 hour 30 minutes

∴ Krishna has travelled for 6 hour 30 minutes

Example 3

Subtract : 3 hours 45 minutes from 5 hours 30 minutes

	Hours	Minutes
	5	30
-	3	45

	Hours	Minutes
	4	60+30
		90
	~~5~~	~~30~~
-	3	45
	1	45

We can't subtract 45 minutes from 30 minutes so regroup 1hour from 5 hours as (60 + 30) 90 minutes and subtract 45 minutes from 90 minutes. We can get 45 minutes.

When we subtract 3 hours from 4 hours balance is 1 hour.

1 Hour 45 minutes

Example 4

Ram works on his computer from morning 10 O'clock to evening 3:30. How long does he work in his computer?

		Hours	Minutes
Ram works on his computer till evening	=	3	30
He starts work at morning	=	10	00

	Hours	Minutes
	15	30
-	10	00
	5	30

Subtract from a.m. to p.m., we add 12 hours.

Add 3:30 hours + 12 hours we can get 15:30

∴ Ram works 5 hours 30 minutes in his computer

Example 5

SCHOOL TIME TABLE			
First bell	9:00 a.m.	**Lunch time**	12:40 p.m. to 2:00 p.m.
Morning prayer	9:15 a.m.	**Afternoon school starting time**	2:00 p.m.
Class starting time	9:30 a.m.	**Afternoon break time**	3:20 p.m. to 3:30 p.m.
Morning break time	11:00 a.m. to 11:10 a.m.	**Evening school closing time**	4:10 p.m.
Morning school closing time	12:40 p.m.		

1. Find out the duration between First bell time to morning break time in school.

		Hour	Minutes
Morning break time	=	11	00
First bell time	=	- 9	00
		2	00

The time interval between First bell and morning break time is **2 Hours.**

2. Find the time interval between the time of class starting and the time of morning break.

		Hour	Minutes
		10	(60 + 10)
Morning break ending time	=	~~11~~	~~10~~
Class starting time	=	- 9	30
		1	40

The time interval between class starting time and morning break ending time is 1 hour 40 minutes.

We can't subtract 30 minutes from 10 minutes so we convert to hour into minutes 1 hours to 60 minutes and add.

60+10 = 70 now we subtract 30 minutes from 70 we can get 1 hour 40 minutes.

3. Find the total time from starting of morning class to closing of Afternoon class?

	Hour	Minutes
Afternoon school ending time =	4	10
Morning class starting time =	9	30

Hours	Minute
	(60+10 = 70)
15	
~~16~~	~~10~~
- 9	30
6	40

Add 12 hours, 4.10 + 12.00 = 16 Hours + 10 minutes.

The total time from starting of Morning class to closing of Afternoon class is 6 hours 40 minutes.

Try this

Find the time interval between starting of Afternoon class to closing of Evening class

		Hour	Minutes
Evening school ending time	=	4	10
Afternoon school starting time	=	- 2	00

To subtract pm from am, we add 12 hours to pm and then subtract.

Exercise 5.1

1 **Write down your school time table of the following:**

a. Morning school break time to morning school ending time. _____

b. Morning school working time. _____

c. Afternoon school working time. _____

d. Afternoon Lunch break time. _____

GKNDM

2 **Match the following:**

12 hours Clock	24 hours Clock
9:40 a.m.	23:40 hours
3:20 p.m.	6:25 hours
6:25 p.m.	15:20 hours
11:40 p.m.	9:40 hours
6:25 a.m.	18:25 hours

3 **Addition**

a. 4 hours 30 minutes + 2 hours 50 minutes = _____

b. 4 hours 50 minutes + 2 hours 30 minutes = _____

c. 3 hours 45 minutes + 1 hours 35 minutes = _____

d. 1 hours 50 minutes + 3 hours 45 minutes = _____

e. 2 hours 25 minutes + 4 hours 50 minutes = _____

4 **Subtract**

a. 5 hours 10 minutes – 2 hours 35 minutes = _____

b. 4 hours 20 minutes – 2 hours 40 minutes = _____

c. 4 hours 25 minutes – 1 hours 20 minutes = _____

d. 6 hours 55 minutes – 2 hours 20 minutes = _____

e. 5 hours 45 minutes – 3 hours 55 minutes = _____

5 **Answer the following:**

a. An office works from 10 a.m. to 6 a.m. What is the duration of working hours?

b. A school works from morning 9 a.m. to evening 4:10 p.m. What is the duration of working hours of the school?

c. A circus starts at 12:15 p.m. and ends by 2:30 p.m. What is the duration of circus?

d. A bank works from morning 9:30 a.m. to 4:30 p.m. What is the working time of the bank?

