Solve .

1. $15.37 + 12.8 = ?$ 2. $11.02 + 8.21 = ?$

3. $77.6 + 75.12 = ?$ 4. $34.0 + 43.45 = ?$

5. $0.45 + 0.65 = ?$ 6. $0.56 + 0.27 = ?$

Subtraction of decimals -

Example 1. In a shot put throw competition, Ramesh threw the shot upto a distance of 3.25 meters and Umesh threw it upto 2.13 meters. What is the difference in their distance?

Solution . $3.25 - 2.13 = ?$

Both of these numbers have tenth and hundredth digit.

$$\begin{array}{r} 3.25 \\ - \quad 2.13 \\ \hline \end{array}$$

> Note that, units, tenth and hundredth digit of one number is written just below the other number respectively.

Subtraction of decimal numbers is similar to the subtraction of whole numbers.

$$\begin{array}{r} 3.25 \\ - \quad 2.13 \\ \hline 1.12 \end{array}$$

Answer .   Ramesh threw the shot put 1.12 km. ahead of Umesh.

Example 2. Subtract 154.26 from 273.04.

Solution .

$$
\begin{array}{r}
273.04 \\
-\ 154.26 \\
\hline
118.78 \\
\end{array}
$$

> Follow the subtraction by borrow method as we did earlier.

Solve .

1.	12.34	2.	76.5	3.	345.74
+	17.23	+	45.6	+	23.63

4.	788.45	5.	62.123	6.	216.06
–	499.45	–	51.00	–	132.23

Multiplication of decimals .

Now let us see how can we multiply decimal numbers? Let us consider an example.

Example . Multiply 45.63×5

$$
\begin{array}{r}
45.63 \\
\times\ 5 \\
\hline
5 \\
\end{array}
$$

First multiply 3 hunderdth by 5.

$3 \times 5 =$ 15 hundredth

$=$ 1 tenth and 5 hundredth

So, we will write 5 in hundredth place, 1 tenth is carry over. We will keep it separately as in the next step we will get more tenth digit.

$$
\begin{array}{r}
45.63 \\
\times\ 5 \\
\hline
15 \\
\end{array}
$$

Now multiply 5 with 6 tenth.

$6 \times 5 =$ 30 tenth

After adding 1 tenth of the earlier carry over

$30 + 1 =$ 31 tenth

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45.63 × 5 .15	= 3 unit and 1 tenth We will write 1 in tenth place in the product and keep 3 units (carry) separately because in next step we will get more units. **"Since now we will get units in the product, hence place a decimal point in the product."**
45.63 × 5 8.15	Now multiply 5 units with 5 :- $5 \times 5 = 25$ units . Adding 3 units of the carry over, we get $25 + 3 =$ 28 Units = 2 tens and 8 units Write 8 in place in the product and keep 2 tens (carry) separately.
45.63 × 5 28.15	Now multiply tens with 5 $4 \times 5 =$ 20 tens After adding carry over we get $20 + 2 =$ 22 tens = 2 hundreds and 2 tens We will write 2 in tens place in product.
45.63 × 5 228.15	Since we have multiplied all digits of 45.63, hence write 3 in hundreds place in product $\therefore 45.63 \times 5 = 228.15$ (Answer)

Exercise

1.	12.45×7	2.	52.74×3	3.	32.25×8
4.	49.70×12	5.	27.66×6	6.	24.08×13
7.	0.83×11	8.	3.5×17	9.	0.75×14

Look at the following example -

1. $1.234 \times 10 = 12.340$

2. $1.234 \times 100 = 123.400$

3. $1.234 \times 1000 = 1234.000$

Now fill in the blanks -

1. $1.246 \times 10 =$ _____   4. $6.789 \times 10 =$ _____

2. $1.246 \times 100 =$ _____   5. $6.789 \times 100 =$ _____

3. $1.246 \times 1000 =$ _____   6. $6.789 \times 1000 =$ _____

Did you see any pattern here?

"When we multiply by 10, the decimal point moves one digit to the right."

"When we multiply by 100, the decimal point moves two digit to the right."

"When we multiply by 1000, the decimal point moves three digit to the right."

Complete the table -

	× 10
0.2	....
0.02	....
0.002	....

	× 100
0.5	....
0.05	....
0.005	....

	× 1000
0.6	....
0.06	....
0.006	....

Division of decimals -

Example .   If 8 gas cylinders contain 116.8 liters of gas, how much gas is there in each cylinder?

Solution .	The quantity of gas in 8 cylinders = $116.8 \div 8$
$8\overline{)116.8}$	Since, hundreds place is less than the divisor therefore the number in we convert one hundred to tens place
	1 hundred = 10 tens

$\begin{array}{r} 1 \\ 8\overline{)116.8} \\ \underline{-8} \\ 3 \end{array}$	Since 1 is in tens place already $\therefore$ 10 + 1 = 11 tens We divide 11 tens by 8 and get 1 as a quotient. 11 − 8 = 3 tens are left.

$\begin{array}{r} 14 \\ 8\overline{)116.8} \\ \underline{-8} \\ 36 \\ \underline{-32} \\ 4 \end{array}$	3 tens = 3 × 10 = 30 units Write down units below. 30 + 6 = 36 units Divide 36 units by 8. We get 4 as a quotient. 36 − 32 = 4 units are left.

$\begin{array}{r} 14.6 \\ 8\overline{)116.8} \\ \underline{-8} \\ 36 \\ \underline{-32} \\ 48 \\ \underline{-48} \\ 0 \end{array}$	Now change 4 units into tenths. 4 unit = 4 × 10 = 40 tenths 40 + 8 = 48 tenths **We get tenths in quotien also. Therefore, we write decimal in quotient.** We get 6 as quotient 48 − 48 = 0 Therefore quotient = 14.6, Remainder = 0

We have seen that if there are tenths, hundredths etc. in any number, the process of division is as same as the division of whole numbers. Keeping it in mind that put a decimal point in quotient before dividing the tenths.

Exercise

1. $4.2 \div 3$ 2. $42.7 \div 7$ 3. $62.5 \div 5$

4. $28.5 \div 3$ 5. $48.0 \div 5$ 6. $36.12 \div 6$

7. $81.18 \div 9$ 8. $120.0 \div 10$ 9. $54.8 \div 4$

Solve the following question. Did you get any pattern?

1. $123.4 \div 10$ 2. $678.9 \div 10$ 3. $124.6 \div 10$

4. $123.4 \div 100$ 5. $678.9 \div 100$ 6. $124.6 \div 100$

You have seen -

"On dividing by 10, the decimal point moves 1 decimal place to the left."

"On dividing by 100, the decimal point moves 2 decimal place to the left."

Now think and tell when any number is divided by 1000, where will you place the decimal point.

....

....

....

Statement sums

1. Rakesh bought a sack of wheat for Rs. 525.25 and a sack of rice for Rs. 425.75. So how much did Rakesh spend in buying grains?

2. Aparna bought 5.25 metre of cloth and Raju bought 2.25 metre of cloth. So how much cloth is bought by them?

3. How much should be added to 4.5 to get 12.3?

4. What should be subtracted from 15.41 to get 4.22?

5. The cost of one pen is Rs. 4.50, what would be the cost of 7 pens?

6. Rupali gets a scholarship of Rs. 22.50 per month. How much will she get in 10 months?

7. One work is finished by 4 labourers. If the total amount paid for the work is Rs. 250.00. How much would each labourer get?

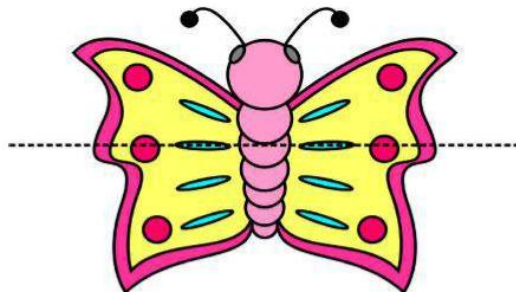8. 15 kg of sugar is filled equally in 4 boxes. How much sugar is there in each box?

✦✦✦

Symmetry

You have already read about symmetry in the last class.
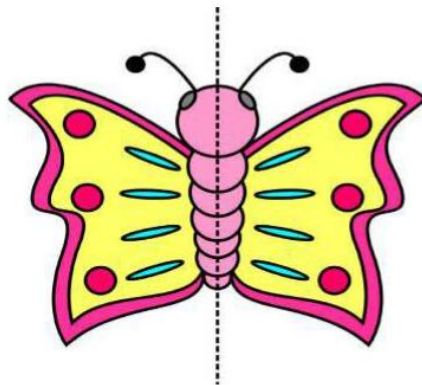
In this figure the dotted line is the axis of symmetry because both the figures overlap each other on folding through this line. If a mirror of the figure shown is


placed on this line then the image in the mirror will be same as the hidden part of the figure. So the figure relative to this symmetrical axis is symmetrical .

Now, look at the other dotted line of the figure. Do both the part of the figure overlap each other completely on folding through the line. You see that they donot overlap each other completers. Along with that if a mirror is placed on this line then the image in the mirror is not similar to the hidden part of the figure. So this is not the line of symmetry and the figure is not symmetrical througth this axis line. Now you draw different liner on this figure and see whether this figure is symmetrical about any of these liner.

Exercise

1. Out of the figures given below which ones are symmetrical about the given line? Tick (✓) on the symmetrical figures.
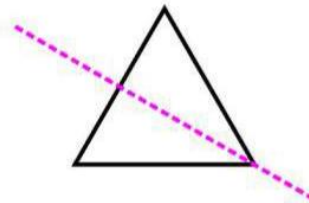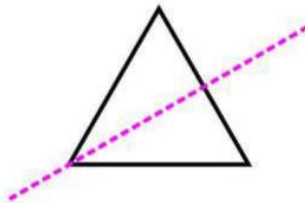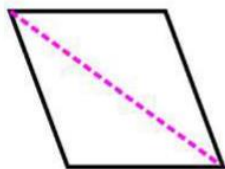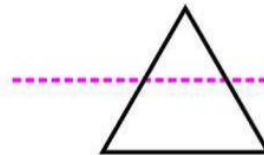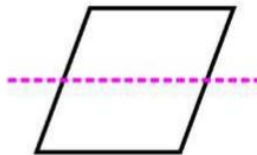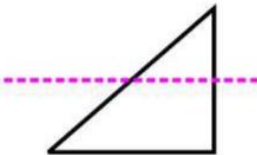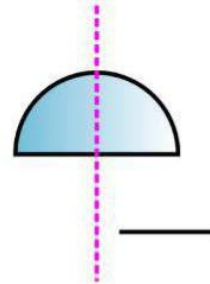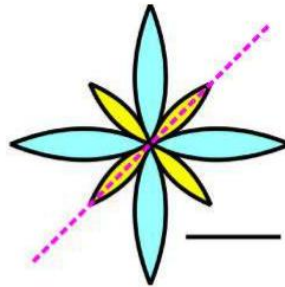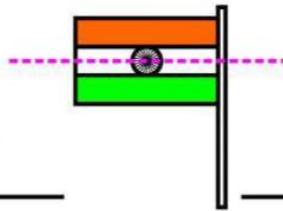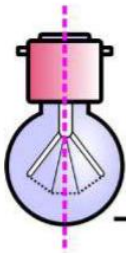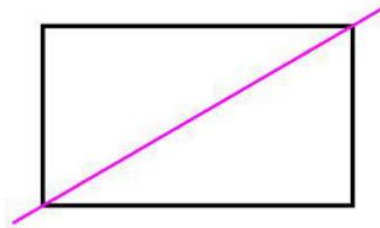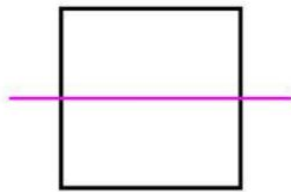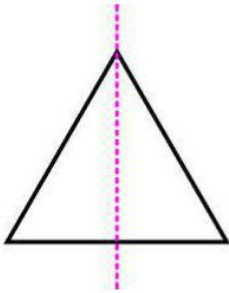
2. Draw all possible symmetrical axis for the folloving figures.
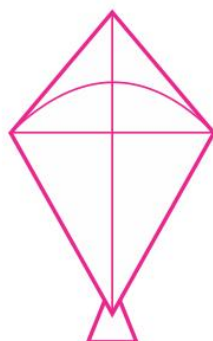
Isosceles triangle -

Now complete the table given below -

Name of figures	Total Number of symmetrical axis in the figure
Equilateral triangle	
Square	
Rectangle	
Isoceles triangle	
Kite	
Roller	

Let's Do and learn.

(If we) Rotate the given figure from its place in such a way that the top most red patel comes down and the lower most green patel goes up, then it is called half rotation of the figure.
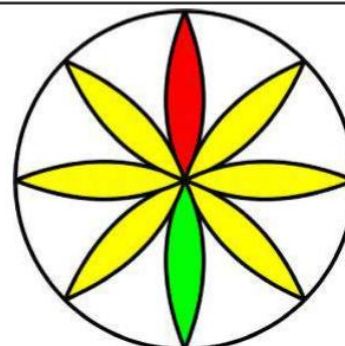
fig. 1 (Before half rotation)

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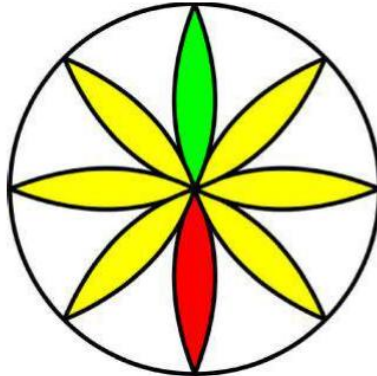After half rotation the figure will look like this-

fig. 2 (After half rotation)

Does this figure look the same before and after half rotation?

You have seen that this figure.does not look the same in both the situations. So after half rotation this figure is not rotational symmetry figure.
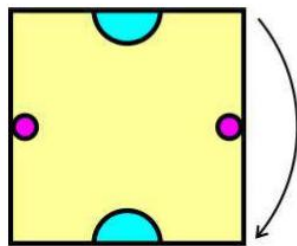
Now look at these figure -
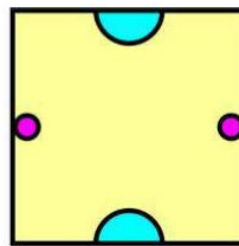
fig. 1 (Before half rotation)   fig. 2 (After half rotation)

You see that the figure (2) look the same after and before half rotation from its place. So after half rotation this figure is rotational symmetric.

The proprty of figures to look like the same after rotation form its place is called rotational symmetry -

Ways of rotation -

Half rotation at its place (Half rotation)

The first method	The other method
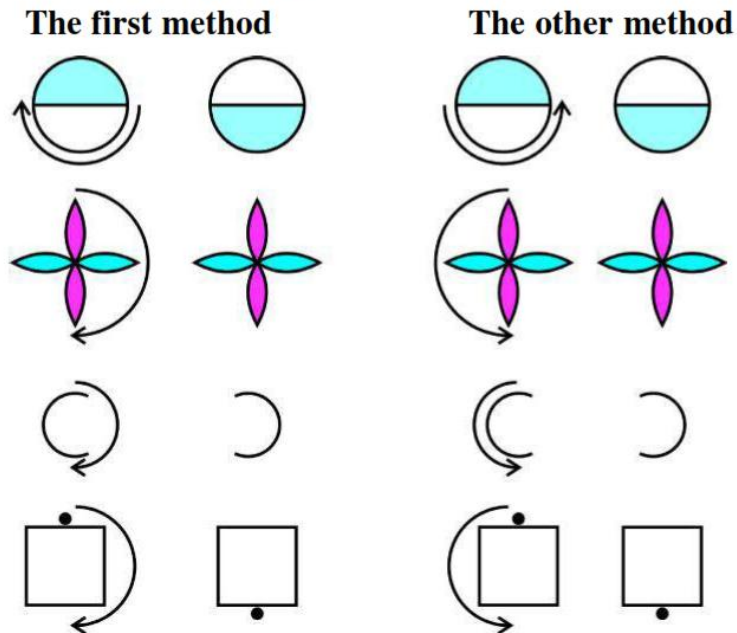
Quarter rotation at its place (Quarter rotation)

The first method	The other method
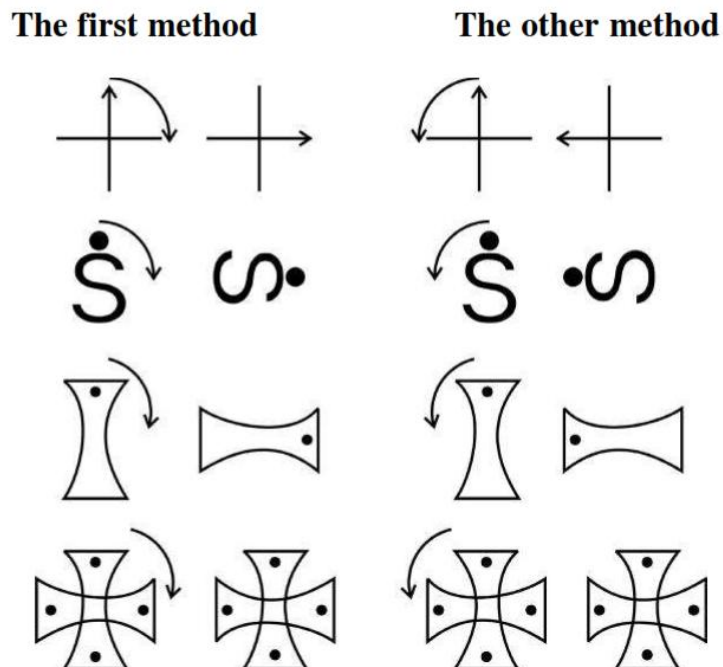
You have seen that rotation can be in two ways clockwise and anti-clockwise.

Excecise

1. Which of the following figures look the same after helf rotation from its place? Tick (✓) on them.
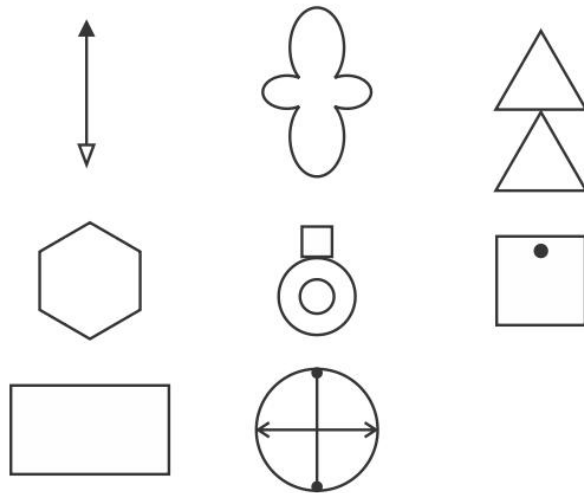
2. Which of the following figures are rotational symmetric after helf rotation ? Tick(✓) on them.
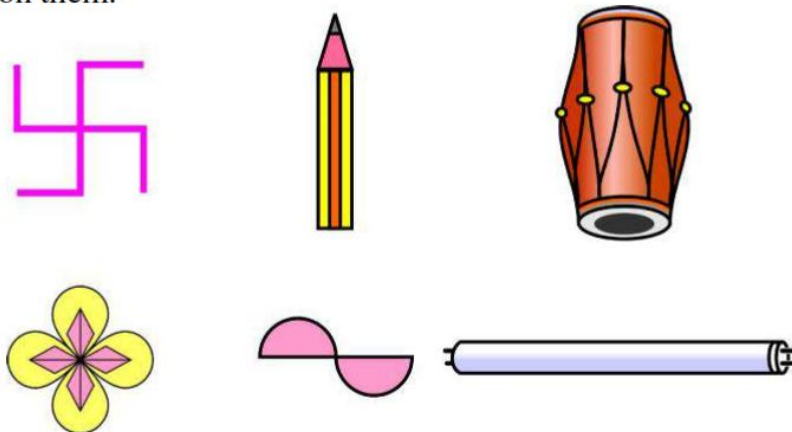
3. Which of the following letters are rotational symmetric after half rotation? Tick(✓) on them.

E   H   J

Quarter rotation -
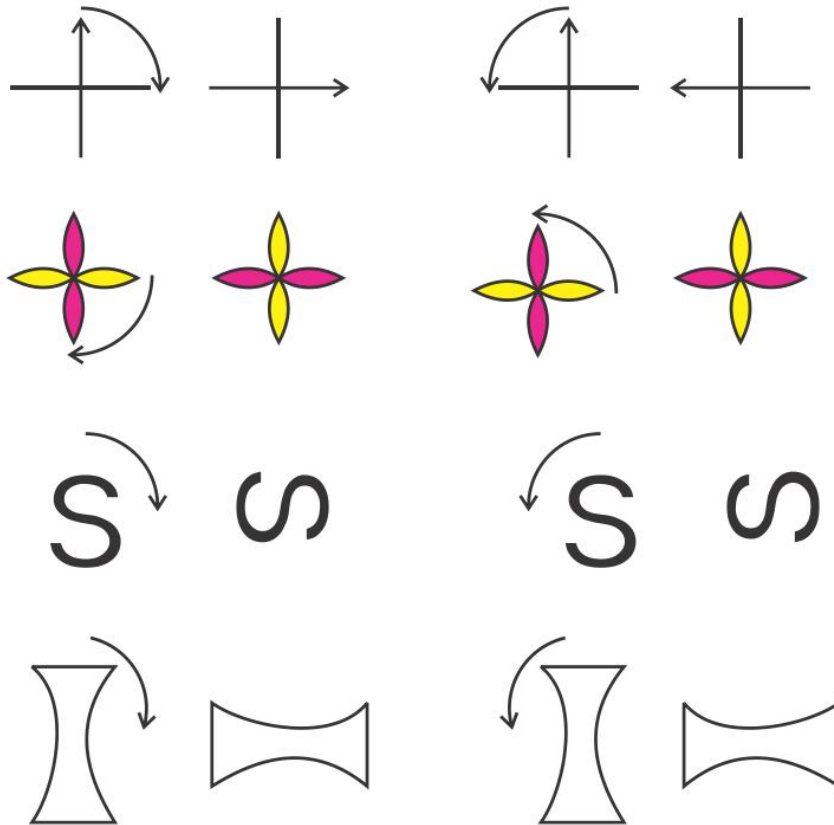
How will the following figers look after quarter rotation ? Draw them.

M   E   H
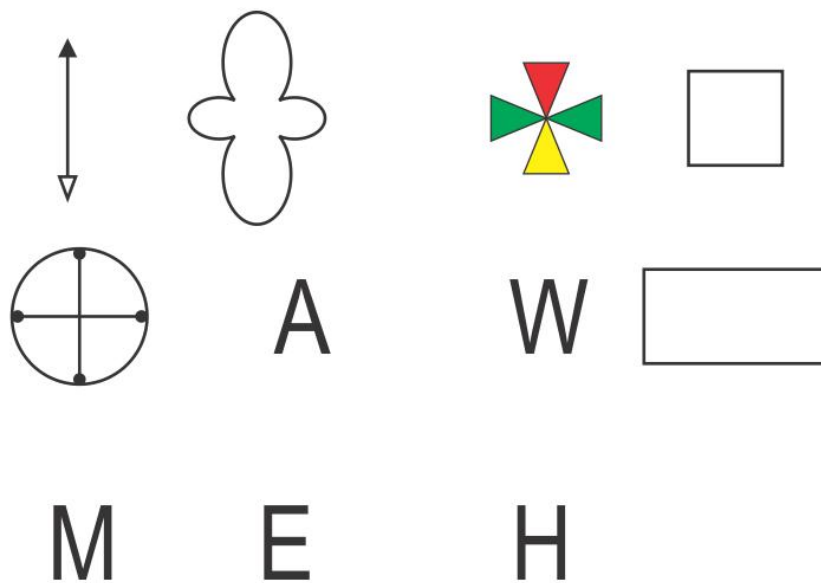
Angles

You are given a picture below with some hidden angles. Find as many angles as you can and mark them. (Ask your friends to do the same exercise). Find out who has succeded in finding the maximum angles, and where are these angles?
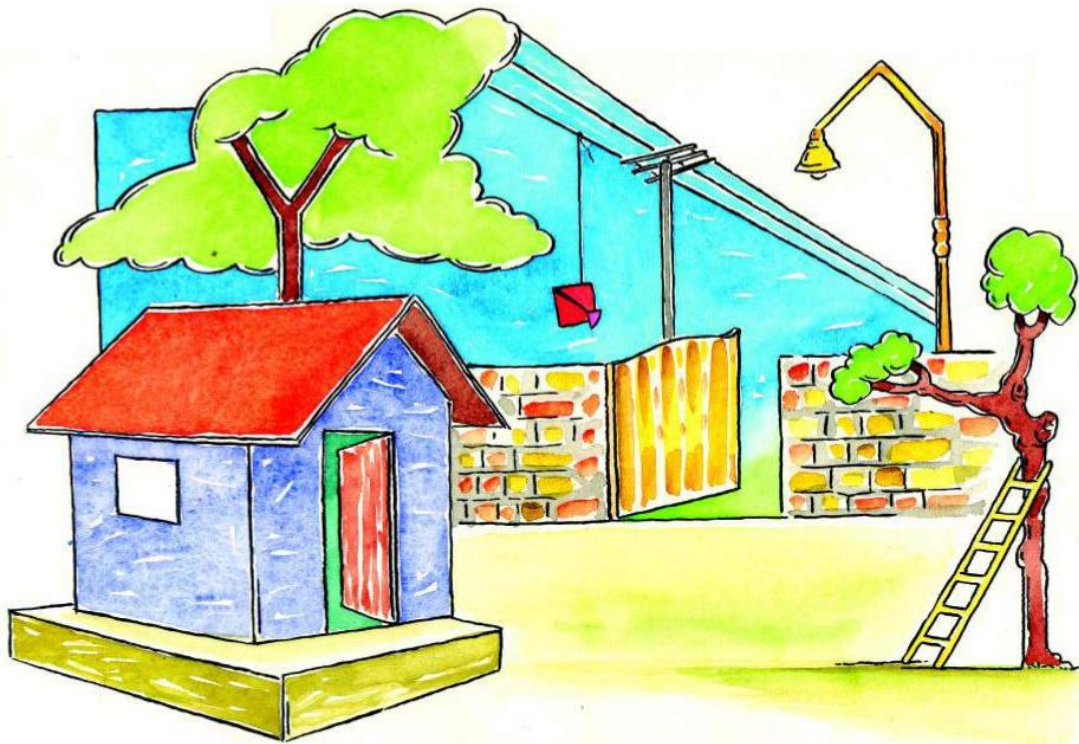
Where are the angles made?

1.   The joint of the roof tops on the hut.

2.   _____

3.   _____

The pictures given below show some items changing their positions. Are there some angles being made there?

Where are these angles made?

1.   The lower position of the door with the door jamb is making an angle.

2.   _____

3.   _____

Is there any difference in the way the angles are being made in the given picture?

The picture on the previous page had angles where two lines interact each other or meet at some point. Whereas in the pictures shown above, the angles are being made because of the movement of some part or due to the change of direction.

Angles tell us how much a part of an object has turned or changed direction. We can say that angle is the measure on the basis of its turn.

Identify and Write-

Some figures are given below, try to identify them and write their names-
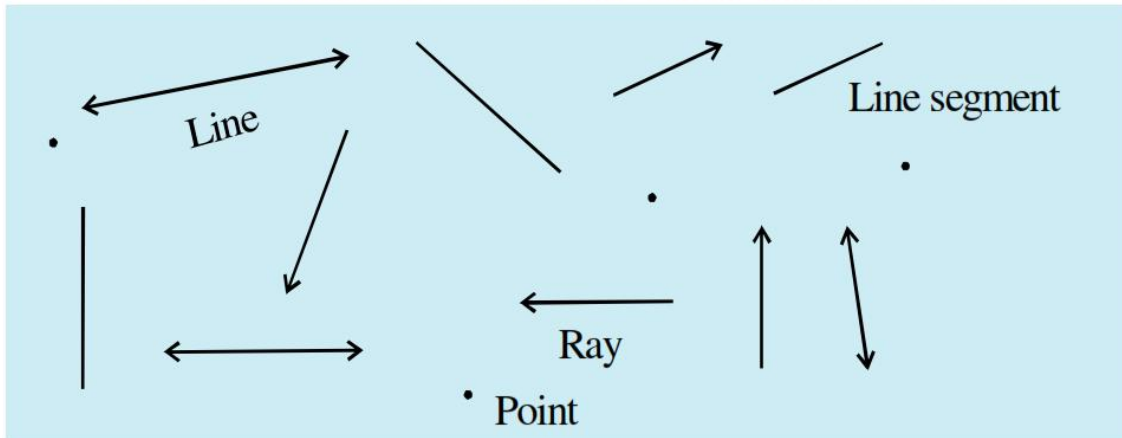
Another way of referring to the same:

The points are given some identification using letters of alphabets:

- We read A as "Point A".

- We read C as "Point C".

Similarly a line segment is named by giving some identification to the end points.
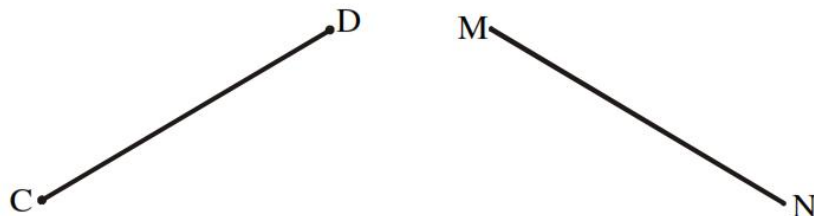
These line segments are read as Line segment CD or Line Segment MN

We can read to the same line segments as DC or NM.

Similarly we can name rays on Lines

Ray OP   Ray PQ   Ray ST

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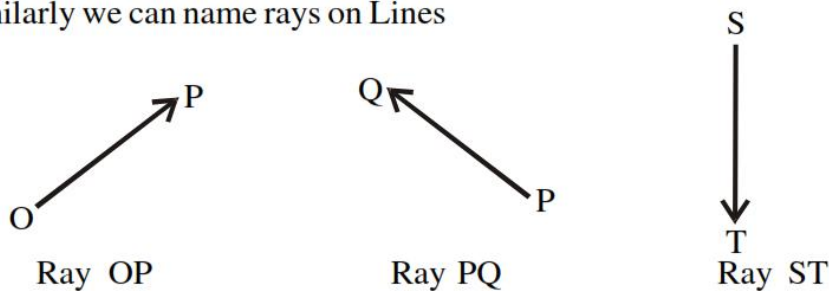
While writing a ray we have to write the originating point first -
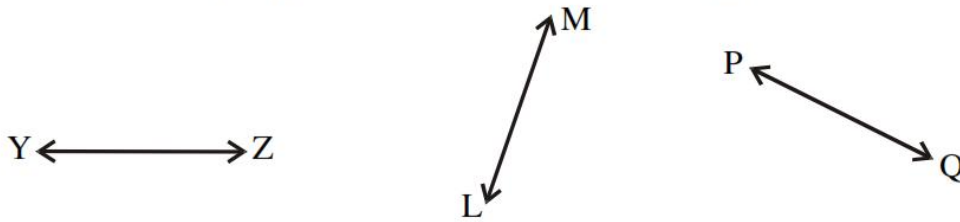
While in a line segment however we can change the order of the points. For example in Line YZ and Line ZY both refer to the same Line.

Fill in the blanks -

B • Point · · · · ·

D | Line ↓ C

A •

M——→N
· · · · · · · · · ·

Do angles have names?

Didi, do angles also have names?

Yes, why not, angles also have names.

Before naming angles you should know that angles have one vertex and two arms.

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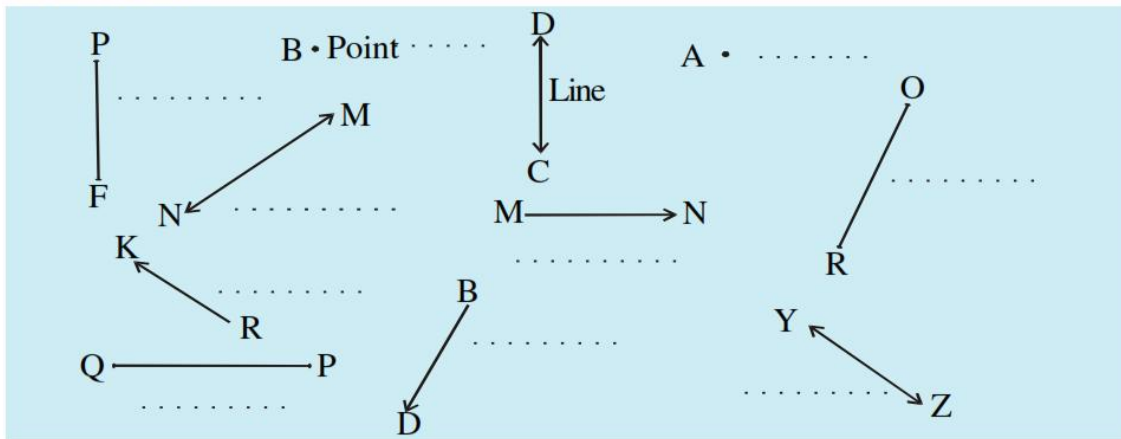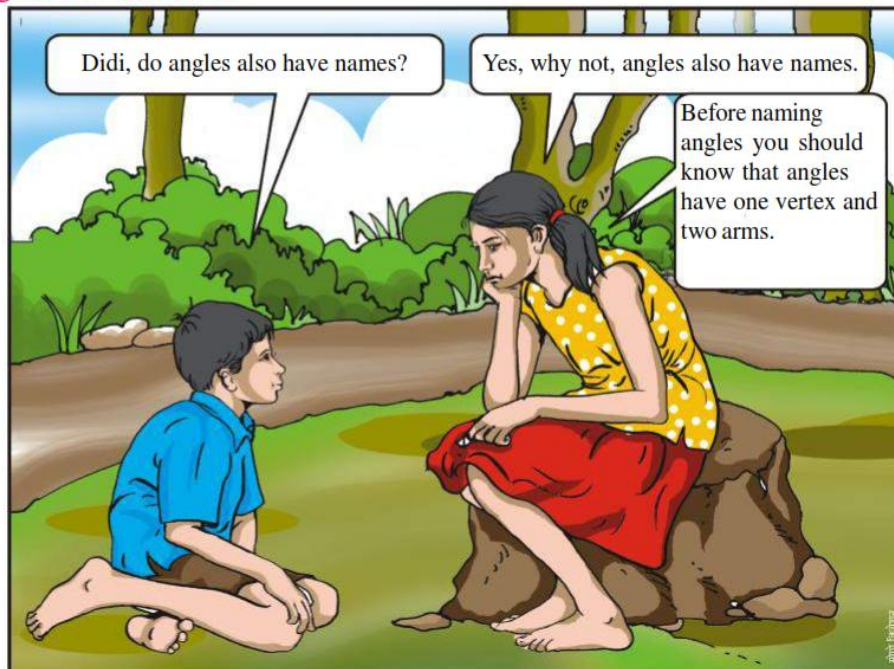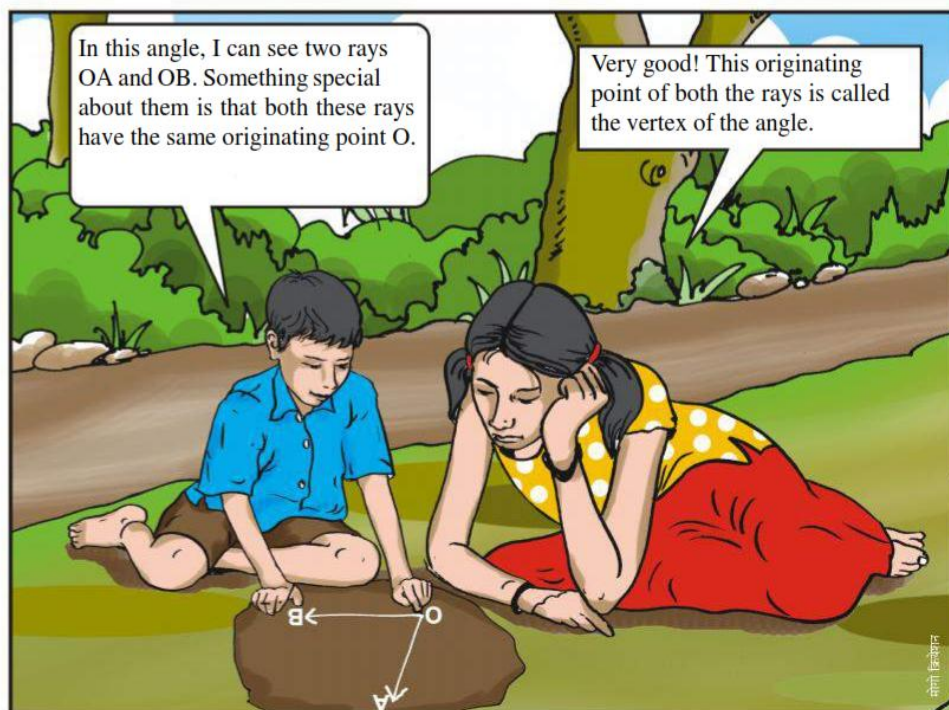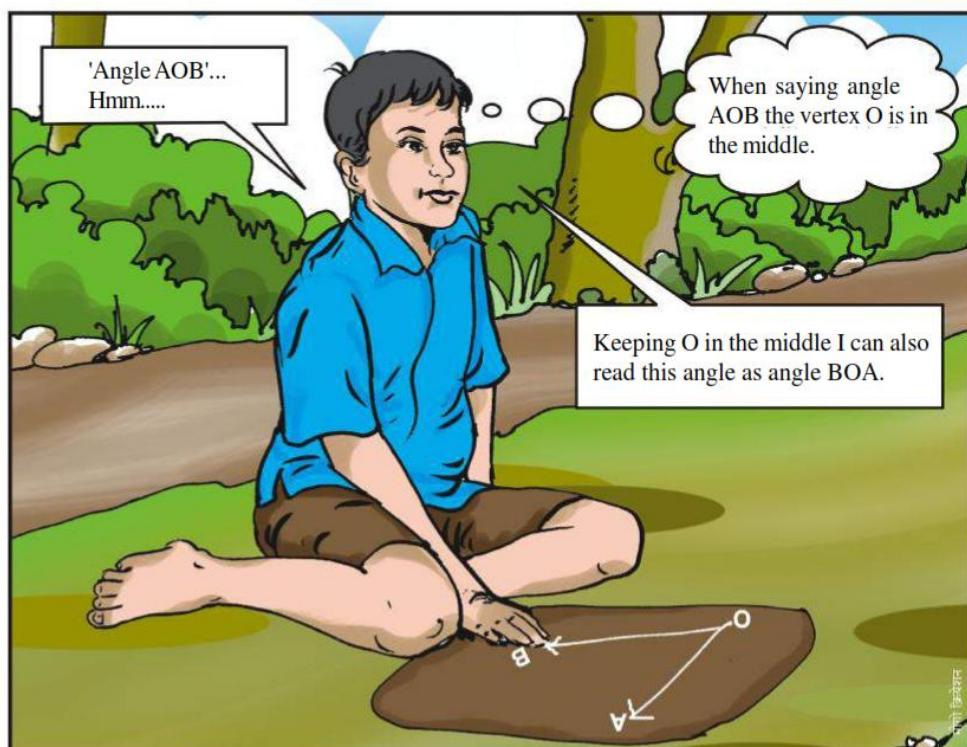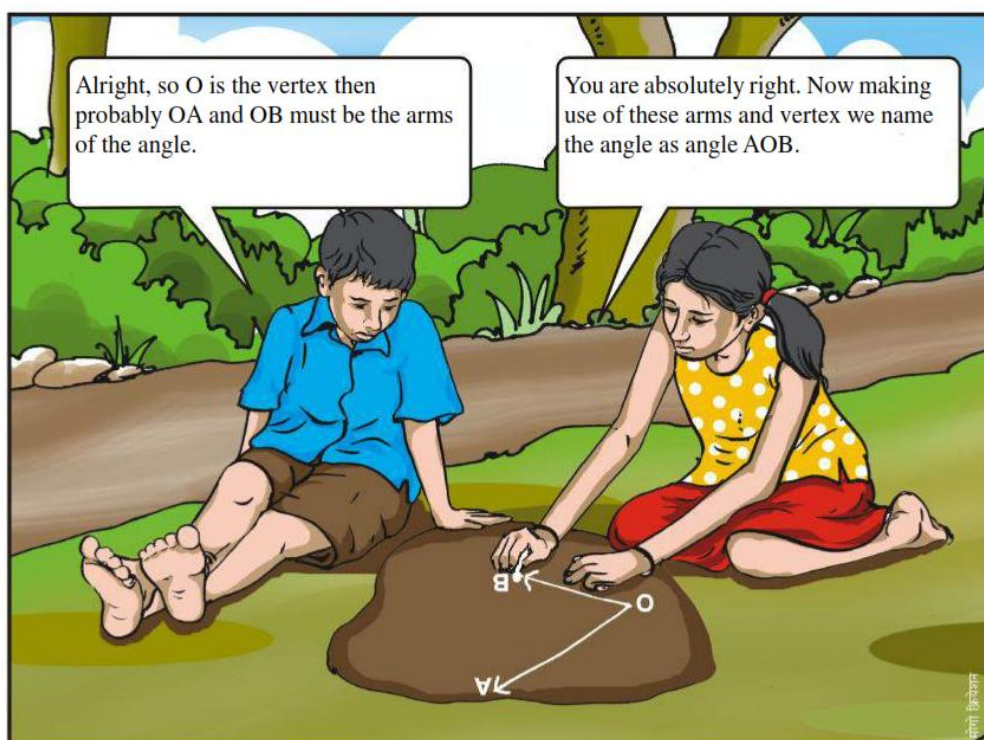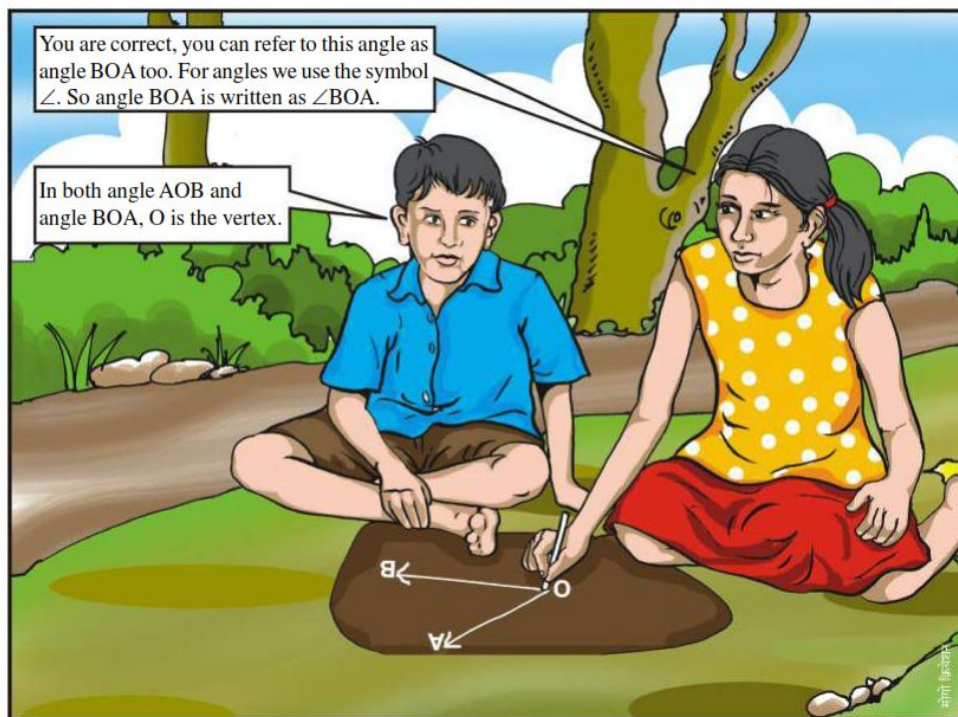
Identify the angles in the picture shown below and write their names in the table given below.
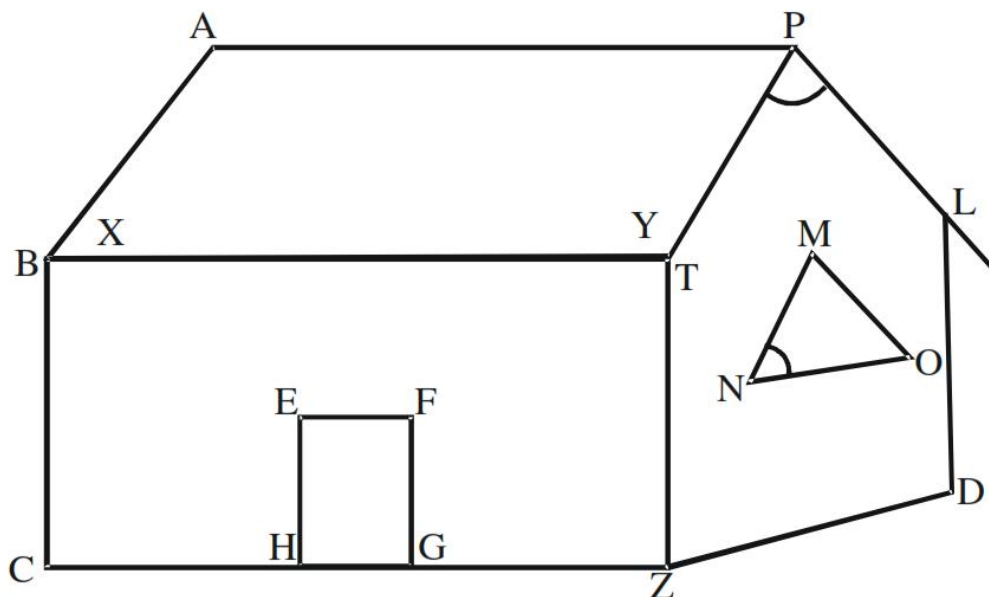
S.No.	Angle	Vertex	Sides or arms
1.	∠XYZ	Y	YX, YZ
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