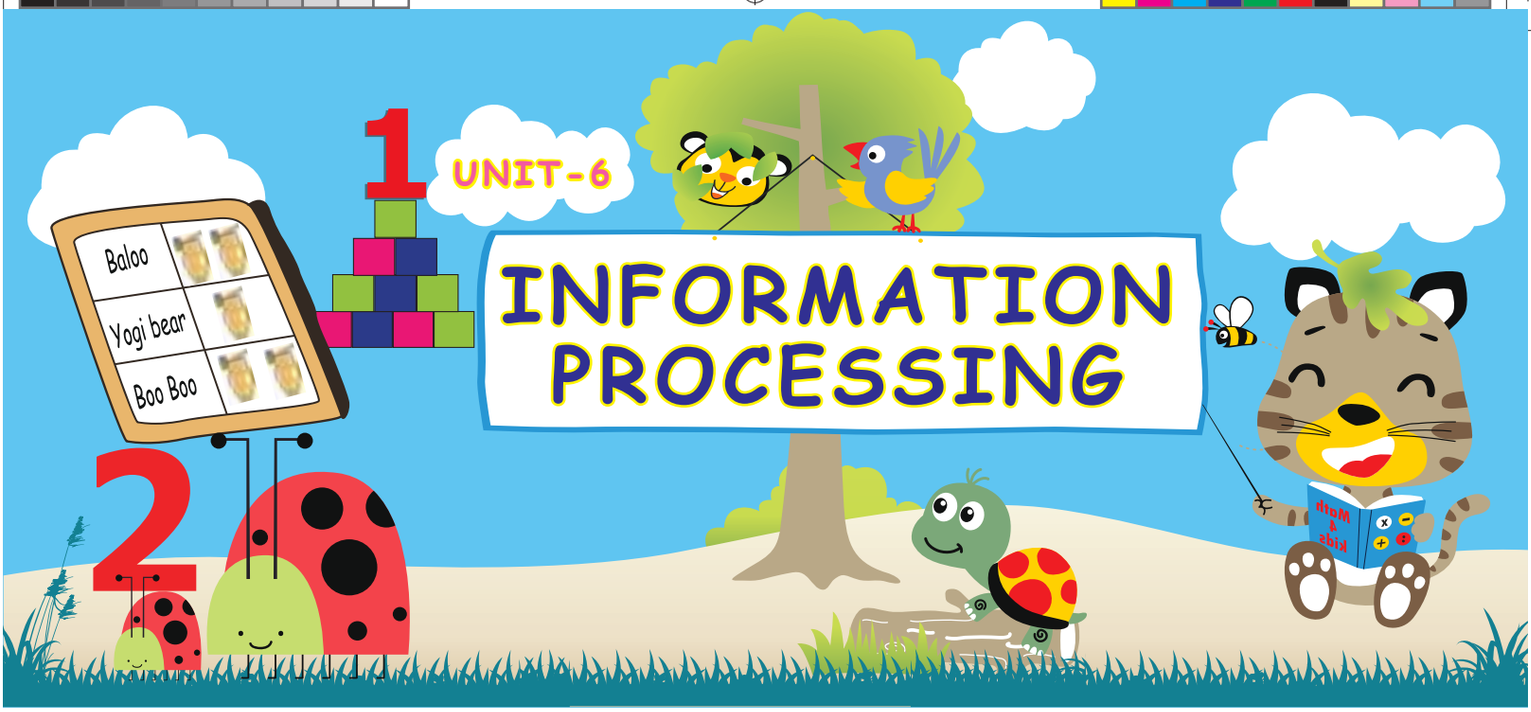
e. A man comes to his village in Tamilnadu from Ahmedabad. He travels 2 hours 15 minutes in Aeroplane and 4 hours 40 minutes in Car. What is the total time of travel?

f. A painter paints a house for 3 hours 15 minutes in morning and 2 hours 50 minutes in evening. What is the total time he painted?

Activity

Find the travel time of the train with the time given in 24-hour clock.

Train Name	Starting time Chennai	Reaching time	Travelling time
Sarkar Express Kakkinoda	17:20	09:50	
Rameswaram Express train Rameswaram	19:15	08:35	
Ananthapuri Express Kollam	06:50	08:20	
Sozhan Express Train Trichirapalli	08:00	16:00	

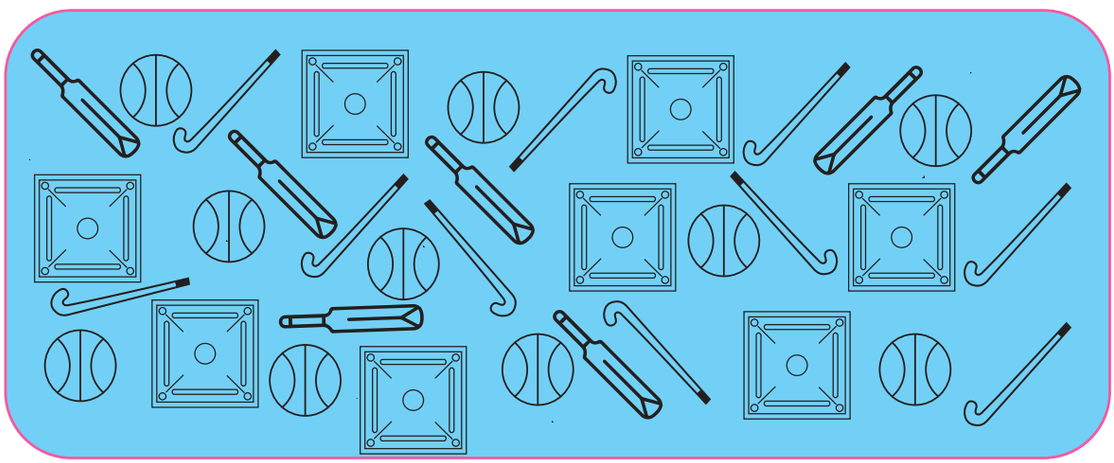


Introduction

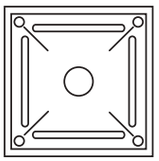
The main aim of this information processing is to enable the learners to count, compare and assume information such as invitees coming to attend a birthday party, sort out the class library books, food production, the number of pupils taking food in the mid-day meal scheme and the various occupations of their parents.

Example

A fifth standard teacher asked a student named Dinu to collect the pictures of favourite sports articles of his classmates and Dinu collected the same and handed it over to the teacher in a short span of time. Let us see how is it possible for him to do it quickly.



The teacher asked few questions about his collection and Dinu was able to answer those questions quickly. Let us find what Dinu did to answer the questions quickly.

Sports article				
Numbers	7	10	8	10

Dinu tabulate the data he collected as given above and answered the following questions.

1. How many students like the cricket bat? 7
2. How many students like football? 10
3. How many students like the Carrom board? 8
4. How many students like hockey stick? 10
5. Find the total number of sports articles. 35

6.1 Systematic Listing

Number puzzle is considered to be one of the unique games in mathematics. These types of games create more interest and involvement to learn mathematics in a very easy manner.

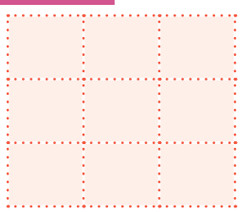
It is very happy to note that most of the number puzzles can be solved with basic knowledge of mathematics.

Here is a number puzzle with a systematic rule to solve it.

i. Choose any one number
ii. Add the next number to it.
iii. Then add 9 to the sum.
iv. Divide it by 2.
v. And then subtract the number chosen from it.
vi. Can you guess the answer?

Try with other numbers you could observe the answer is same for all the numbers.

Let us know



The above diagram (grid) shows rows and columns, horizontal squares are called **Rows** vertical square called **Columns**.

Example 1

3×3 Sudoku

The object is to fill all empty squares so that the numbers 1 to 3 each number can only appear once in a row and column.

Step: 1

1	2	3

Step: 2

1	2	3
2	**3**	**1**

Step: 3

1	2	3
2	**3**	**1**
3	**1**	**2**

Try this

How many ways can we arrange the numbers from 1 to 3 in first Row?