What does this box contain?

Children, you generally have a compass box or a geometry box. You may have used some of the items from this box. Come let us learn some more things about these items.

Geometry Box
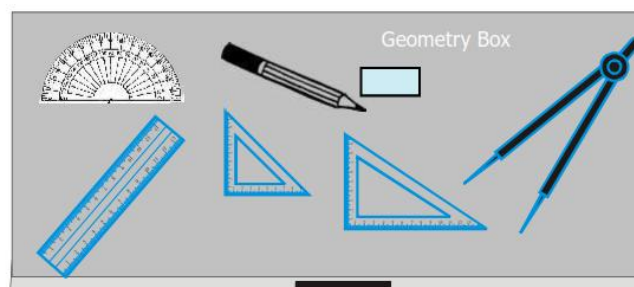
You call this object as the scale or ruler. This is used to draw a line segment or to measure its length.
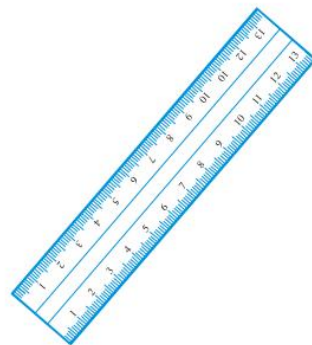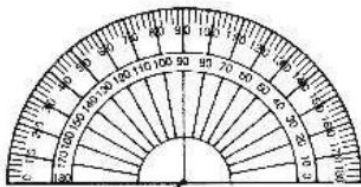
This is known as a protractor. This is used to measure an angle or to draw an angle of a given measure. The marking on this is from zero to one hundred and eighty. Each part is of one degree. The marking are made from both ends. The line joining both the zeros is known as the baseline. The mid point of this line is known as the centre. While making or measuring an angle, this base line and centre are very helpful.
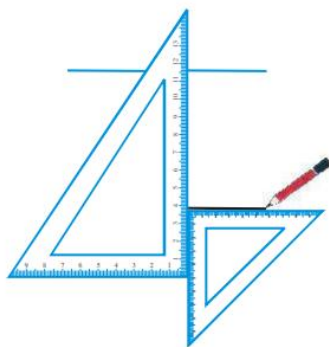
These are known as setsquares. These are used to make angles of special measure such as- 30°, 45°, 60°, 75°, 90° etc. We can also make use of these to draw a pair of lines which never meet, like the lines in your copy.

You might have seen a similar instrument with a mason who builds a house. Find out how they make use of it.

This is a divider. It is used along with a scale to measure a line segment accurataly.

There is another instrument just like the divider in which we can fit a pencil in one of its leg. This is known as compass. It is used to draw a circle.
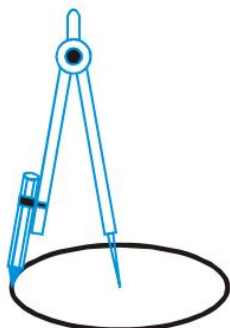
Besides these a compass box may have a pencil, eraser and a sharpner also.

How to measure an angle -

Measuring an angle means to measure the inclination between the two sides or to measure how much part of any thing is rotated. To measure the angle, consider one side of the angle as the base.

Now place the protractor on the angle in such a way that base line of the angle completely covers the base line of the protractor.
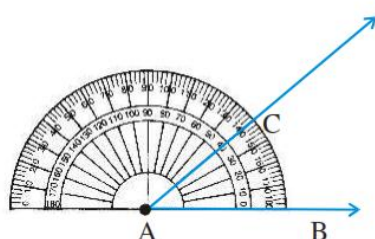
Move the protractor along the base line so that the mid point of the base line of the protractor coincides with the vertex of the angle.
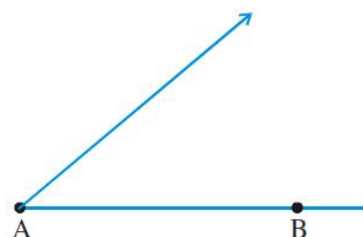
You will see that the base line of the angle is at zero of the protractor. Now move upwards from this point until you find the line which coincides with the other side of the angle. Read the measure given at this point to know the measure of the angle.
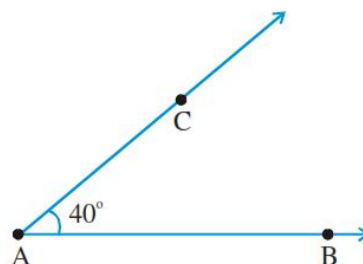
Now let us draw an angle

You know that by fixing a vertex and drawing two rays from this point will give you an angle. But can we draw an angle of a given measure.

You will need a protractor to do this. Let us try to draw an angle of measure 70° using a protractor.

Draw line segment using a scale.

Draw a ray OA.

O ————————————— A

Place the protractor on OA in such a way that OA completely covered by the base line of the protractor.

Along the base line of the protractor with this base ray OA.
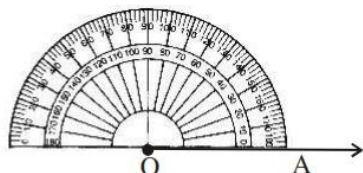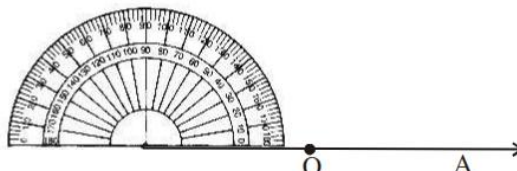
Move the protractor until the mid point and the base line coincides with the vertex O. Take care that the base line of protractor still coincides with ray OA.

Ray OA will pass through 0° (0 degree) on the protractor. Now move upwards reading 10°, 20°..... until you find 70°. Mark this point with a pencil. Naming it B. Now remove the protractor.
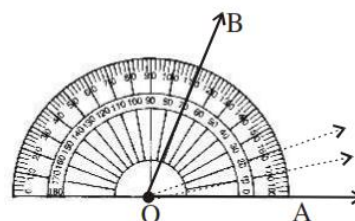
Draw a ray from O, passing through B.

Thus an angle BOA has been drawn whose measure is 70°.

$$\angle\ BOA = 70°$$

or $\angle\ AOB = 70°$

Now draw angles of the measure given below:

40°, 90°, 130°, 35°, 72°, 168°, 180°, 10°, 0°, 30°, 45°

Look around you. You will see angles of different measures. Observe the angles being made at the joints of the doors, windows, blackboards, books etc.

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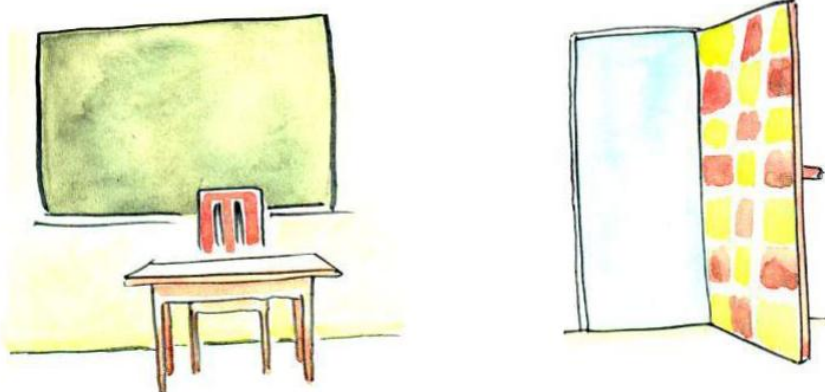
Are there any angles equal to the ones you drew earlier.

Is there any angle drawn by you which appears to be equal to the angle given above?

What is the measure of that angle?

_____

Let us measure the angle being made at the corner of your book.
Keep the corner of your book in your copy and trace it out. Measure the angle you have made. Let your friends do the same activity. Take the measures of all these angles and find the average measure.

Is it around 90°?

An angle of measure 90° is known as a right angle.

The angles whose measures are less than 90° is known as **Acute angle** and angles whose measures are more than 90° but less than 180° are known as **obtuse angles.**

Measure the angles drawn below and say what type they are : acute, obtuse or right angle.

✦✦✦

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Geometrical Figures

Know more about triangles

You know that an angle consists of one vertex and two arms or sides. In the same way a triangle also has vertices, angles and vertex sides.

A triangle as the name suggests has three vertices, three angles and three sides.

Vertex

A ∠BAC

SIDE AB

SIDE AC

Vertex
B

Angle...

SIDE BC

Vertex C

C
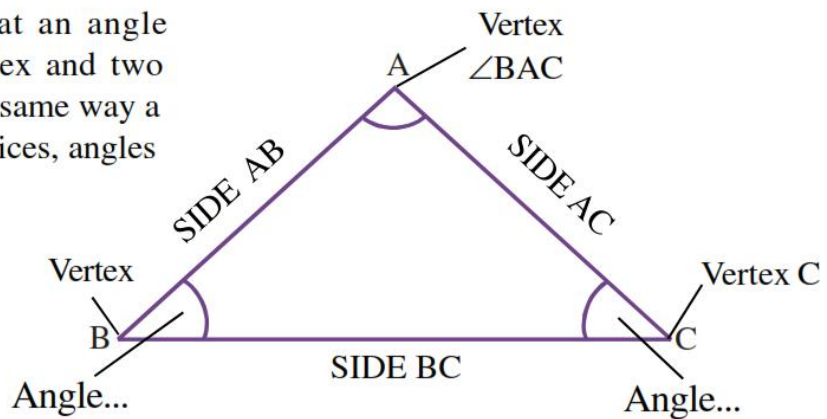
Angle...

Identify these in triangles ABC and write them.

Triangle ABC can be written as triangle CAB, triangle BCA ...etc.

Now look at the triangles shown below and identify their vertices, sides and angles and fill the given table :

P

Q R

Triangle 1

N

M L

Triangle 2

D
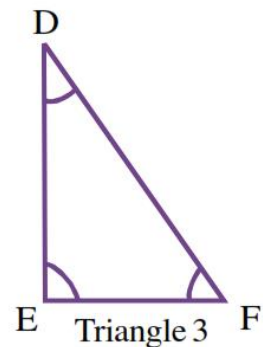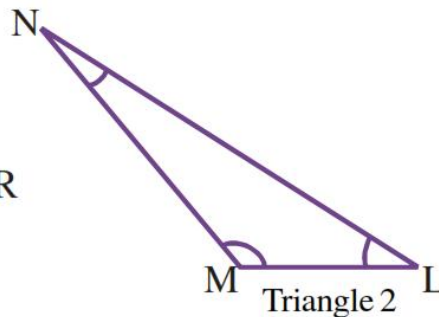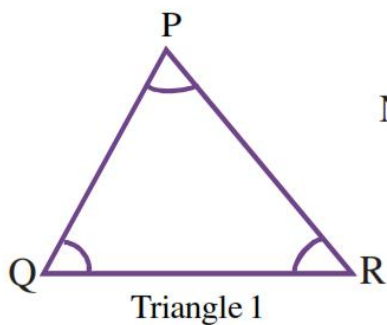
E Triangle 3 F

Triangle No.	Name of Triangle	Vertices	Sides	Angles
1	ΔPQR	P,Q,R	PQ, QR, PR	∠PQR, ∠QPR, ∠PRQ

Types of triangle -

Collect some twenty to thirty twigs or sticks of a broom with the help of you friends. Now make different triangles using these.

Look at the triangles carefully.
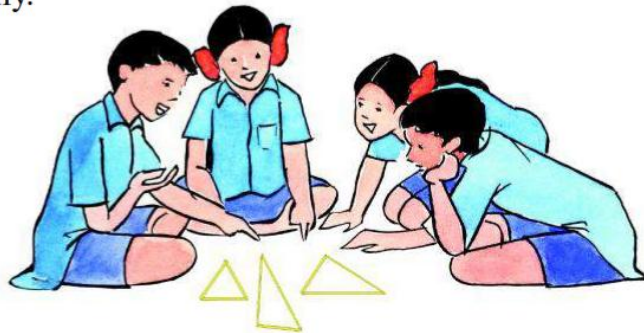
Are all the triangles the same?

• If not what is the difference between them? Talk with your friends.

• Have you got some triangles, which have two sides of equal length?

• Have you got some triangles, which have three sides of equal length?

• If you do not have any such triangle in which two sides are of equal measure or all three sides of equal measure, then make such triangles.

Now you have the following three types of triangles.

One which has all three sides of different length.

One which has two sides of equal length, and

One which has all three sides of equal length.

Can these triangles have different names?

The names, decided according to the length of sides are:

Triangles which have all sides of equal length are called equilateral triangle.

Triangle with two sides of equal length are called isosceles triangles.

Triangles with all three sides of different and unequal length are called scalene triangles. "Are the triangles named, on the basis of angles?"

From the angles given below identify the acute angles, right angles and obtuse angles. Write the types you identify in each of the triangle in the table given below.

Triangle 1
Triangle 2
Triangle 3
Triangle 4
Triangle 5
Triangle 6
Triangle 7
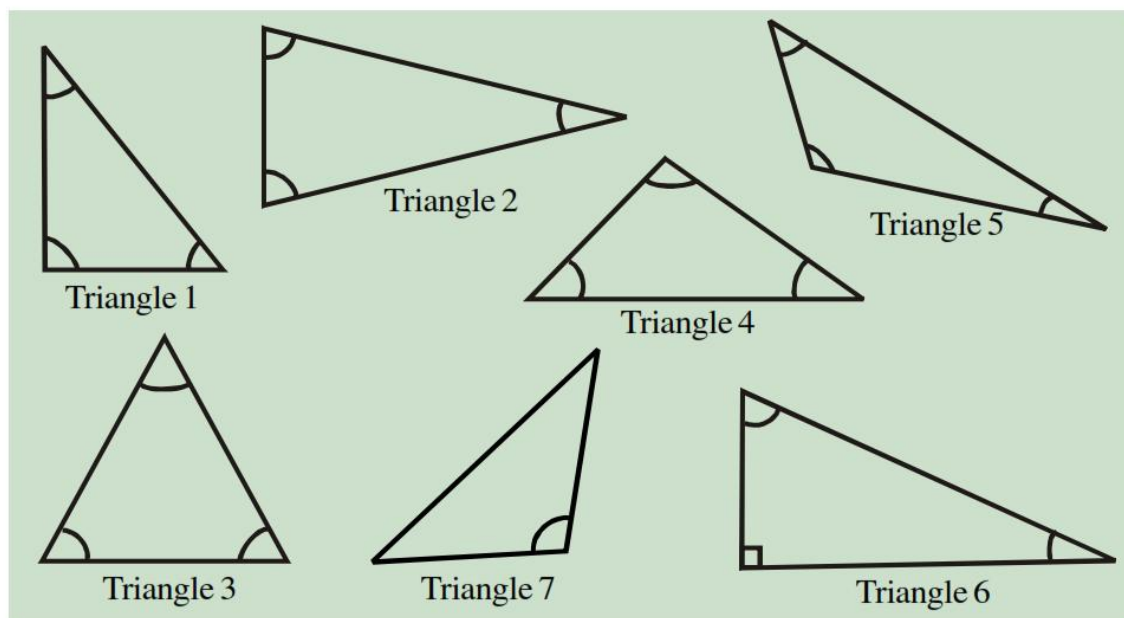
Triangle	Number of obtuse angle	Number of right angles	Number of acute angle
In triangle 1	....	....	....
In triangle 2	....	....	....
In triangle 3	....	....	....
In triangle 4	....	....	....
In triangle 5	....	....	....
In triangle 6	....	....	....
In triangle 7	....	....	....

Now answer these questions: -

➤ How many angles are there in each triangle? ....

➤ Maximum how many right angles can there be in a triangle? ....

➤ Maximum how many obtuse angles can there be in a triangle? ....

➤ Maximum how many acute angles can there be in a triangle? ....

➤ What is the minimum number of acute angles in a triangle? ....

You have seen that in any triangle-

The minimum number of acute angles are two and the third angle can either be a right angle or obtuse angle or acute angle.