[**Answer:** (1 2 3), (1 3 2),(2 1 3),(2 3 1),(3 1 2)]

Example 2

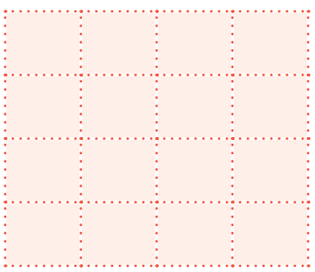
4×4 Sudoku

1	4	3	
3			
	1		3
2		4	1

Answer:

1	4	3	**2**
3	**2**	**1**	**4**
4	1	**2**	3
2	**3**	4	1

Try this



In how many ways can we arrange the numbers from 1 to 4 in first row?

Try this

5, 3, 2 = 15 10 22

9, 2, 4 = 18 36 52

8, 6, 3 = 48 24 66

5, 4, 5 = 20 25 41

therefore 7, 2, 5 = ?

Answer: 14 35 47

Note:

(i) product of 1st 2nd numbers
7 x 2 = 14

(ii) product of 1st 3rd numbers
7 x 5 = 35

(iii) Add these 2 products then subtract the middle number
= 14 + 35 = 49 - 2 = 47

Exercise 6.1

1 Complete the following Sudoku 3 x 3 by using numbers 1, 2 & 3.

a.

1		3
		1
	1	

b.

1		2
3		1

c.

2		
	2	
		2

d.

3		
	3	
		3

2 Solve 3×3 magic square using the numbers from 1 to 9. So that the sum is 15 both horizontally and vertically.

			15
			15
			15
15	15	15	

3 Complete the following 4×4 Sudoku by using the numbers 1, 2, 3, 4.

1			
	4		
4			
	3		1

		1	
	4		
3			2

	1	3	
2			1

4 Circle that comes twice.

DEF, EFD, FDE, EFD, FED, DFE, EDF

5 Circle the odd one.

ABC, ACB, BCA, BAA, CAB, CBA

6.2 Graphical Representation of Data

6.2.1 Collection of data

The easy method to calculate is to tabulate the collected information and represent it in pictures.

Example 1

Sports day celebration

After the Sports day Celebration the students kept all the used sports articles in a room. The physical director asked the students Dinesh & Ganesh of Class V to arrange the sports article in a proper order. They tabulated the sports articles as below.

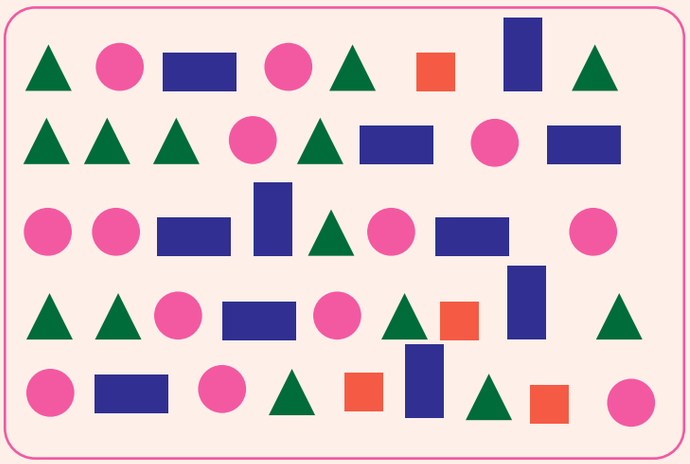
Note:
Rows are horizontal arrangements whereas column are vertical arrangements.

Let us see the way they arranged the articles in a proper way

Shapes										
Numbers	4	1	2	6	11	3	2	1	1	10

Activity 1

The Fifth standard students were given a task of collecting mathematical shapes in a competition. Team named shakuntaladevi won the competition.



Let us count the shapes collected by the winning team.

Shapes	▲	▬	●	■
Numbers				

Example 2

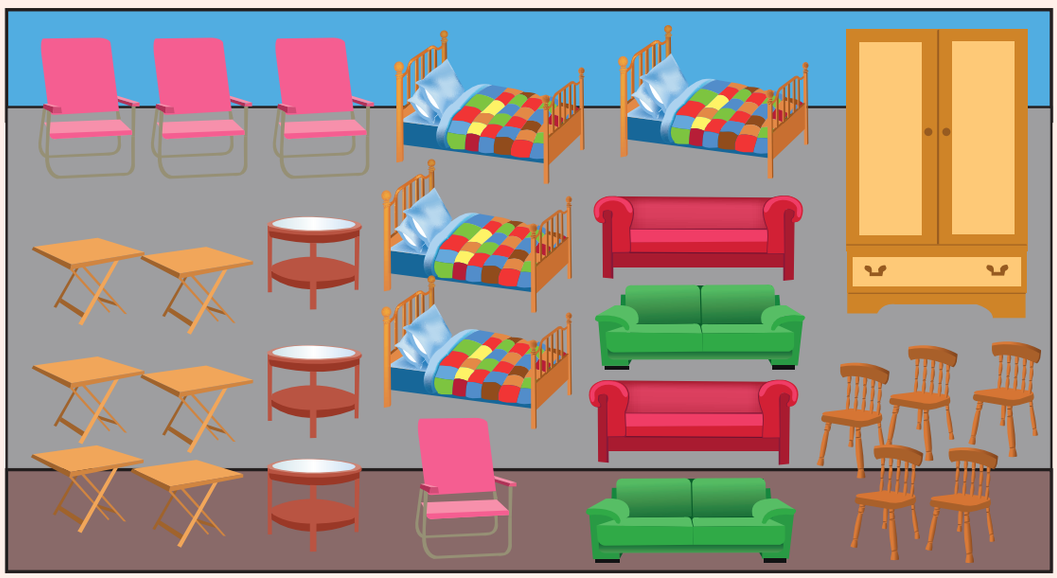
Prabu would like to present some gifts to his friends on his birthday party. He collected the details from his friends about their favourite item.

Friends name	Favourite item	Friends name	Favourite item
Mathavi	Pen	Priya	Pencil
Arul	Eraser	Vishal	Pen
Anjali	Eraser	John	Pencil
Malar	Pen	Ravi	Pencil box
Vembu	Pencil	Albert	Water bottle
Selvi	Scale	Periasamy	Pencil box
Begam	Pencil	Senthil	Water bottle
Sangavi	Eraser		

Items	Pencil box	Pen	Eraser	Pencil	Scale	Water bottle
Numbers	2	3	3	4	1	2

Activity 2

Total stock of household articles at the end of the month in a mart is given below.



Observe the above picture and complete the table.

Items								
Numbers								

Answer the following questions.

1. How many chairs were there in the stock list?
2. Name the articles that are lesser in count than the count of cots.
3. What is the total number of things in the stock?
4. How many tri footed stools are there?
5. Mention the article which is 3 numbers greater than tri footed stool?

6.3 Pictograph

Information can be easily understood when it is represented in pictures.

A **pictograph** is the representation of data using pictures. Pictographs represent the frequency of data using symbols or images that are relevant to the data. This is one of the simplest way to represent data.

Example

Information collected from 150 students about their favourite subjects are given below. Make a pictograph based on it:

Subject	Number of students
Tamil	25
English	20
Maths	55
Science	35
Social sciences	15

 = 5 students

Subject	Number of students
Tamil	
English	
Maths	
Science	
Social science	

Activity

The following information shows the number of literates in a village of 200 people. Draw a pictograph for that data.

Education	Numbers
Up to Fifth standard	10
Up to Eigth standard	20
Up to Tenth standard	50
Up to Twelveth standard	70
Under Graduate	10
Post Graduate	10
Illiterates	30

Exercise 6.2

1. The following table shows the weight of paddy cultivated in a particular village during the years 2010 to 2015

Year	Paddy production
2010	
2011	
2012	
2013	
2014	
2015	

 = 100 kg

Observe the pictograph and answer the following questions.

a) In which year paddy production was maximum?

b) In which two years paddy production were equal?

c) Find the quantity of paddy produced in 2015.

d) Find the total quantity of paddy produced particularly in 2013, 2014, and 2015.

2. The total number of pupil studying in 5 schools in a particular area are as follows

GHSS: 1000 PUPS: 200 BHSS: 400

PUMS: 400 Private nursery School: 800

Prepare a pictograph using the symbol  to represent 100 Pupil and answer the following question:

1. Which school has the maximum number of pupil?
2. Which school has the least number of pupil?

6.4 Representation of Data by Tally Marks

Any collection of information in the form of numerical figures giving the required information is called Data.

Example 1

Information collected about the number of vehicles which crossed a school on a particular time are shown below.

Car	IIIIIIIIIII
Van	IIIIIII
Lorry	IIIIIIIIIIII
Two wheelers	IIIIIIIIIII
Bus	IIII

'1' is called a 'tally mark'. It is difficult to count if there are more number of tally marks.

Therefore to make it easier to count, we change it as follows.