The triangle, in which all three angles are acute, is known as an acute angled triangle.

A triangle in which one of the angles is a right angle, is known as a right angled triangle

A triangle, in which one of the angle is an obtuse angle, is known as a obtuse angled triangle.

Rectangle and square

A quadrilateral PQRS in given below, Measure the angles and sides of this quadrilateral and fill the blanks given below:

Side QP	=	.... cm.
Side QR	=	.... cm.
Side RS	=	.... cm.
Side PS	=	.... cm.

∠QRP	=	....
∠RSP	=	....
∠SPQ	=	....
∠PQR	=	....

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What did you notice about the measures of the sides of the quadrilateral?

....

....

Is there something special about the measures of angles?

....

....

A quadrilateral in which the opposite sides are equal in length and all four angles are right angles is known as a rectangle.

Now measure the sides and angles of the figure given below and fill the blanks:-
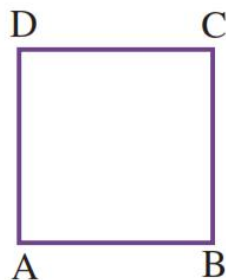
AB = ...   ∠DAB = ...

BC = ...   ∠ABC = ...

CD = ...   ∠BCD = ...

DA = ...   ∠CDA = ...

What observations can you make about the sides of this quadrilateral?

....

What can you say about its angles?

....

Is there something common between the two quadrilaterals?

....

Is there any difference between the two quadrilaterals?

....

A rectangle in which all sides are equal in length is known as a square.

1.   Identify the triangle by measuring their sides.
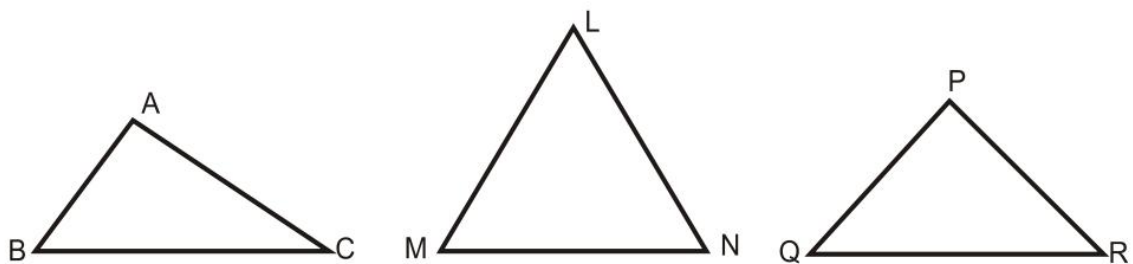
2.   Identify the triangle by measuring their angles.
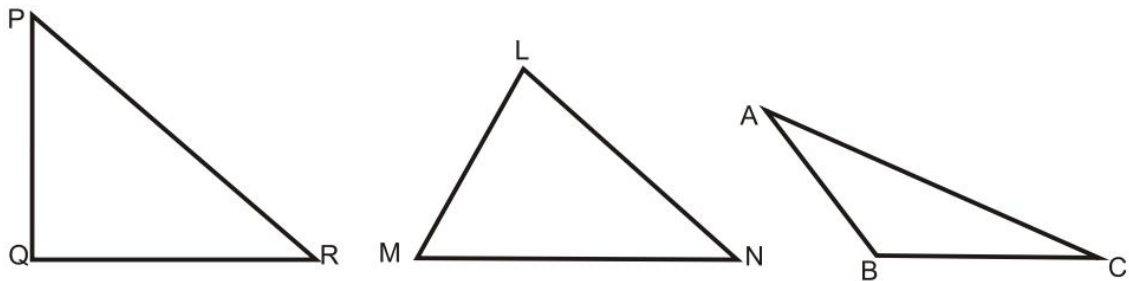
3.   Below given are some quadrilaterals. Measuring the sides of these quadrilaterals indentify the squares and rectangles.

✦✦✦
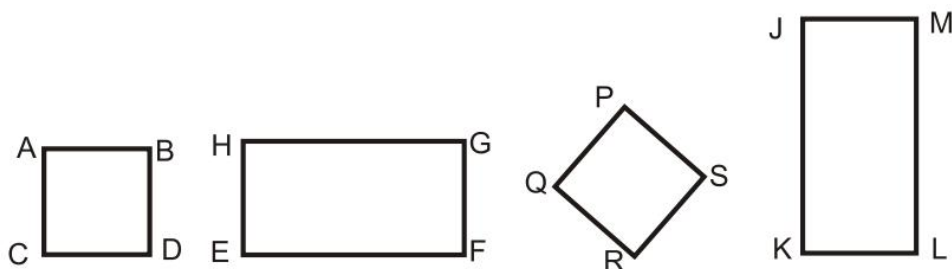
Book   Copy   Maths Box   Chalk Box   Bricks

Look at these things carefully. You can see that the surface of each of these is rectangular in shape. Any object with 6 such surface is called a cuboid.

Let us cut an empty chalk box and lay down all its surfaces which will look like the figure shown below. This is called a net of the chalk box.
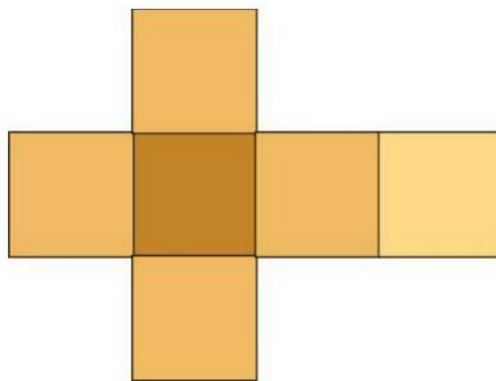
Net of the chalk box.

Let us make a figure of cuboid.

cuboid

step (1)   step (2)   step (3)

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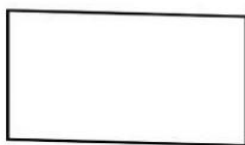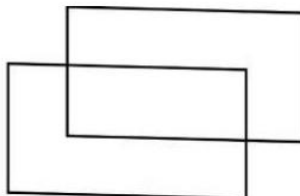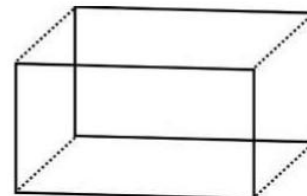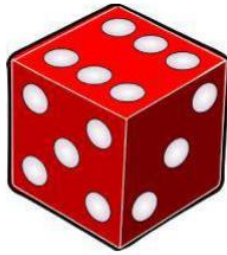
Cube -

Have you seen a dice? All of its surfaces are square in shape. The shapes of such objects are similar to a cube.
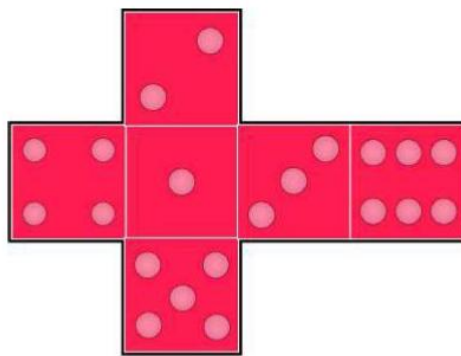
Look at the figures below -

Ice cream cone   Birthday cap   Top of a temple
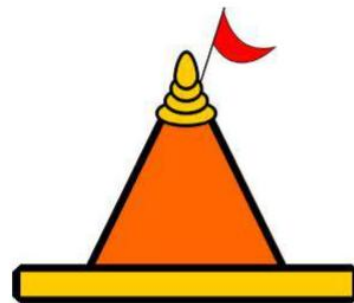
All these things are of cone shape. On cutting and opening a hollow cone with a lid will look like this which is its net.

cone   Net of a cone

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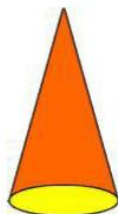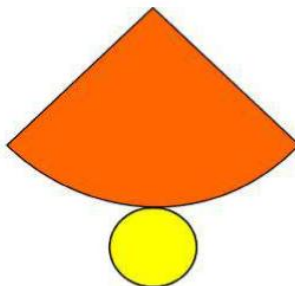
Cylinder   -   Look at the figures below -
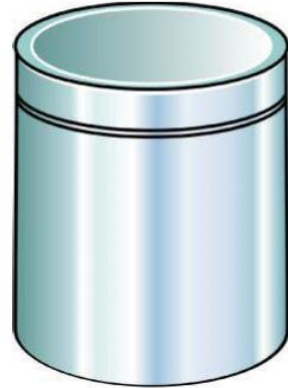
Battery   Glass   Cup   Can of Ghee

All these things are cylinderical in shape on cutting the cylinder and laying it flat entirely it will look like the figure given below which is the net of a cylinder.

cylinder   Net of a cylinder

✦✦✦
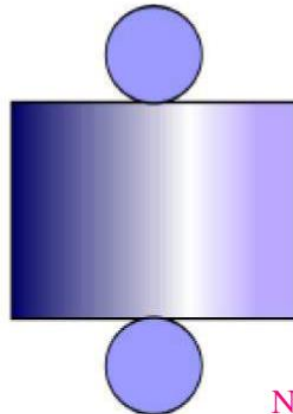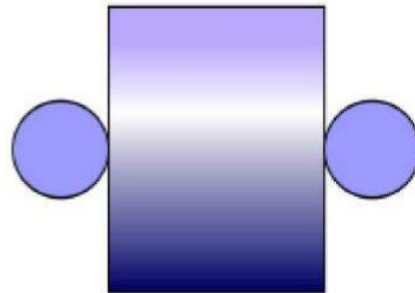
Length

Take a meter scale and measure the items mentioned in the table below and fill the table:

Item	Length	Breadth
Book		
Table		
Door		
Room		

In order to find the length and breadth which units did you use:

Length of a book   -   Centimeter/Metre/Both

Door   -   Cntimeter/Metre/Both

Length and breadth of the room   -   Centimeter/Metre/Both

Now if you had to write the length in only meter or centimeter what would you do?

You would probably say that you would convert the centimeters to meters or Metre to centimetres.

Let us see how to do such conversions-

    One example -

5 Metre   = ... Centimetres?

5 Metre   =   1 Metre + 1 Metre + 1 Metre + 1 Metre + 1 Metre

                 =   100 cm. + 100 cm. + 100 cm. + 100 cm. + 100 cm.

                     ($\because$ 1 Metre = 100 cm.)

$$= 100 \times 5 \text{ cm.}$$

or $= 5 \times 100 \text{ cm.}$

$$= 500 \text{ cm.}$$

So to change metre to centimetre we have to multiply by 100.

300 cm.	=	.... metre?
	=	100 cm. + 100 cm. + 100 cm.
	=	1 metre + 1 metre + 1 metre
	=	3 metre
or		$300 \div 100$ metre

Or do it like this -

∵ 100 cm. equal to 1 metre

∴ 1 cm. equal to $\frac{1}{100}$ metre

∴ 300 cm equal to $\frac{1}{100} \times 300$ metre

$$= 3 \text{ metre}$$

To change centimetre to metre we have to divide by 100

In the lengths you have measured above, you used the unit meter and centimeters. If you want to find the distance of your school from your house or the distance of one village to another village, than what would be the unit of measure?

In such cases you would probably use 'Kilometre' as a measuring unit.

The distance of 1000 metre is equal to 1 Kilometre.

How will you convert these units to each other?

Take an example -

Example 1 : Convert 5 Kilometre to metres.

Solution   : Let us use the unitary method.

∵ 1 kilometre is equal to 1000 metres,

∴ 5 kilometres equal to = 5 × 1000

= 5000 metres.

Example 2 : How many kilometers are equal to 4000 metre?

Solution : 1000 metre equal to 1 kilometre

1 meter equal to $\dfrac{1}{1000}$ kilometre

∴ 4000 metre equal to $\dfrac{1}{1000} \times 4000$ kilometre

= 4 kilometre

Change the units :

1. 700 centimetres = ... metre
2. 1200 centimetres = ... metre
3. 7 kilometres = ... metres
4. 2000 metres = ... kilometres
5. 40 metres = ... centimetres
6. 9000 metres = ... kilometres

Now answer these -

(a) Can you write 170 centimetres in metres?

(b) Can you explain 1200 metres in kilometres?

Let us find the solutions -

(a) ∵ 100 centimetres equal to 1 metre

∴ 1 centimetre equal to = $\dfrac{1}{100}$ metre

∴ 170 centimetres equal to = $\dfrac{1}{100} \times 170$

= 1.70 metre

In the same way we can also convert 1200 metres into kilometres.

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Change the units-

1. 310 cm. to metre

2. 988 cm. to metre

3. 1760 metres to kilometre

4. 2010 metres to kilometre

5. 1007 cm. to metermetre

Understand these-

Example 3 : 5.6 metres = ... cm.?

Solution : ∵ 1 metre equals 100 cm.

∴ 5.6 metres = 5.6×100 cm.

= 560 cm

Example 4 : 3.207 kilometres = ...metre?

Solution : ∵ 1 kilometre equal to 1000 meter

∴ 3.207 kilometres = 3.207×1000 metre

= 3207 metre

Exercise

Solve these -

1. 3.2 metre is equal to how many centimetre?

2. 5.63metre equal to how many centimetre?

3. Convert 9.02 metres to centimetre.

4. Explain 3.407 kilometres in metre.

5. 0.035 kilometer equal to how many metre?

6. How many centimetre are there in 2 kilometre?

+ + +

Weight

You know that -

1000 grams = 1 kilogram

500 grams $= \frac{1}{2}$ kilogram (half of a kilogram)

250 grams $= \frac{1}{4}$ kilogram (quarter of a kilogram)

Fill in the blanks :

2000 grams = ... kilograms

3700 grams = ... kilograms ....gram

4000 grams = ... kilograms

4500 grams = ... kilograms .... gram

8000 grams = ... kilograms

Now convert 800 grams into kilogram.

Let us think over this-

$\because$ 1000 gram = 1 kilogram

$\therefore$ 1 gram $= \frac{1}{1000}$ kilogram $= 0.001$ kilogram

$\therefore$ 800 gram $= \frac{800}{1000}$ kilogram $= 0.800$ kilogram

Hence 800 gram = 0.800 kilogram

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$$5 \quad \text{gram} = \frac{5}{1000} \text{ kg.} \quad = 0.005 \text{ kg.}$$

$$50 \quad \text{gram} = \frac{50}{1000} \text{ kg.} \quad = 0.05 \text{ kg.}$$

$$500 \quad \text{gram} = \frac{500}{1000} \text{ kg.} \quad = 0.5 \text{ kg.}$$

$$735 \quad \text{gram} = \frac{735}{1000} \text{ kg.} \quad = 0.735 \text{ kg.}$$

Fill in the blanks-

1. 750 gram = 0.750 kg.
2. 135 gram = ... kg.
3. 40 gram = ... kg.
4. 25 gram = ... kg.
5. 9 gram = ... kg.
6. 3 gram = ... kg.
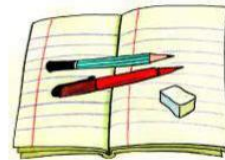
Now let us see how we can convert a weight given in kilograms and grams to kilogram.

Example : 12 kg. 25 grams is how much kilograms?

Solution : To change 12 kg. 25 grams to kilogram, we need to change 25 grams in kg.

12 kg. 25 grams = 12 kg. + 25 gm.

$$= 12 \text{ kg.} + \frac{25}{1000} \text{ kg.}$$

$$= 12 \text{ kg.} + 0.025 \text{ kg.}$$

$$= 12.025 \text{ kg.}$$

Hence 12 kg. 25 gm = 12.025 kg.

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Exercise

Change the given weights to grams :

1. 5 kilograms
2. 9 kilograms
3. 15 kilograms 600 grams
4. 11 kilograms 50 grams
5. 28 kilograms 5 grams

Change the following weights to kilograms :

6. 7850 grams
7. 1050 grams
8. 10 kilograms 225 grams
9. 17 kilograms 80 grams
10. 20 kilograms 5 grams

Solve these :

11. Add 3.720 kg. and 1.350 kg.
12. Subtract 7.925 kg. from 14.670 kg.
13. Multiply 18.980 kg. by 10
14. Divide 18.980 kg. by 10

Example 2 : If one box can hold 2.325 kg. of dal, how many kilograms of dal could you store in 5 such boxes.

Solution : 2.325 kg.

$$\begin{array}{r} \times \quad 5 \\ \hline 11.625 \text{ kg} \end{array}$$

Because 2.325 kg. = 2 kg. 325 gm.

2 kg.   325 gm.

$$\begin{array}{r} \times \qquad 5 \\ \hline 10\text{kg.} \quad 1625\,\text{gm} \end{array}$$

Here 10 kg. + 1625 gms

= 10 kg. + 1000 gm. + 625 gm.

= 10 kg. + 1 kg. + 0.625 kg.

= 11.625 kg.

Example 3 : How many sacks each of 15 kg. capacity can be filled if there is 75 kg. of rice?

Solution : If 15 kg. rice is filled in 1 sack

Then 1 kg. of rice is filled in $\frac{1}{15}$ th sack

$\therefore$ 75 kg. of rice will need $= \frac{1}{15} \times 75$ sacks

$= 5$ sacks

Hence 75 kg. of rice can be filled in 5 sacks.

Statement Sums

1. Ramu bought 1 kg. tomatoes, 2 kg. potatoes and 250 gram chillies from the market. So what is the total weight of these vegetables?

2. If Nilu weighs 20.600 kg., Sanjay weighs 22.800 kg. and Kundan weighs 25 kg. What is the weight of all of them together?

3. A shopkeeper bought 100 kg. sugar and carried it to his village. Due to a small hole in the sack, some of the sugar fell on the way. He reached his shop and weighed the sugar and found its weight 90.700 kg.. How much sugar was lost from his sack?

4. Ramesh bought a cabbage and a pumpkin from the market. The cabbage weighed 750 gram and the pumpkin 3.700 kg.. So by how many kgs. is the pumpkin heavier than the cabbage?

5. In the school 100 gram of rice is cooked for a child. So how many kgs. of rice has to be cooked for 75 students?

6. One sweet box contains 0.450 kg. of sweets, how many kgs. of sweet would be there in 10 such boxes ?

7. One shopkeeper has 60 kg. of sugar. He divides this equally into 15 packets. So how many kgs. of sugar is packed in each packet?

8. How many packets of 250 gm. each can be made from 5 kg. of spices.

9. Ramlal had 235 kg. of rice. He sold 75 kg. on the first day, 85 kg. on the second day and 52 kg. on the third day. How many kgs. of rice is still left with him?

10. Manoj bought 6 bags each with 500 gm. of sugar. How many packets of 200 gm. each can you make from this quantity of sugar?

✦✦✦

Capacity

In the previous class you filled up a 1 litre vessel with vessels of different capacity. From this we came to a conclusion.

1000 ml = 1 litre

Similarly 500 ml = $\frac{1}{2}$ litre

250 ml = $\frac{1}{4}$ litre (quarter litre)

Fill in the blanks:

2000 ml = ... litre

5000 ml = ... litre

3600 ml = ... litre .... ml.

4050 ml = ... litre .... ml.

Now can you tell how many litres are equal to 700 ml?

Let us think over this question-

∵ 1000 ml = 1 litre

∴ 1 ml = $\frac{1}{1000}$ litre= 0.001 litre

∴ 700 ml = $\frac{1}{1000} \times 700$ litre = $\frac{700}{1000}$ litre

= 0.700 litre

Similarly

$$5 \text{ ml} \quad = \quad \frac{5}{1000} \text{ litre} = 0.005 \text{ litre}$$

$$50 \text{ ml} \quad = \quad \frac{50}{1000} \text{ litre} = 0.050 \text{ litre}$$

$$500 \text{ ml} \quad = \quad \frac{500}{1000} \text{ litre} = 0.500 \text{ litre}$$

Fill in the blanks :-

1) 375 ml = ... litre
2) 125 ml = ... litre
3) 50 ml = ... litre
4) 20 ml = ... litre
5) 8 ml = ... litre
6) 2 ml = ... litre

Let us see how we can convert the measurement given in litre and ml to litres-

Example 1 :   Change 3 litres 200 ml to litres

Solution   :   To write 3 litres 200 ml in litres we need to write 200 ml in litres

$$3 \text{ litres } 200 \text{ ml} \quad = \quad 3 \text{ litres} + 200 \text{ ml}$$

$$= \quad 3 \text{ litres} + \frac{200}{1000} \text{ litres}$$

$$= \quad 3 \text{ litres} + 0.200 \text{ litres}$$

$$= \quad 3.200 \text{ litres}$$

Hence, 3 litre 200 ml = 3.200 litres

Exercise

Change the given to millilitres-

1.   8 litres

2.   7 litres 250 ml

3.   12 litres 500 ml

4.   6 litres 50 ml

5.   9 litres 8 ml

6.   5 litres 750 ml

7.   11 litres 7 ml
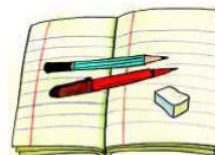
Change the given to litres-

8.   5750 ml

9.   12050 ml

10.   6005 ml

11.   15600 ml

12.   900 ml

Solve-

13.   Add 5.750 litre and 2.500 litre.

14.   Subtract 8.750 litre from 12.250 litre.

15.   Multiply 2.250 litre by 4..

16.   Divide 8.500 by 5.

Example 2 : If one vessel can hold 2.750 litre of water how much water will 5 such vessels hold?