II	- 2	𝍸 II	- 7
III	- 3	𝍸 III	- 8
IIII	- 4	𝍸 IIII	- 9
𝍸	- 5	𝍸 𝍸	- 10
𝍸 I	- 6	𝍸 𝍸 I	- 11

Note:
We can use tallymark to record data of a variety of things with large numbers.

Solution

Vehicles	Tally mark	No. of vehicles
Car	𝍸 𝍸 I	11
Van	𝍸 II	7
lorry	𝍸 𝍸 III	13
Two wheelers	𝍸 𝍸 II	12
Bus	IIII	4

Answer the following questions:

1. Which vehicle crossed the school in maximum number?
   Answer: lorry
2. Find the total number of vehicles which crossed the school on a particular time? Answer: 47

Example 2

Information collected by Balu from 20 students of class five regarding their favourite snacks are given.

Roll number of students	Snacks	Roll number of students	Snacks
1	Chocolate	11	Apple
2	Cake	12	Chocolate
3	Biscuit	13	Cake
4	Chocolate	14	Chocolate
5	Chocolate	15	Chocolate
6	Banana	16	Cake
7	Biscuit	17	Banana
8	Biscuit	18	Chocolate
9	Biscuit	19	Apple
10	Chocolate	20	Chocolate

Tabulate the above information using Tallymark.

Name of the snack	Tallymark	No. of students
Chocolate	𝍸	9
Cake	𝍸	3
Biscuit	𝍸	4
Apple	𝍸	2
Banana	𝍸	2

Activity 1

The number of Two Wheeler sold in a week in a showroom is given below. Represent the data using tally marks.

Sunday-6
Monday-11
Tuesday-3
Wednesday-5
Thursday-16
Friday-16
Saturday-4

Days	Tallymark	No. of vechiles
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		

Activity 2

In a mathematics test, the following marks were obtained by 30 students. Arrange these marks in a table using tallymarks.

8	1	3	2	6	4	2	8	4	9
2	9	5	7	6	2	7	10	2	4
3	4	7	5	5	5	6	3	8	6

(a) Find how many students obtained marks equal to or more than 8?

(b) How many students obtained marks below 4?

Mark	Tally marks	Number of students
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Try this

Collect information about the number of students present in a particular day in all the classes of a school. Tabulate the above information using tallymark.

Do it yourself

Collect the information about the different types of houses in your village and complete the following table.

Type of the house	Tally mark	Total number of houses
Thatched house		
Tiled house		
Asbestos house		
Concrete house		

Try yourself

Choose any five cities and record their temperature for a particular day from the TV (or) Newspaper.

Try these

Collect information based on the points given below and prepare a table using tally marks

(a) Types of storybooks liked by your classmates.

Clue: [Fairy tales, Moral stories, Comics, picture stories, fictions and animal stories]

(b) Ambition of your classmates.

Clue: [Doctor, Farmer, Engineer, Pilot, Politician]

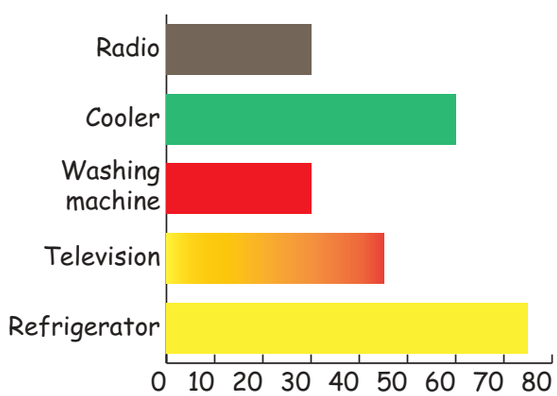
6.5 Bargraph

A Bar graph is a chart that uses bars to show comparisons between categories of data. The bars can be either horizontal or vertical.

Example 1

The number of things sold in a month of January in a particular shop is shown below. Draw a bargraph.

Home appliances	No. of things sold
Refrigerator	75
Television	45
Washing machine	30
Cooler	60
Radio	30



Activity 1

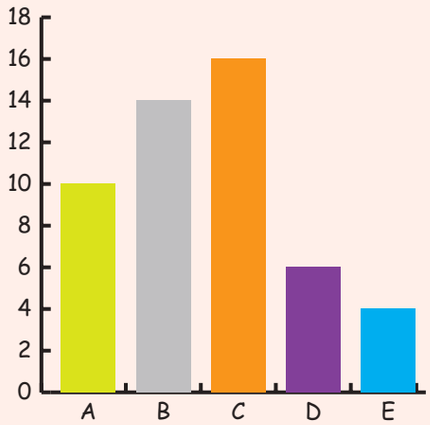
1. Take a survey among your friends and family on their favourite pet. Use the information to draw a bargraph.
2. Take a survey among your school friends on their favourite colour. (key: Purple, Green, Red, Brown, Blue)

   Draw a bargraph to represent your data.