Solution : Quantity of water in 1 vessel $=$ 2.750 litre

$\therefore$ Quantity of water in 5 vessels $=$ 2.750×5 litre

$=$ 2.750

$=$ $\dfrac{\times \quad 5}{13.750}$

$=$ 13.750 litres.

Hence 5 vessels can hold 13.750 litre of water

Example 3 : How many bottles can be filled each of capacity 225 ml with 45 litres of medicine?

Solution : 1 litre = 1000 ml

$\therefore$ 4.5 litre $= 4.5 \times 1000$ ml

$= 4500$ ml

As 225 ml can be filled in 1 bottle

$\therefore$ 1 ml can be filled in $\dfrac{1}{225}$ bottle

$\therefore$ 4500 ml can be filled in $\dfrac{1}{225} \times 4500$ bottles

$= \dfrac{4500}{225}$ bottle

$= 20$ bottles

Hence 4.5 litres of medicine can be filled in 20 bottles each of capacity 225 ml.

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Statement Sums

1. A milkman gave 1 litre 500 ml of milk to one customer and 1 litre milk to another customer. How much litres of milk did he give?

2. A kettle has 2 litre of tea. 500 ml tea was consumed so how much tea is left in the kettle?

3. Mohan drinks 250 ml of milk daily. How much milk in litres would be consumed in 4 days?

4. If 1 litre juice was divided equally among 5 people, how many litres would each person get?

5. Rajesh bought 2.250 litres of Soyabean oil, 3 litres of mustard oil and 500 ml of coconut oil from a shop. How many litres of oil did he buy in all?

6. A box has 1.6 litres of milk. How many mugs can be filled with this quantity if the capacity of each mug is 200 ml?

7. One drum can hold 25 litres of water. How many litres of water can be filled in 7 such drums?

8. A shopkeeper has a drum with 15 litres of oil. He sold 3.250 litre, 5 litre and 2.300 litre oil to the three customers So, how much oil is left in the drum?

9. One bucket can hold 27 mugs of water. If the capacity of one mug is 300 ml, what is the capacity of the bucket?

10. A water tanker can hold 6000 litres of water. If it fills tanks of capacity 800 litres and 400 litres respectively in this order, How many of each type of tanks can be filled? (**Hint -** Subtract 800 and 400 from 6000 one after the other.)

✦✦✦

CHAPTER- 15

Money

How many paise are there in a rupee?

Think and answer-

How many 50 paise coins will you get instead of 1 rupee?

....

How many 25 paise coin will you get instead of 1 rupee?

....

You saw that you got two 50 paise coins instead of 1 rupee

Meaning 50 p. + 50 p. = 100 paise

Instead of 1 rupee you get 4 coins of 25 p. each 25 p + 25 p + 25 p + 25p = 100 p.

Thus each time you got 100 paise.

Now can you say how many coins of 20 paise will you get instead of rupee?

1 rupee = 100 paise

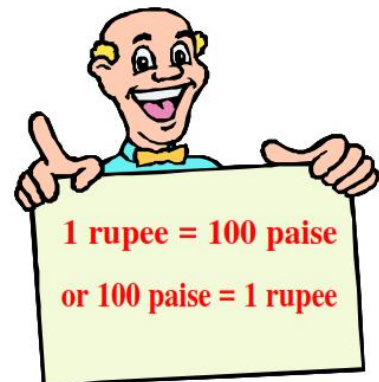**or 100 paise = 1 rupee**

You now know

100 paise   = 1 rupee

Let us see the same by converting paise to rupees. How do we write this?

As 100 paise   = 1 rupee

1 paise $= \dfrac{1}{100}$ rupees

              $= 0.01$ rupees

1 paise	= 0.01 rupees
$\therefore$ 50 paise	= 0.01×50 rupees
	= 0.50 rupees
Hence 50 p.	= 0.50 rupees

You can do this in another way too :

100 paise	= 1 rupee

$$1 \text{ paise} = \frac{1}{100} \text{ rupee}$$

$$50 \text{ paise} = \frac{1}{100} \times 50 \text{ rupees}$$

$$= \frac{50}{100} \text{ rupees}$$

$$= 0.50 \text{ rupees}$$

Similarly-

$$5 \text{ paise} = \frac{5}{100} \text{ Rs.}$$

$$= 0.05 \text{ Rs.}$$

$$\text{and } 15 \text{ paise} = \frac{15}{100} \text{ Rs.}$$

$$= 0.15 \text{ Rs.}$$

Now change the given paise to rupees and write the answer :

(1) 25 paise   (2) 35 paise   (3) 50 paise   (4) 45 paise

(5) 55 paise   (6) 64 paise   (7) 75 paise   (8) 80 paise

(9) 85 paise   (10) 96 paise

Fill in the blanks :

(1)   3 paise   = ... rupees

(2)   8 paise   = ... rupees

(3)   10 paise   = ... rupees

(4)   15 paise   = ... rupees

(5)   37 paise   = ... rupees

Can you say how many rupees equals rupees 10 and 75 paise?

Let us understand-

In 10 rupees and 75 paise, there are 10 rupees but we need to convert 75 paise to rupees

Solution **:** 10 rupees 75 paise = 10 Rs. + 75 p.

$$= 10 \text{ Rs.} + \frac{75}{100} \text{ Rs.}$$

$$= 10 \text{ Rs.} + 0.75 \text{ Rs.}$$

$$= \text{Rs. } 10.75$$

Hence, Rs. 10 & 75 p = Rs. 10.75

Now you convert the given rupees and paise to rupees :

(1)   15 rupees 15 paise (2)   22 rupees 20 paise

(3)   36 rupees 45 paise (4)   53 rupees 65 paise

(5)   60 rupees 60 paise

Fill in the blanks :

(1)   Rs. 17, and 22 p. =   Rs. ....

(2)   Rs. 46, and 76 p. =   Rs. ....

(3)   Rs. 66, and 50 p. =   Rs. ....

(4)   Rs. 70, and 85 p. =   Rs. ....

(5)   Rs. 86, and 25 p. =   Rs. ....

The accounts of a market

Example 1 : Chitra bought tomatoes for Rs. 9.50 and ladys fingures for Rs. 17.75. So how much money did she spend in total ?

Solution : The cost of tomatoes   Rs. 9.50

          Lady finger   Rs. 17.75

          Total cost   Rs. 9.50+17.75

          That is   Rs. 27.25

          Hence Chitra spent a total of   Rs. 27.25.

Example 2 : Monu went to the market with Rs. 75. She spent Rs. 25 & 50 p. So how much many is left with her?

Solution : Monu had with her   Rs. 75

          She spent   Rs. 25 & 50 p.

                        or   Rs. 25.50

          Amount left with her =   75.00 - 25.50 = Rs. 49.50

          Hence Monu is left with Rs. 49.50.

Solve these:

1. Mukesh bought a pair of socks worth Rs. 23 & 75 p., a watch worth Rs.175 and a pair of spectales worth Rs. 90 & 50 p. How much money did he spend in total?

2. Akhtari has Rs. 64.50 with him. How much more is needed to make this amount Rs. 141.25?

3. Rashmi bought a chocolate for Rs. 9 biscuits for Rs. 12.50 and sugar for Rs.20.50. How much did she spend in all?

4. Surjit has Rs. 110.25 with him. He bought sweet worth Rs. 17.50. How much money is left with him?

5. Atri had Rs. 327 with him. He bought rice worth Rs. 72.50 wheat worth Rs.50.25 and sugar worth Rs. 50. How much amount is now left with him?

Let us solve some more questions :

Example 3 : Gaja has 35 kg. of seeds with him. How much would he earn on selling these if the cost of 1 kg of seeds in Rs. 5.50.

Solution : Given 1 kg seeds cost   Rs. 5.50

We want to know the cost of 35 kg of seeds

1 kg seeds cost   = Rs. 5.50

35 kg seeds would cost   = 5.50 x 35

                                = Rs. 192.50

Example 4 : The cost of 3 copies is Rs. 43 & 50 p., so what is the cost of 1 copy?

Solution : Given that 3 copies cost   = Rs. 43 & 50 p

We want to find cost of 1 copy   = ?

3 copies cost   = Rs. 43.50

1 copy costs   = $43.50 \div 3$

                                = Rs. 14.50

Hence 1 copy will cost Rs. 14.50.

Solve these -

1. Phoolsingh is paid Rs. 63 & 75p. per day as labour charge. So what amount would he get for 7 days?

2. If the cost of 7 kg. of Dal is Rs. 214.90, what is the cost of 1 kg. of Dal?

3. A class of 35 students collected Rs. 87 & 50p. So how much average amount did each student contribute?

4. 1 metre of tape costs Rs. 1 & 75p. so what is the cost of 12 metres of tape?

5. The cost of 10 pens is Rs. 88 & 50p., so what is the cost of 1 pen?

6. The cost of 12 litres of diesel is Rs. 415 & 20 p. so what is the cost of 3 litres of diesel?

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Time

Look at the clock shown in your book. The dial of the clock has been divided into 12 big parts. These big parts have been represented by number i.e. from 1 to 12. Each big part has been further divided into 5 small parts. Now, we have 60 small parts on the dial. To know the time., needles of second, minute and hour have been shown.

The seconds hand takes 1 second to cross a small part of the dial. The minutes hand on the other hand takes 1 minute to cross 1 smaller part.

The seconds hand crosses a small part in one second, and to have complete round of the clock, it crosses sixty small parts and takes 60 seconds for it.

The minutes hands takes 60 seconds to cross one small part, on the basis of this we can say.

1 minute = 60 seconds
Or 60 seconds = 1 minute

Likewise the minutes hand takes 60 minutes to have a complete round. The hours hand takes 60 minutes to cross one big part and we say that the hour's hand had taken one hour.

Means,

1 hour = 60 minutes
Or 60 minutes = 1 hour

You might have seen that the hours hand takes two rounds in a day. That means one day has twenty four hours.

That is a day has 24 hours

24 hours = 1 day
Or 1 day = 24 hours

Now change minutes to seconds-

How do we change 5 minutes to seconds?

Nita did it like this-

5 minutes = 1 minute + 1 minute + 1 minute + 1 minute + 1 minute

= 60 seconds + 60 seconds + 60 seconds + 60 seconds + 60 seconds

= 300 seconds.

∴ 5 minutes = 300 second

We can do this another way

As 1 minute equals 60 seconds

∴ 5 minute equal 60x5 seconds

= 300 seconds

Hence 5 minute = 300 seconds

How can we change 180 minute to hours?

We can do this by the following method:

As 60 minutes equal 1 hour

Therefore 1 minute equals $\dfrac{1}{60}$ hour

and 180 minutes equal $\dfrac{1}{60} \times 180$ hours

= 3 hours

Hence 180 minutes = 3 hours

Change the following-

(1)   8 minutes to seconds.

(2)   240 seconds to minutes.

(3)   6 hours to minutes.

(4)   300 minutes to hours.

Here you saw the relation between seconds, minutes and hours. Similar relation can be established between days, weeks, months and years.

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To understand this fill the following table:

S.No.	Name of the month	Number of days
1.	January	31
2.	February	28
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

Total number of days ....

Answer these -

How many months are there in a year?

....

How many days are there in a month?

....

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(From the table you filled above you must have realised that the number of days is not the same in each month. That is why we consider that on an average there are 30 days in a month)

How many days are there in a year?

....

In leap year February has 29 days. So how many days will there be in a leap year?

....

(1)   How many hours are there in 2 days?

(2)   Change 72 hours to days.

(3)   Change 4 months to days.

(4)   How many months will there be in 90 days?

Fill in the blanks-

(1)   280 seconds   = ... minutes .... seconds.

(2)   150 minutes   = ... hours .... minutes.

(3)   52 hours   = ... days .... hours.

(4)   4 minutes 10 seconds   = ... seconds.

(5)   1 hour 17 minutes   = ... minutes.

(6)   3 days 10 hours   = ... hours.

(7)   2 months 9 days   = ... days.

(8)   1 year 10 months   = ... months.

Adding time intervals

To add time intervals we add seconds to seconds, mnutes to minutes and hours to hours. But if the addition of seconds is more then 60, then we carry one minute to minutes column and now add the minutes to minutes.

So also if the addition of minutes exceeds 60 minutes, you carry 1 hour to the hours column and add the hours.

To add year, months and days also we use a minute method.

Example 1 :   5 hours 30 minutes
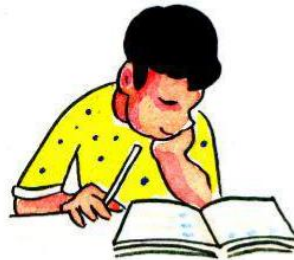
+ 2 hours 20 minutes

7 hours 50 minutes

Example 2 :   Add 3 hours 40 minutes and 1 hour 50 minutes

Solution   :   3 hours 40 minutes

+ 1 hour 50 minutes

4 hours 90 minutes

= 4 hours + 60 minutes + 30 minute

= 4 hour + 1 hour + 30 minutes

= 5 hours 30 minues

Add :

(1)   3 hours 30 minutes and 2 hours 15 minutes.

(2)   5 hours 45 minutes and 4 hours 25 minutes.

(3)   7 hour 44 minutes and 1 hour 31 minutes.

(4)   2 hour 30 minutes 20 seconds and 6 hour 10 minutes 10 second

(5)   6 hour 40 minutes 45 seconds and 2 hour 20 minutes 35 seconds

(6)   8 years 7 months and 2 years 3 months.

(7)   5 years 8 months and 3 years 5 months.

Subtraction of time intervals

To subtract time intervals we subtract seconds from seconds, minutes from minutes and hours from hours. But if the minutes to be subtracted is more than the minutes in the above row, we borrow 1 hour of 60 minutes from the hours column and add this to the minutes in the above line before subtracting. If there are seconds involved we do follow a similar procedure.

A similar method is used to subtract days, months and year.

Example 3 :   Subtract 5 hours 25 minutes from 8 hours 50 minutes

Solution   :   8 hours 50 minute

    − 5 hours 25 minute

    3 hours 25 minutes
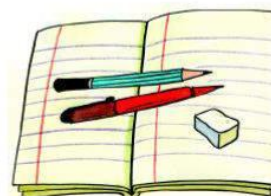
Example 4 :   Subtract 1 hour 15 minutes from 3 hours 10 minutes

Solution   :   Here you cannot subtract 15 minutes from 10 minutes so you take 3 hours 10 minutes as 2 hours 70 minutes and then subtract.

3 hours 10 minutes = 2 hours + 1 hour + 10 minutes

= 2 hours + 60 minutes + 10 minutes

= 2 hours + 70 minutes

    2 hour 70 minutes

    − 1 hour 15 minutes

    1 hour 55 minutes

Subtract-

    (1)   5 hours 25 minute from 8 hours 40 minutes.

    (2)   2 hours 40 minutes from 7 hour 20 minutes.

    (3)   3 hours 55 minutes from 12 hour 35 minutes.

    (4)   4 hours 20 minutes 25 seconds from 5 hours 25 minutes 15 seconds.

    (5)   5 hours 40 minutes 12 seconds from 9 hours 15 minutes 25 seconds.

    (6)   2 years 5 months from 4 years 7 months

    (7)   3 years 8 months from 7 years 3 months.

Exercise

(1)   Manisha spends 4 hours 30 minutes studying in school and 3 hours 30 minutes studying at home. So how much time does she spend studying totally?

(2)   A labour works daily for 5 hours 20 minutes in the farm and 2 hours 30 minutes at home. So how much time does he spend working daily?

(3)   Mohan finishes a job in 5 hours 40 minutes of the allotted time 8 hours. How much time before does he finish the job?

(4)   A cyclist covers a distance of 25 km in 3 hours and 55 minutes and a motor cyclist takes 1 hour 15 minutes to cover the same distance. How much less time did the motorcyclist take than the cyclist?

(5)   A labourer worked for 2 weeks in a factory. He worked daily for 6 hours. So how many hours did he work totally?

(6)   Waheed stayed for 12 days at his brother in law's place, 15 days at his grand mother's place and 5 days at his friends place, during his holidays. So how many weeks and how many days did he spend with friends and relation?

(7)   Pushpa is 1 year and 3 month younger than Amit. Amit 1 year and 10 months younger to Rashmi. So how much younger is Pushpa than Rashmi?

(8)   A bus took 2 hours and 25 minutes to reach Saraipalli from Raigarh and 3 hours 10 minutes to reach Raipur from Saraipalli. So how much time did it take to go from Raigarh to Raipur?

(9)   Poonam's birth date is 28.01.1996. What will her age be on 30 Sept. 2005?

Calculation of Age -

Poonam's date of birth is 28 Jan. 1996, what was her age on 30 sept. 2005.

Solution:

		Year	Month	Day
1.	To calculate the age for a particular date, we write first year then month and then date.	2005	09	30
2.	Then we will write the Date of birth below.	− 1996	01	28
3.	Now you subtract Day from Day, month from month and year from year.	09	08	02

∴ On 30ᵗʰ Sept. 2005 Poonam's age is 9 years, 8 months and 2 days.

Can you find your age? Write in figures and in words -

....

You also find your age as on 3¹ˢᵗ December -

	Year	Month	Day
	....	12	31
−	....	....	....
	....	....	....

Coming year what will be your age as on 1ˢᵗ January.

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CHAPTER- 17

Billing

Mohan had to buy a few stationary items. He went to a shop.

Mohan   -   Sir, how much does 120 pages notebook cost ?

Shopkeeper   -   ₹ 20/-

Mohan   -   Please give me 3 notebooks and how much is this pencil for ?

Shopkeeper   -   ₹ 5/-

Mohan   -   Please give me two pencils and also a 2 rupee eraser.

             (The shopkeeper gave all the items)

Shopkeeper   -   Do you want anything else?

Mohan   -   No, thank you. Please give the bill.

Shopkeeper   -   Why do you need a bill ?

Mohan   -   My mother asked me to bring the bill.

Shopkeeper   -   Ok. I will give you the bill.

The shopkeeper gave the bill to Mohan which was as follows -

BILL

Apna Stationary, Kurud

No.   05
Name Mohan   Date   6/8/17

S.no.	Items	Rate (in Rs.)	Quantity	Amount
	(in)			
1.	120 pages copy	20	3	60
2.	Pencil	5	2	10
3.	Rubber/Eraser	2	1	2

Signature
Apna stationary, Kurud

Excecise

1. If you need 5 copies, 3 pencils and 1 rubber then make a bill according to the above conversation.

BILL

Apna Stationary, Kurud

No.   ....

Name   ....

S.no.	Items	Rate (in Rs.)	Quantity	Amount (in)
			Total	

Signature
Apna stationary, Kurud

2. You went to a grocery shop. There you bought 1 kg sugar, 2 kg potatoes, 1/2 litre groundnut oil and 1 kg flour, make a bill according to the price list in the shop.

Daddu Grocery Shop

Price List

S.no.	Items	Price per kg
1.	Potatoes	Rs. 15
2.	Sugar	Rs. 40
3.	Flour	Rs. 20
4.	Groundnut oil	Rs. 70
5.	Jaggery	Rs. 30

3. Whenever you go to shop to buy things always make a bill for the items purchased.
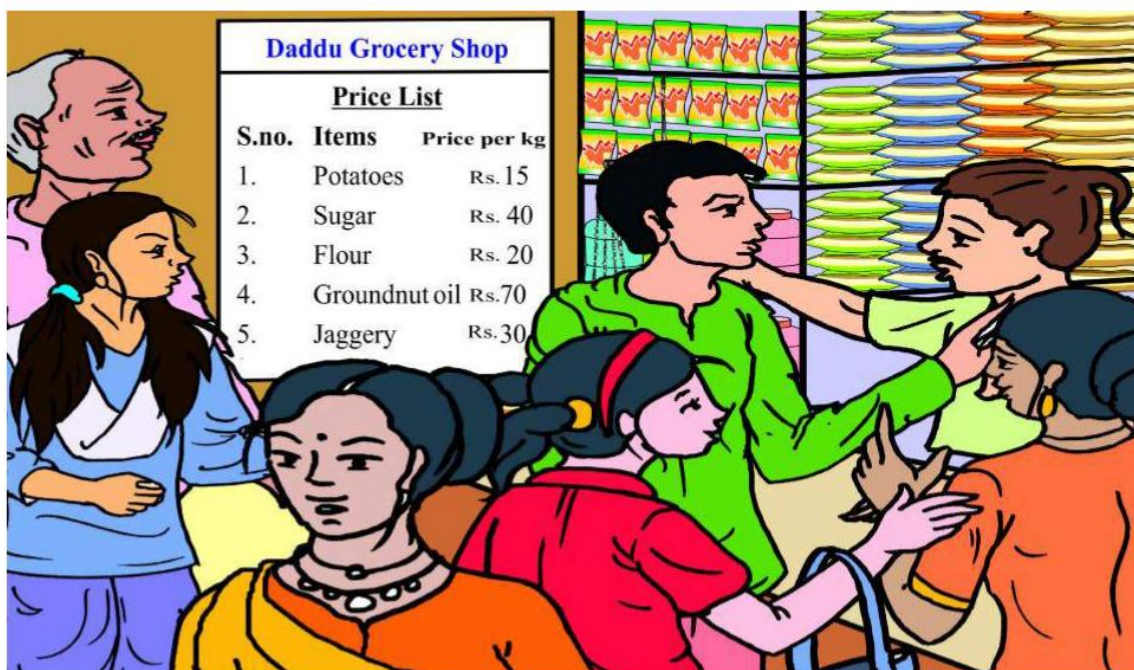
Bill

Om Grocery Shop

No. ....

Name ....

S.no.	Items	Rate (in Rs.)	Quantity	Amount (in)
			Total	

Signature
Om Grocery Shop

✦✦✦

Perimeter

In Deepa's school the preparation for celebrating Republic day were going on. To hang paper streamers, the children fixed four bamboo poles at the four ends of the field and tied a rope to the first bamboo, tying it to the second, third and fourth again tied it back to the first bamboo. Thus a rectangle of the rope was formed.Now Deepa and her friends stuck the paper streamer and flags on this rope.

Deepa said "What is the length of this rope? Let us measure and see."

Meeta got a meter scale from the teacher and started measuring the rope. To do this they started from the first bamboo went to the second, third and fourth bamboo and came back to the first-one. The measurement was 70 meters.

Just then the teacher reached there and asked what they were doing?

Deepa   -   We wanted to know the length of the rope. We measured it and found it is 70 meters long.

Teacher -   How did you find this?

Meeta   -   We went from the first bamboo, to the second, third, fourth and again to the first and found it was 70 meters long.

Deepa   -   This means the rectangle made by the rope has a perimeter of 70 meters.

Teacher -   Yes, you are absolutely right.

"You know that the measure of the length of the boundary of a figure is called its perimeter."

Closed and open figures

Some figures are drawn below. Place your finger at any one place and start tracing the figure.
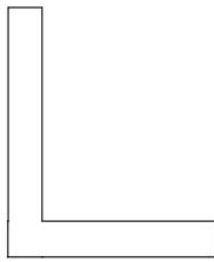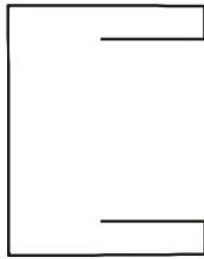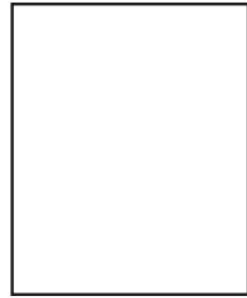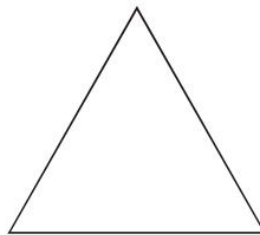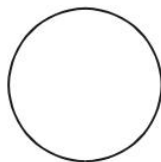
Which of these figures are such that you reached the same point where you started?

....

Which of the figures are such that you did not reach the same point where you started from?

....

Figure in which you reach the same point where you started from are called closed figures

Figures in which you do not reach the same point you started from are called open figures.

When Deepa and her friends were finding the perimeter of the rectangle formed by the rope, did they reach the same point where they started from?

So what sort of figure is a rectangle? Open or closed?

We can find the perimeter of only closed figures.

Look at some of the objects around you like the blackboard, books etc carefully write the names of the objects which you find to be closed figures of the in the table below. Find the perimeter of the closed figures.

Object	perimeter (cm.)
Blackboard	
Surface of a table	
Book	

To find the perimeter of the blackboard, table or book, you must have measured all the four edges. Similarly to find perimeter of any closed figure we find the length of the edges.

Find the perimeter of given figures-

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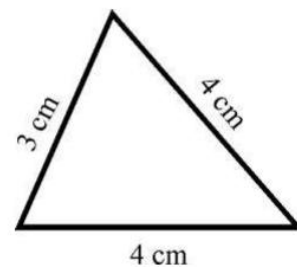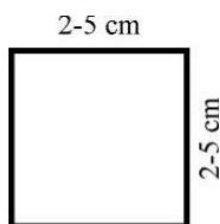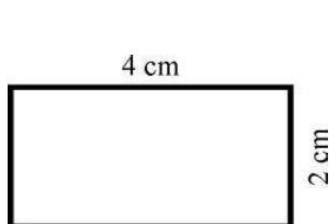
Meaning of perimeter - The total of the length of the sides of any closed figure.

Perimeter of Triangle -

Some triangles are given below with the lengths of each side. Find the perimeter of each triangle-
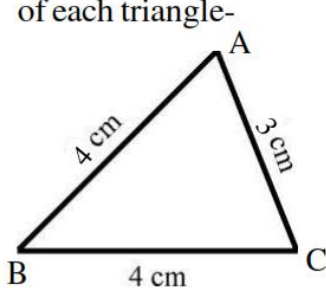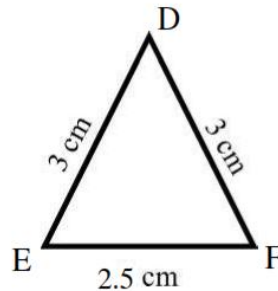
Perimeter of ABC = ...   Perimeter of DEF = ...   Perimeter of XYZ = ...
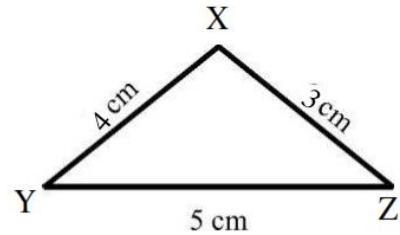
What did you do to find perimeter of these triangles?

The perimeter of a triangle = length of first side + length of second side + length of third side

Perimeter of triangle = sum of the length of the three sides of a triangle.

Perimeter of a rectangle

What is the perimeter of the following rectangles-
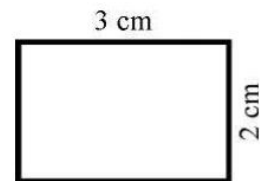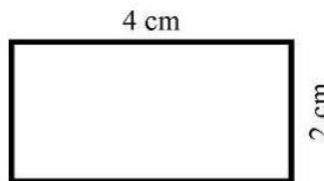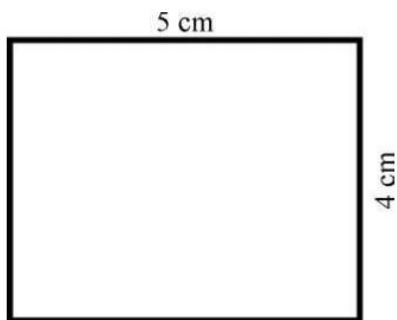
How did you find the perimeter of these rectangles?

....

....

....

You know that in a rectangle the opposite sides are equal in length. So while finding the perimeter we add twice the length and twice the breadth.

Meaning

Perimeter of a rectangle   =   length + breadth + length + breadth

=   length + length + breadth + breadth

=   sum of 2 length + sum of 2 breadths

So perimeter of rectangle   =   2 × length + 2 × breadth

Perimeter of squares-

As we know that all four sides of square are equal in length.

∴ Perimeter of square   =   side + side + side + side

=   sum of 4 sides

So, perimeter of square   =   4 × side

Now give the perimeter of these figures-
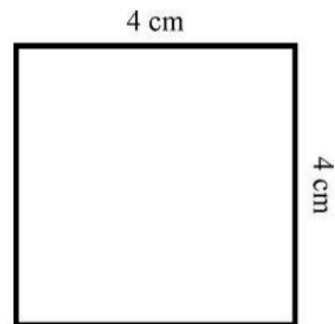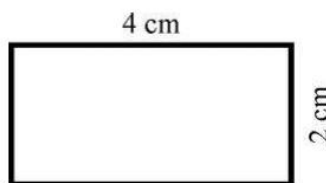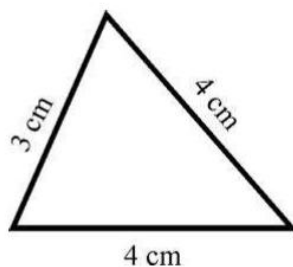
Problems

1.   The length of a playground is 200 metre and the breadth is 150 metre . If Raju wants to go around the boundary once, how many metres would he have to run?

2.   A square garden has a side of 250 metres. To put a wire fencing around this, what is the length of wire required?

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3. What is the length of lace which would be required to be put around a handkerchief, which is a square with a side of 15 cm each?

    If you wanted to make 5 such handkerchiefs what length of lace would you need?

Some more questions-

Write the perimeter of each rectangle-

1. Length = 25 metres, breadth = 20 metres

2. Length = 32 metres, breadth = 18 metres

Give the perimeter of the following triangles-

1. 6 cm, 8 cm, 10 cm

2. 15 cm, 18 cm, 20 cm

3. 12 cm, 12 cm, 12 cm

Find the perimeter of the following squares-

1. Each side = 8 metres

2. Each side = 11 metres

3. Each side = 35 metres

+++

Area

Arrange books on the table in your class such that no book covers the other and all the books are of the same size.

How many books did you need to cover the whole table?

Hence the surface area of table = surface of .... books.

Now do a similar activity using copies. If you don't find copies of the same size, use only one and measure how many times you needed to cover the whole table.

You can take the help of your teacher in doing this.

You can do this using a slate too.

Now complete the given table-

Surface of table = Surface of .... books.

Surface of table = Surface of .... copies.

Surface of table = Surface of .... Slates.

Sometimes while keeping books on the surface of the table is does not cover the table completely. Some portion of the table, is left uncoverd.

If it happens, can we say that the surface area of the table is equal to the number of books kept on the table? Discuss with your teacher.

The measure of the surface of figure is the area of that figure.

Arrange bangles on the surface of the table in such a way that they touch each other

- How many bangles did you arrange?

- Is there space between the bangles?
- Was there space between the books you had arranged?
- Can you find the area of a surface using bangles?
- To measure the area of the surface, is it necessary to cover the whole surface with same units.

Cut surface of the following figures from a cardboard.

2 cm | 2 cm

1 cm | 3 cm
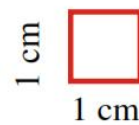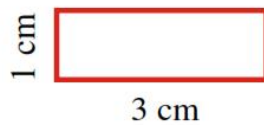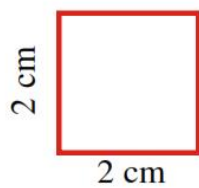
1 cm | 1 cm

Now use the pieces of 2cm×2cm to cover the surface of the following figures-

5 cm | 4 cm

5 cm | 6 cm

2 cm | 5 cm

4 cm | 4 cm
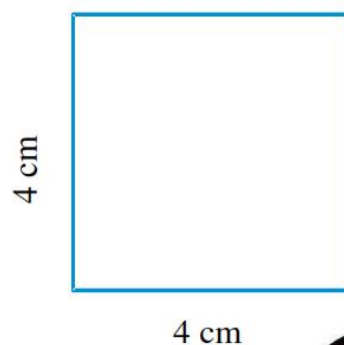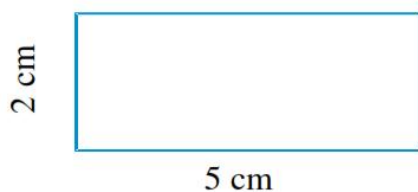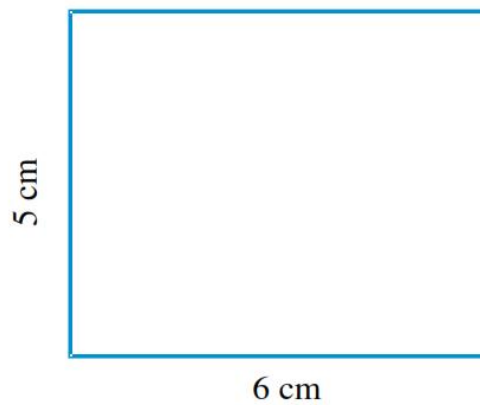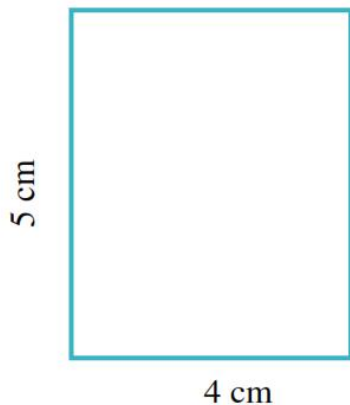
Which of the figures are completely covered?

Now arrange the rectangles of 3cm x 1cm on these figures.

Are the figure completely covered?

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Now use the pieces of measurement of 1 cm x 1 cm and cover the surfaces.

Have the figures been covered completely now?

You saw that it was only with the pieces of 1 cm x 1 cm that the given figures were completely covered.

We use unit square to measure the area.

We use 1 cm × 1 cm square to measure the area of small figures.

And to measure the area of bigger figures we can use 1 m × 1 m square or more than this if required.

Area of figure = the number of unit squares which fit in this figure

Now let us find out the area of a rectangle-
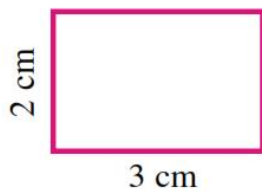
We want to find the area of this rectangle

The length of the rectangle $\quad = \quad$ 3 cm

Breadth of the rectangle $\quad = \quad$ 2 cm
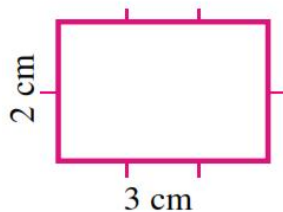
Put marks on the sides at a distance of from 1-1 cm
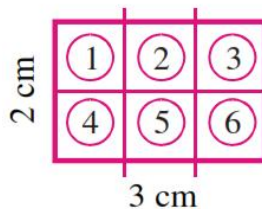
Join the marks made by using a scale.

The unit squares thus made are 6

Hence area of square = 6 square units

If we multiply the length with the breadth we get $3 \times 2 = 6$

Can we say that the number of unit squares made in any rectangle is always equal to the product of the breadth and the length?

Let us find out-

You are given a rectangle whose length is 5 cm and breadth is 4 cm. Find the area of this rectangle.

How many unit squares can you make inside this rectangle? ....
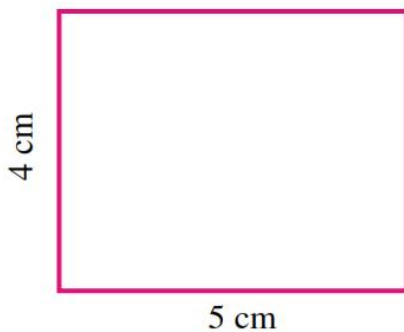
The product of the length and breadth is

$5 \times 4 = 20$

4 cm

5 cm

Now look at the rectangle given below and answer-
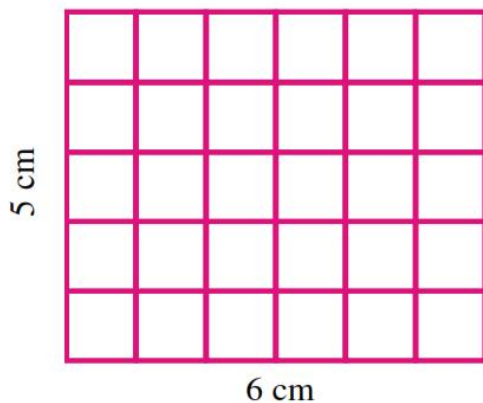
The length of the rectangle = ...

The breadth = ...

Total unit squares made = ...

Hence area of rectangle = ...
square cm

And length x Breadth = ...

5 cm

6 cm

The length of the rectangle = ...

Breadth of the rectangle = ...

Total unit squares made = ...

Hence area of rectangle = ... Sq. cm

And length x breadth = ...

3 cm

6 cm

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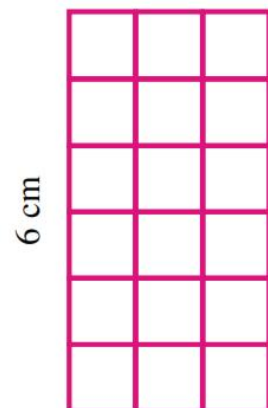
Inside any rectangle you can make unit squares equal to the product of the length and the breadth.

> **Area of rectangle = length x breadth**

Area of a square-

You know that square is a special type of rectangle.

∴ Area of a square = length x breadth

But the sides of a square are equal in length

∴ Area of square = length of side x length of side

Example 1 : The length of a book is 25 cm and its breadth is 20 cm. What is the area of the book?

Solution : Book is rectangular in shape

We know that area of rectangle = length x breadth

We are given the length of book = 25 cm

and the breadth of book = 20 cm

So the area of the book = 25 cm x 20 cm

= 500 sq. cm

Example 2 : A square room has a side of 8 m., So what is the area of the floor?

Solution : Room is square in shape

You know that area of square = length x length

We are given that length of side = 8 metre

So area of the floor of the room = 8 x 8 sq. m

= 64 sq. m.

Find the area of the following-

1. Find area of a rectangle whose length is 8 cm and breadth is 4 cm.

2. The length of a rectangle is 25 cm and its breadth is 15 cm. Find its area.

3. If a rectangle is 15 metre long and 6 metre wide, what is its area?

4. The side of a square is 9 metre; find the area of this square.

5. Find the area of a square whose side is 16 cm. long.

6. The Kabbadi field is 14 metre long and 8 metre broad. What will its area be?

7. ___ metre long and 4 metre broad room. Find its area. (You can choose your own length.)

8. A carrom board has a side of 75 cm. Find its area.

9. What will be the area of a square garden whose side is of 55 m.

10. The length of a playground is twice its breadth. If the breadth is 9 metre. Find the area of the field.

It also happens-

It may happen that we know the area of a rectangle and we also know either the length or breadth, then can we find the other?

Let us try. The rectangle given below has been divided into 12 unit squares, hence its area is 12 square unit.

There are 4 squares in the length and 3 squares in its breadth.

If we divide 12 by 4 we get the result as 3; which is the breadth.

Area ÷ breadth = length

Also Area ÷ length = breadth

Let us solve this-
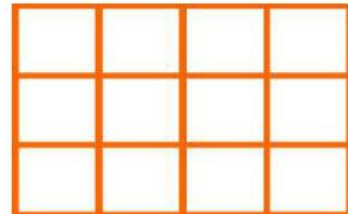
Example 3 : The area of a rectangular courtyard is 48 square meters and its breadth is 6metres. What is the length?

Solution : The area of a courtyard = 48 sq. m.

Breadth of the courtyard = 6 m.

We want to find the length of the courtyard

We know that area / breadth = length

48 ÷ 6 = length

The length is 8 m.

Now you solve these-

1. The area of the floor of a room is 18 square metre. If the breadth of the room is 3 metre, find the length of the room.

2. A rectangular field is 35metre long. If the area of the field is 700 square metre, find the breadth of the field.

3. A 40 cm broad table has an area of 2800 square cm. What is the length of the table?

4. The area of a theater floor is 81 square meter. Find the breadth, if the length of the floor is 9 metre.

   Can you say what is the shape of theater?

Project work -

1. Find the area of the floor of all the rooms is your school. Which room has the bigger area?

2. Find the area of the floor of any one room in your house.

   What did you do in order to find this? Tell your teacher.

Another method of finding area -

We have divided a rectangle and square into unit squares and found their area. Let us see whether we can do the same for a triangle.
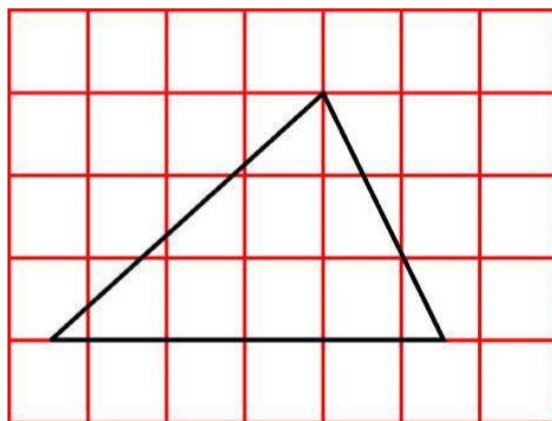
You can see that some unit squares are completely inside the given triangle but some unit squares which are half or less than half are also inside the given triangle.