Activity 2

The following information is collected from 50 students of class V about their grades in exams. Complete the following table from the bar graph.

Grade	Tallymark	No. of students
A	𝍸 𝍸	10
B	𝍸 𝍸 ||||	14
C		
D		
E		



Example 2

In Trichy, GHSS has five different clubs. The data shows the number of students in each club. Use the information to draw a bargraph and answer the question.

Art club	Debate club	Dance club	Drama club	Sports club
28	80	150	100	120

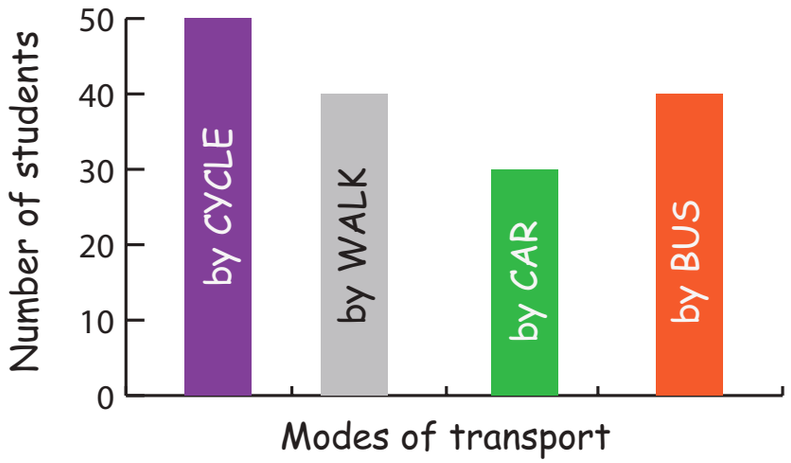
1) Which club has the fewest students? How many?
   Arts club 28
2) How many students are there in art club and debate club?
   28+80=108
3) How many more students are there in the sports club than the drama club?
   20
4) How many students are there in all the clubs altogether?
   478

Activity 3

Take a survey among your classmates on their favourite hobby.
[Clue: Reading, Painting, Gardening, Cooking, Fishing]

Exercise 6.3

1 **The bar chart represents the number of students using different modes of transport.**



Observe the above bar chart and answer the following questions.

a. Which mode of transport is mostly used by the students?

_____

b. How many students come to school by walk? _____

c. Which mode of transport is used the least? _____

d. How many students come to school by bus? _____

2 **The following information shows the grades of science and maths of 30 students of class 5.**

Answer the following questions.

a. How many students got equal grades in both subjects.

b. How many students got 'A' grade in science than in maths?

c. Which grade did most of the students score in science?

Maths Grade

Science Grade	A	B	C	D	E
A	2	8			
B		1	4		
C		2	3		
D			4	2	
E		1	0	2	1

3 **Mr. Dinesh collected the information about the rainfall of a particular city in a week from the newspaper and recorded his information in the pictograph.**

Measurement of rain (mm)

Sunday	3
Monday	6
Tuesday	5
Wednesday	3
Thursday	4
Friday	10
Saturday	6

= 2 millimetres of rain

Answer the following questions

a. On which day, the rain was most?

b. On which day, the rain was least?

c. How much rain was there on Sunday?

d. How much rain was there on Monday?

e. Find total rainfall of the city in that whole week?