Fill those squares with green colour which has less than half part inside the triangle.

Now colour the remaining squares which are inside the triangle with blue.

Since maximum number of squares are blue, we can say that the area of the triangle is equal to approximately the number of blue squares.

Area of triangle = ... unit square (approximately)

Or the Area of this triangle = ... unit square (approximately)

Now similarly try to estimate the area of the following figures:
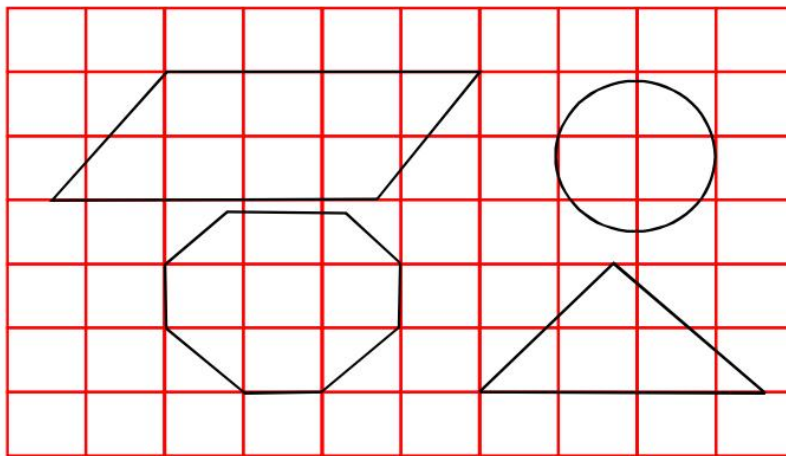
Can you find the area of your palm by this method? Try it.

Data Handling
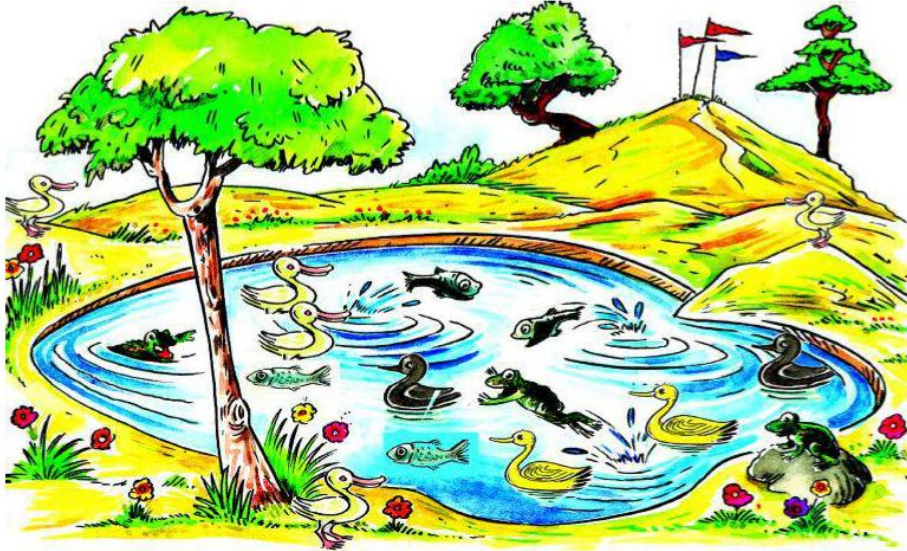
Children, you can see the picture of a lake given above look at it carefully.

Draw a " **/** " for each animal you observe there in the table given below:

Fish	Duck	Swan	Frog	Goose

Cut the pictures given below and stick the number of each you have counted above in the table given below above the name mentioned:
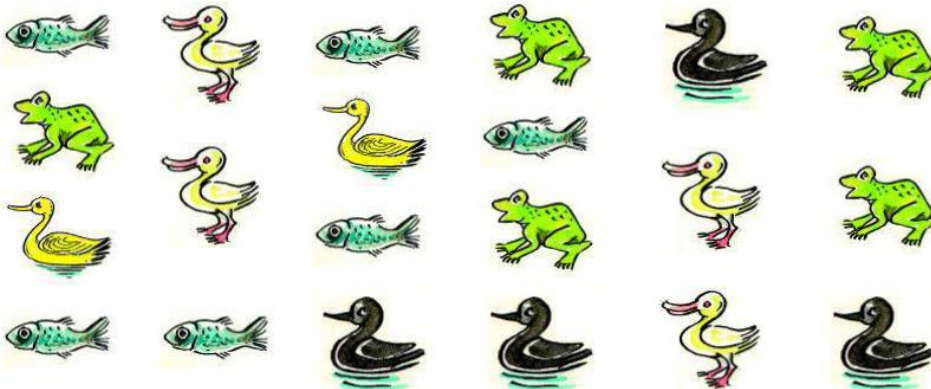
Fish	Duck	Swan	Frog	Goose

You have some blocks made below, write the names of the animals you have seen and colour the number of boxes equal to the number you counted.

Fish	Duck	Swan	Frog	Goose

Number of animals

Names of animals

Let us make another table

1. Some figures have been drawn on a blackboard.
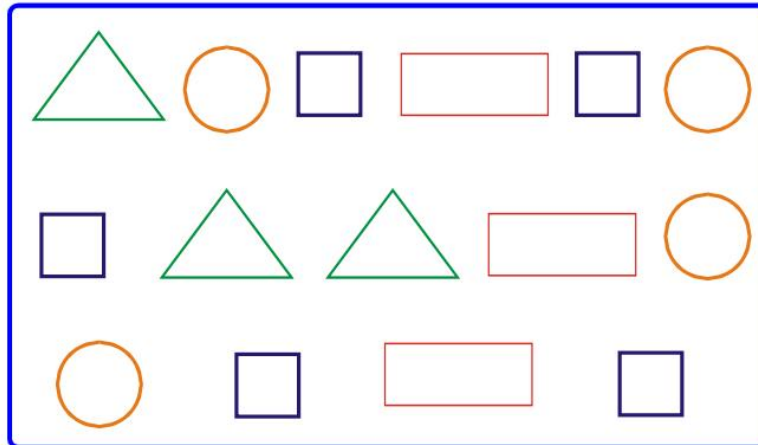
Look at the pictures and finish this table:

Figure				
Number	– – – –	– – – –	– – – –	– – – –

Now colour the number of boxes equal to number of each figure in the following table-

Number of figures

Triangle   Circle   Rectangle   Square

2.	A joint family has the following number of members :

Women	Men	Girls	Boys
6	5	4	4

Colour the boxes equal to number of members:

Now answer the following question with the help of coloured portion -

1.	How many more women are there than men?

2.	How many member are there in all?

3.	How many less boys are there than men?

4.	How many less girls are there than women?

5.	What is the total number of men and women in the family?

6.	What is the total number of boys and girls in the family?

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A test in maths had a total of 5 marks. Some children got 1 mark, some got 2, some 3, some 4 and also 5. The picture below shows the number of children who got different marks: observe and answer the questions given below.
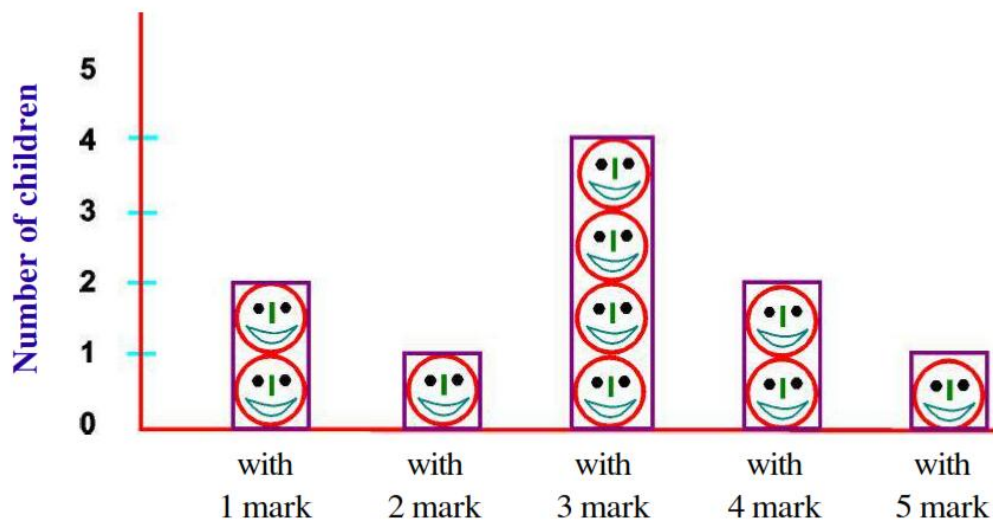
Now answer these-

1   How many students got 3 marks?

2.   What is the lowest score?

3.   How many students got the lowest marks?

4.   Did any child get 5 marks?

5.   How many students got more than 2 marks?

6.   How many students are there in all?

7.   How many students got less than 3 marks?

8.   How many students got more then 4 marks?

9.   How many students got 2 marks?

The number of students of class 5th those like different sports are given in the table below.

Kho Kho	Football	Cricket	Kabaddi
5	3	4	6
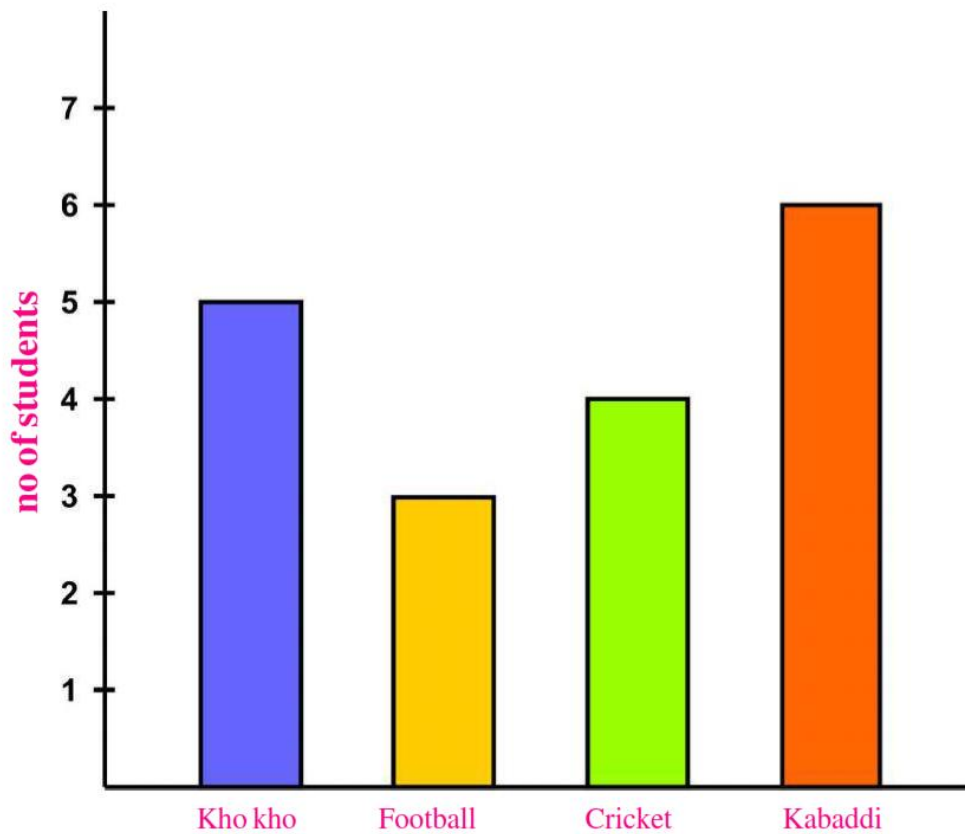
The number of students according to their choice are shown through different bars in the given figure. For each student a box of equal length is taken and the width of all the bars is equal.

This kind of representation of information is called bar-diagram.

A game of dice

Make a group of your 3 to 4 friends and throw a dice by turns. Whatever number comes, make a tally mark '**|**' in front of that box. When each student has thrown the dice 4 to 5 times, count the number of signs in each row. For example, let us say that the number 3 came 4 times on the dice then-

Number of the dice	'**|**' mark	Total how many
1		
2		
3	'||||'	4
4		
5		
6		

Which number occurs how many times? Fill as many box with colour.

How many times

Number 1   Number 2   Number 3   Number 4   Number 5   Number 6

✦✦✦

Pattern and Riddles
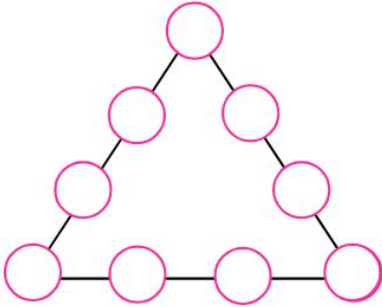
(1) Arrange the numbers 1 to 9 in the given cycle in the given triangle, so that the sum of each side is equal to 20. Number should not be repeated.

(2)   5 pieces of chain were brought to a blacksmith to join. Each piece had 3 rings. Before he started the job, he thought' "How many joints should be opened to make it one". After thinking he concluded that he would have to open 4 rings. Can we join them by opening less than 4 rings?

(3)   Some goats and hens are there in a room. The total number of them is 7, and total number of their legs are 20. How many hens and goats are there in that room?
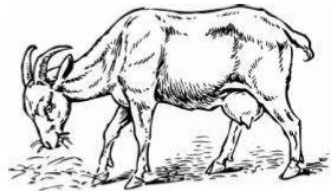
(4)   Can we make 30 by using 5 three times -

Let us see -

We have   5 +   5 × 5 = 30

First we multiply then we add

$$5 \times 5 = 25$$
$$\underline{+\ 5}$$
$$30$$

In the same way -

Solve the following questions -

(i)   Can we get 30 by using 6 three times?

(ii) Can we get 20 by using 5 three times?

(iii) Can we get 20 by using 4 three times?

(5)   An Aeroplane flying from City A to City B, takes 1 hour and 20 minutes, but comes back in 80 minutes, why it is this so?

(6)   Find out the missing numbers -

```
    4    1   [ ]                    [ ]   [ ]    5
  ×      [ ]   1                  ×        1    4
  _____                    _____
     [ ]    1    5                  1    3   [ ]  [ ]
  + 8   3   [ ]   ×             +  [ ] [ ]   0    ×
  _____                    _____
   [ ] [ ]   1   [ ]               4    6    0    0
```

Let us solve some puzzles-

1.   The distance from Raju's house to the tap is 9 steps. He takes 2 steps forward and 1 step backward. How many steps would he take to reach the tap.

2.   I am a two digit number and a multiple of 6. On reversing the digit I become a single digit odd number. Who am I?

3.   The players have made two teams. The first team says if one of your team member joins us, we both will have equal number of players. The second team says if one of you joins us, we will have twice the number of player of your team. How many players are there in each team?

4. Use 2 three times to get 24.

5, Use 3 four times to get 24.

6. The sum of Ram's age and his daugher's age is 31 years. Ram is 30 years older then his daugher. What are their ages?

7. A boatsman has to take a fox, a duck and some corn across a river in a boat. But the boat at one time can carry only the boatman and one of the remaining three. How will he get them across taking care that the fox does not eat the duck and the duck does not eat the corn.

Pattern 1 :
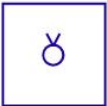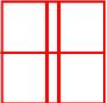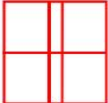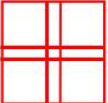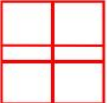
What will come next in the given pattern? Observe, understand and make:

1. ....

2. ....

3. ....

4. ....

5. ....
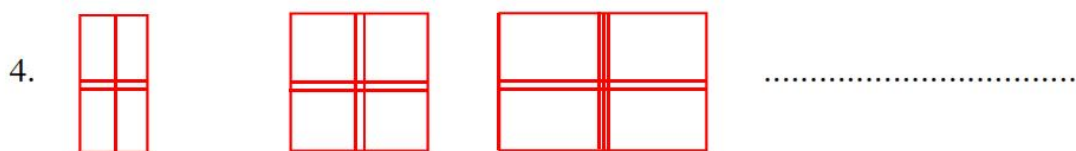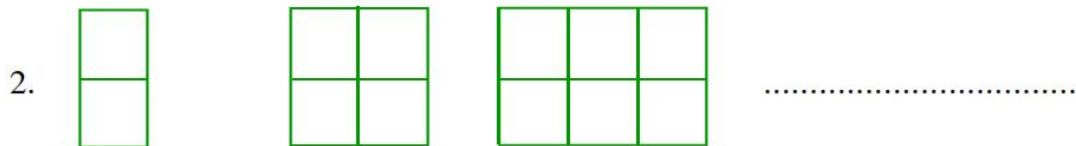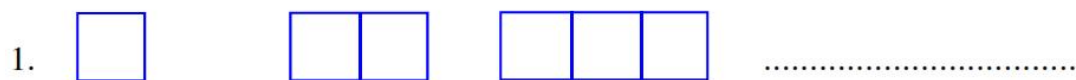
6. ....

7. ....

8. ....

9. ....

Pattern 2 :

Identify the figure similar to the first from the remaining 3 and make a (✓)

1.

2.

3.

4.

5.

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Pattern 3 :

Look at the patterns carefully and identify the one which is different. Mark it with (✓).

1.

2.

3.

4.

5.

✦ ✦ ✦

OUR
Devanagari Numerals
Introduction and Exercises

NUMBERS

Introduction – Devanagari numerals

  Yesterday, when Dashmat was helping his mother in house cleaning, he got some old papers from grandmother's almirah. Dashmat knows, what is written on that paper very well, but something he doesn't understood. That signs were looked like a few numbers but still he didn't recognize them. So he asked his mother by pointing that number "What are these"? Ramu kaka also writes like this, when he calculates grocery item bill. Mother smile and told – These are numbers. Dashmat told – but we don't write like this.

  Then mother told – "These numbers are written in Devanagari numerals. For writing the numbers we use these numerals. Mother read these numbers also. Now Dashmat also wants to learn that numbers . Then mother told international numerals 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are written as ०, १, २, ३, ४, ५, ६, ७, ८ and ९ respectively in Devanagari . Mother showed calender, Ramu kaka's shop bill and some other things too, in which the numerals are written in Devanagari numerals**.**

  Till now you have learnt addition, subtraction, multiplication and division in international system and you have also recognize Devanagari numerals**.** Now do these exercise to identify them properly.

  Discuss with your teacher if you have any difficulty.

Fill this table with remaining numbers.

१									६१
	२२								
४									
	१५							८५	
		३६							
७			४७						
६									
		३०			७०		१००		

Remember that addition, subtraction, multiplication and division of Devanagari numerals are similar as you solve in international numerals.