4 **Neela, Mala, Kala and Bala were neighbours. The following data shows the number of fish in each of their fish tank. Draw pictograph to represent the data and answer the following questions.**

Neela	Mala	Kala	Bala
16	20	12	24

a. Who has more fish in the tank? _____

b. Who has 16 fish in the tank? _____

c. How many fewer fish did Kala have than Mala? _____

d. How many fish did Neela and Bala have altogether? _____

Answers

GEOMETRY

Exercise 1.1: 2. a) true b) false c) False d) True e) True

Exercise 1.2: 2. X, A, O, I, S 3. 1,0,8 4. 88888, 10101, 11111, 80808

Exercise 1.3: 1. Acute angle 2. Obtuse angle 3. Straight angle 4. $\angle C$

5. Acute angle 6. L 7.  8 90° 9. Obtuse angle 10. Obtuse angle

NUMBERS

Exercise 2.1: 1. 10104, 10105, 10106, 10107 2. 10240, 10250, 10260, 10270

3. 10930, 10940, 10950, 10970 4. 11104, 11105, 11106, 11107

Exercise 2.2: 1. a) 1,57,31,997 – one crore fifty seven lakhs thirty one thousand nine hundred ninety seven.

b. 3,41,964 – three lakhs forty one thousand nine hundred sixty four

c. 2,91,21,972 – Two crore ninety one lakhs twenty one thousand nine hundred seventy two

d. 3,47,810 – Three lakh forty seven thousand eight hundred ten.

Exercise 2.3: 1. a) tens b) hundreds c) ten thousands

3. a) hundreds b) lakhs

c) ten lakhs

d) tens

4. a) 33333 b) 207007 c) 8073305 d) 4000404

5. a) 60000+3000+500+70 b) 3000000+600000+1000+400+70+8

c) 10000000+4000000+500000+70000+4

d) 2000000+800000+40000+8000+300+80+7

6. 9899999

Exercise 2.4: 1. b) thirty four thousand c) one lakh

e) Thirty seven thousand six hundred eighty nine

g) Four Lakhs h. Twelve lakhs

2. b) Ten thousand, Ten Lakh

c) a. 10040004 b. 6400003

d) (i) 12130422 1 lakhs 4 hundreds (ii) 42133322 one lakh 3 hundreds

e) 19999

f) a. Ascending order : 33058 40978 47224 81421 90470 97879

Descending order : 97879 90470 81421 47224 40978 33058

b. Ascending order: 11111 22222 33333 44444 66666 99999

Descending order : 99999 66666 44444 33333 22222 11111

g) 70543 h) 184810 i) 9899999

Exercise 2.5: 1. 61,866; 41,969

2. a) 44,410 b) 2,83,448 c) 2, 55, 404 d) 52,738 3. 15,832

4. ₹ 64, 667 5. ₹ 47,450

Exercise 2.6: 1. a) 18,872 b) 63,308 c) 1,10,398 d) 85,162 2. 732

Exercise 2.7: 1. a) 22,704 b) 7,695 c) 21,900 d) 17,934

e) 16,263 f) 24,360

2. a) ₹ 825 b). ₹ 1375 c) ₹ 16,675 d) ₹ 16,875 e) ₹ 24,700

Exercise 2.8: 1. a) Q = 636, R = 8 b) Q = 947, R = 0 c) Q = 432, R = 1

d) Q = 4325, R = 1 e) Q = 633, R = 0

2. a) 1,019 b) 701 c) 1,555

Exercise 2.9: 1. a) 125 b) 85 c) 65 d) 1,450

2. a) Q = 301, R = 10 b) Q = 143, R = 16 c) Q = 407, R = 16

d) Q = 98, R = 0 e) Q = 87, R = 0

PATTERNS

Exercise 3.2: 1. b) 49 2. c) 16 3. No 4. Itself 5. 25 6 10,21

MEASUREMENTS

Exercise:4.1

1. a) 705 cm b) 32600 cm c) 5030 m d) 50 cm 5 mm e) 6 m 50 cm
2. a) false b) true c) false d) true e) false
3. a) 69 m 750 cm b) 165 km 450 m c) 10 cm 7 mm
4. a) 2 km 250 m b) 380 m 360 mm c) 2 km 50 m
5. a) 2453 m 15 cm b) 151 km 800 m c) 298 m 800 mm
6. a) 190 km 160 m b) 7m 110 mm c) 43m 12cm
7. a) 000322 b) 6 km c) 20 poles, 30 m

d) 27 m 50 cm e) 8 km 800 m

TIME

Exercise: 5.1: 3. a) 7 h 20 min b) 7 h 20 min c) 5 h 20 min d) 5 h 35 min

e) 7 h 15 min

4. a) 2 hr 35 min b) 1 hr 40 min c) 3 hr 05 min d) 4 hr 35 min e) 1 hr 50 min
5. a) 8 hr b) 7 hr 10 min c) 4.45 hrs d) 6 hrs e) 6 hr 55 min f) 6 hr 05 min