Let us do -
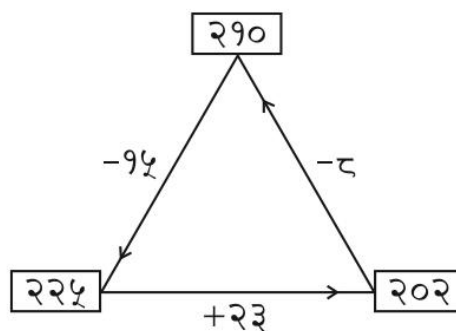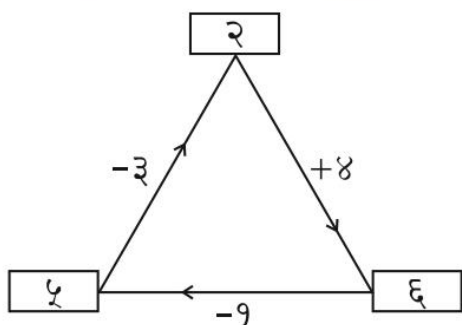
Now, Make your own questions -
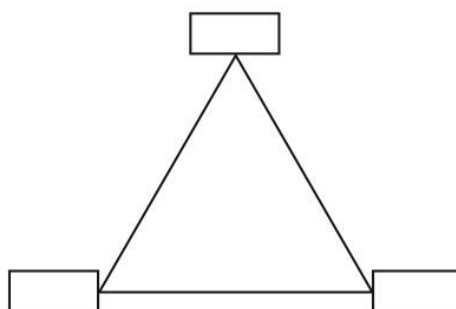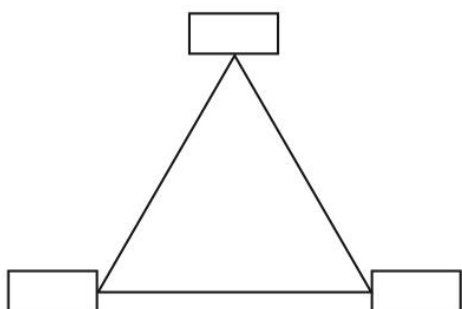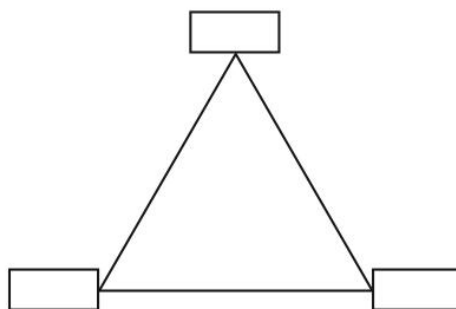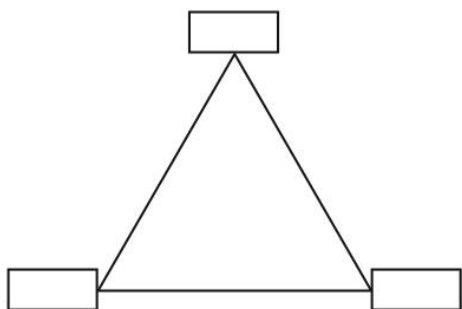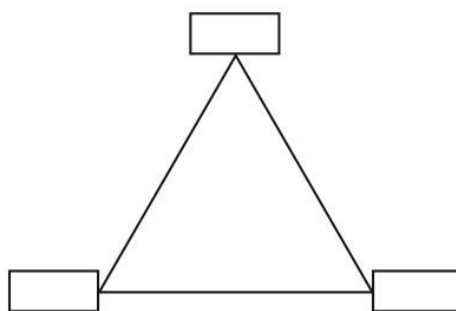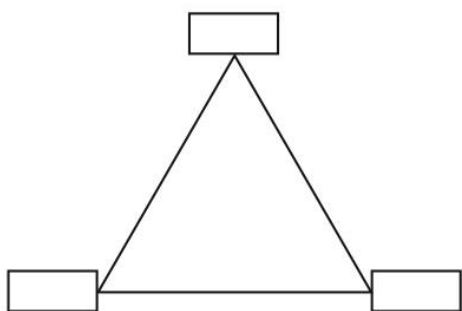
If needed, take your teacher's help -

You are given some numbers in figures and words. Look at them and read the names

१२,५००	Twelve thousand five hundred
५२,४५७	Fifty two thousand four hundred fifty seven
९३,५०९	Ninety three thousand five hundred nine
९४,०६०	Ninety four thousand sixty
१०,३२५	Ten thousand three hundred twenty five
२७,६२७	Twenty seven thousand six hundred twenty seven
२०,००५	Twenty thousand five
३०,३६०	Thirty thousand three hundred sixty
०४,२५२	Four thousand two hundred fifty two

Write the given numbers in words:

६०,६३२	. . . .
७६,१८०	. . . .
५८,१५१	. . . .
६५,८३६	. . . .
०६,४२४	. . . .
१८,३८१	. . . .
७७,१२४	. . . .
४५,८६४	. . . .
८६,६६१	. . . .

Place value

Example 1 : Write the place value of each digit of ૪૮,૫૬૭ and write it in the expanded form.

Solution :

Digit	position	place value
૭	Ones	૭ × ૧ = ૭
૬	Tens	૬ × ૧૦ = ૬૦
૫	Hundreds	૫ × ૧૦૦ = ૫૦૦
૮	Thousands	૮ × ૧૦૦૦ = ૮૦૦૦
૪	Ten thousands	૪ × ૧૦૦૦૦ = ૪૦૦૦૦

The expanded form of ૪૮,૫૬૭ = ૪૦,૦૦૦ + ૮,૦૦૦ + ૫૦૦ + ૬૦ + ૭

Write the place value of each digit of the given numbers and write the expanded form too :

(૧) ૨૫૪૬૨ (૨) ૮૨૫૭૪ (૩) ૩૪૦૭૬

(૪) ૪૦૭૭૦ (૫) ૫૦૦૭૮ (૬) ૬૩૫૦૬

Make some numbers of 5 digits and write the place value of the digits and write the expanded form of each.

Write the numbers which come just before and just after:

-------------- ૬૮૨૬૭ --------------

-------------- ૫૦૬૩૨ --------------

-------------- ૪૬૨૬૧ --------------

-------------- ૧૫૮૭૭ --------------

-------------- ૧૪૫૦૬ --------------

The number which comes just before is called the predecessor of the given number.

The number which comes just after is called the successor of the given number.

Now answer these:

(૧) Successor of ૬૬ is -------- (૨) Predecessor of ૧૦૦ is ---------

(૩) Successor of ૬૬૬ is ------- (૪) Predecessor of ૧૦૦૦ is---------

The smallest ૩ digit number comes just after the largest ૨ digit number.

The largest ૨ digit number comes just before the smallest ૩ digit number.

So can we say that the smallest ६-digit number comes just after the largest five-digit number? Find out.

Write the following numbers in an increasing order:

9. १५७०५   २५५२५   २०६५०   १५६०५

२. ७७७७७   ७०७७७   ७७०७७   ७७७०७

३. ८५५५८   ८५५८५   ८५८५५   ८८५५५

8. ६०६७६   ८६६७६   ७६६८६   ८७६७६

Write the following numbers in a decreasing order:

9. १७४२६   २७२४६   ३७६४२   ४७५४८

२. ३०६३६   ३५०८५   ०४५४५   ४०५३८

३. ६६७८   ७८६०६   ८१३१६   ५२३७४

8. ३३२२५   ५२२३३   ११११९   १२३८५

Lakh, Ten lakhs, Crore

Now you know how numbers increase. Whenever we reach the tenth beads in any position, we add one bead is the next position instead of १० beads in that position. Each new position has a new name.

We know that:

१० Ones   = १ Ten   १० Tens = १ Hundred

१० Hundreds = १ Thousand   १० Thousands = १ Ten Thousand

This continues even after the ten thousands, also. Let us know the number which come after ten thousand.

१० Ten thousand = १ Lakh   १० Lakh   =   १ Ten lakh

१० Ten lakh = १ Crore   १० Crores =   १ Ten Crores

The numbers given in the table below are written in figures and words. Understand them properly and take the help of your teacher if required.

	Crores		Lakhs		Thousand				
	Ten Crore	Crore	Ten Lakh	Lakh	Ten thousand	Thousand	Hundred	Tens	Ones
७,२५,४२० Seven lakh twenty five thousand four hundred twenty				७	२	५	४	२	०
२५,०४,५६२ Twenty five lakh four thousand five hundred sixty two			२	५	०	४	५	६	२
१०,२७,९८५ Ten lakh twenty seven thousand nine hundred eighty five			१	०	२	७	९	८	५
३,१५,३४,८५९ Three crore fifteen lakh thirty four thousand eight hundred fifty nine		३	१	५	३	४	८	५	६
६४,२४,१५,३७८ Ninety four crore twenty four lakh fifteen thousand three hundred seventy eight	६	४	२	४	१	५	३	७	८

Write the given numbers in figures or words as required

७,२४,५२० . . . .

. . . . Five lakh twenty three thousand seven hundred twelve

२५,५४,३६६ . . . .

. . . . Seventy two lakh six thousand three hundred ten

१,६३,२५,४६५ . . . .

. . . . Three crores twenty two lakhs fourty six thousand

. . . . Seven crores

६०,००,००,००० . . . .

Which number is nearest to which one –

४८
⟵—|—|—|—|—|—|—|—⟶
२० ३० ४० ५० ६० ७०
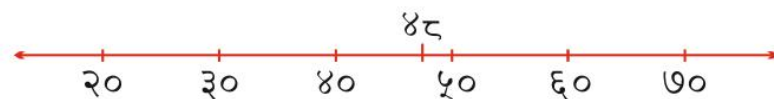
४८ is the number between ४० and ५०

४८ is nearest to which number? ४० or ५० . . . .

The number represent on number line, we find that ४८ is nearest to ५०. Which is nearest ten.

४२
⟵—|—|—|—|—|—|—|—⟶
३० ४० ५० ६० ७० ८० ६०

४२ is the number between ४० or ५०

४२ is nearest to which number?. . . . . . .

The number representation on number line we find that ४२ is nearest to ४०. Which is nearest ten.

१२६
⟵—|—|—|—|—|—|—⟶
८० ६० १०० ११० १२० १३०
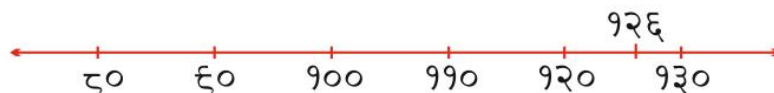
१२६ is nearest to which number?

३५७
⟵—|—|—|—|—|—|—⟶
१०० २०० ३०० ४०० ५०० ६००
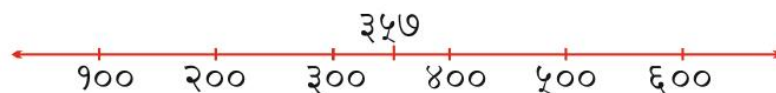
३५७ is between ३०० and ४००, nearest to which number?

Addition & Subtraction

We have done addition and subtraction of numbers in 4 digits in the previous class. Let us revise :

(A) Solve

(१)

$$\begin{array}{r} ३७२१ \\ +\ २५१० \\ \hline \end{array}$$

(२)

$$\begin{array}{r} १५७ \\ ६८३२ \\ +\ ५३१८ \\ \hline \end{array}$$

(३)

$$\begin{array}{r} ६५ \\ ७२१ \\ ५३२८ \\ +\ ३७ \\ \hline \end{array}$$

(४)

$$\begin{array}{r} २७३१ \\ -\ १५४२ \\ \hline \end{array}$$

(५)

$$\begin{array}{r} ६७१० \\ -\ ५२८ \\ \hline \end{array}$$

(६)

$$\begin{array}{r} ५६३२ \\ -\ ३३०७ \\ \hline \end{array}$$

(B) Fill in the boxes with the correct number:

(१)

$$\begin{array}{r} ६\ ८\ ८\ २ \\ +\ २\ \square\ ३\ ८ \\ \hline \square\ ३\ \square\ ० \end{array}$$

(२)

$$\begin{array}{r} ४\ २\ ४\ ५ \\ +\ ३\ १\ \square\ ४ \\ \hline ७\ \square\ ३\ \square \end{array}$$

(३)

$$\begin{array}{r} ५\ ३\ ०\ \square \\ +\ \square\ ८\ \square\ ८ \\ \hline ६\ \square\ ०\ ७ \end{array}$$

(४)

$$\begin{array}{r} ५\ ८\ २\ ० \\ +\ ३\ \square\ ३\ ७ \\ \hline \square\ ८\ \square\ \square \end{array}$$

(५)

$$\begin{array}{r} ८\ ३\ ३\ ८ \\ +\ \square\ ६\ २\ \square \\ \hline ६\ \square\ \square\ ६ \end{array}$$

(६)

$$\begin{array}{r} \square\ ७\ \square\ ६ \\ +\ २\ ६\ ८\ \square \\ \hline ७\ \square\ १\ ७ \end{array}$$

Addition of numbers with 5 digits

See and understand

Example 1:

T.Th	Th	H	T	O
	३	२	७	८	५
+	९	३	२	९	३
	४	५	६	६	८

Example 2:

T.Th	Th	H	T	O
	६	५	८	६	५
+	२	६	०	२	६
	६	१	८	६	१

Add :-

(१) ५६,७८४ and ४८,७६५

(२) २७,८३५ and ३०८

(३) ४०,३१२ and ५०४० and ८०६

(४) ६२२१ and ५६३ और ५१,७३८

(५) ५३८१७ and ३७४०५

Subtraction of numbers with 5 digits

See and understand

Example 1:

T.Th	Th	H	T	O
	६	८	६	३	५
−	४	७	८	१	४
	२	१	१	२	१

Example 2:

T.Th	Th	H	T	O
	३	३	६	१	८
−	१	४	७	०	६
	१	६	२	०	६

Subtract:-

(१) ५६,७२६ from ८०,७८०

(२) ६८,३४६ from ७३,४०५

(३) ४२३६ from ४७,८६५

(४) २३,५६२ from ७८,३५४

(५) ३१,४०५ from ५३,८१७

After having solved the above questions you will have realised that the subtraction and addition of a 5 digit number is exactly the same as you would do with a 4 digit, 3 digit or 2 digit number. In fact, the addition and subtraction of numbers with more than five digits is also the same.

See and understand :

Example 1:

Lakh	Tth	Th	H	T	O
७	५	३	४	२	८
+ १	४	८	५	६	३
६	०	१	६	६	१

Example 2:

Ten lakh	Lakh	Tth	Th	H	T	O
७	६	३	५	४	८	७
+ २	०	८	३	८	०	६
६	७	१	६	२	६	३

Exercise

(१)   २ ६ ३ ७ ० ३
   +   ७ ८ ३ ६ ५

(२)   ५ ५ ० ० ७
   + १ ७ ३ ८ ६ ०

(३)   ३ ७ ८ ३ ५ ४ ६
   + ६ २ ३ ५ ६ २ ७

(४)   ६ ६ ४ २ ५ ५
   + ५ ६ ३ ५ ० ६

(५)   ६ ० २ ७ ६ २ ७
    +   ६ ४ ० ० ०
<hr>
<hr>

(६)   ८ ३ ८ १ २
   + ६ १ ६ ८ ९ ८ १
<hr>
<hr>

(७)   ६ २ ७ ३ ६ ० ४
    +   ४ ० ६
<hr>
<hr>

(८)   ३ ८ ६
   + ८ ६ २ ३ १ ३
<hr>
<hr>

Subtraction of six digit or seven digit numbers

See and understand–

Example 1 :   ७ ८ ६ ५ ३ ८
          – २ ३ ८ ७ १ ५
<hr>
            ५ ४ ७ ८ २ ३
<hr>

Example 2 :   २ ४ ४ ७ ८ २ ३
          – १ ६ ३ ८ ७ १ ५
<hr>
           ० ८ ० ६ १ ० ८
<hr>

Exercise

(१)   ७ ८ ५ ० २ ५ २
    – ६ २ ८ १ ० ४ ६
<hr>
<hr>

(२)   ५ १ २ ४ २ ८ ६
    – २ ५ २ ६ २ १ ४
<hr>
<hr>

(३)   ६ ६ २ ६ ४ ६
      – ६ ६ ६ ६ २ ७
<hr>
<hr>

(४)   ८ ६ ८ २ २ ३
      – २ २ ३ १ ० ४
<hr>
<hr>

(५)   ५ ५ ६ ३ ४ ७ ५
       – ५ ८ ७ ५ २
<hr>
<hr>

(६)   ४ ४ ६ ७ ८ ६ ५
    –   ५ ६ ३ २ ५ १
<hr>
<hr>

Multiplication

Observe, understand and complete the following-

(Diagrams — triangular number puzzles)

Figure 1: top ७ ; ४२ ; ○ ; ६ ; ○ ; ८

Figure 2: top १० ; ○ ; ३०० ; ५ ; ○ ; ३०

Figure 3: top १५ ; ○ ; ○ ; ६ ; १०८ ; १८

(Diagrams — square number puzzles)

Figure 4: ८ — ६२ — ६ ; १२८ ; ○ ; ○ ; १६ — ○ — १८

Figure 5: २४ — ○ — १२ ; ○ ; २१६ ; ○ ; १८ — ○ — ६
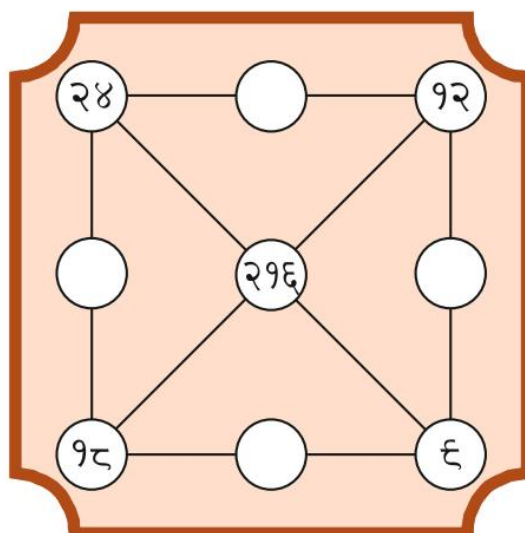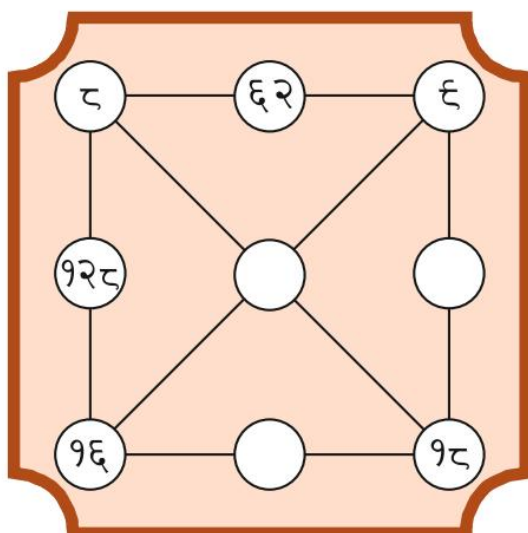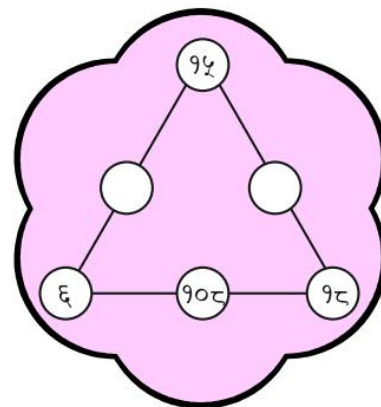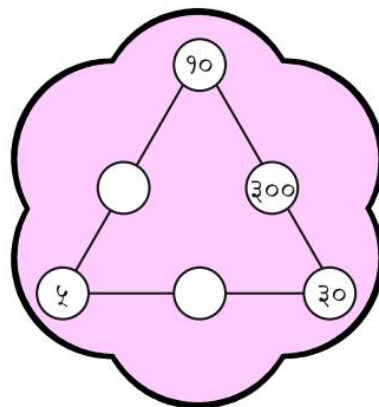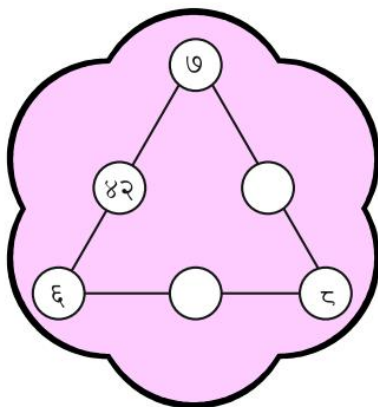
Make some similar questions and give them to your friends to solve.

Let us do and learn-

You have already learnt the method of multiplying a two digit number with another two digit number.

The examples given below will make it clear how you can multiply a three digit number with a two digit number.

Example १ :   ४६३ × ५८ = ?

Solution :

$$
\begin{array}{r}
४६३ \\
\times \ ५८ \\
\hline
३७०४ \\
+ \ २३१५० \\
\hline
२६८५४
\end{array}
$$

४६३ × ५८

= ४६३ × (५०+८)

४६३ × ८ = ३७०४

४६३ × ५० = २३१५०

$$\overline{२६८५४}$$

Example २:   ६४५ × २७३ = ?
Solution :

$$
\begin{array}{r}
६४५ \\
\times \ २७३ \\
\hline
१९३५ \\
४५१५० \\
+१२९००० \\
\hline
१७६०८५
\end{array}
$$

६४५ × २७३

६४५ × (२००+७०+३)

६४५ × ३ = १९३५

६४५ × ७० = ४५१५०

६४५ × २०० = १२९०००

$$\overline{१७६०८५}$$

Now try these :

(১) ৭৩৫ × ২৭   (২) ৬৬৫ × ৫১

(৩) ৫৭৩ × ২৩৬   (৪) ৬৪০ × ৭০

(৫) ৮৬৭ × ৪৫৮   (৬) ৮৮৮ × ২২২

(৭) ৩০৬ × ২০৪   (৮) ৬৪৩৮ × ৩০

(৯) ২২৮৪ × ৭৪৬

Make some similar questions on your own and show the solutions to your teacher.

Statement sums

১. A cooler costs Rs. ৪৩৫০ . If a hostel purchases ১৫ coolers, what would the total cost of the coolers?

২. A cycle costs Rs. ১৬৭৫ . If there are ৪৩ girls in a high school and each child is given one cycle. Find the total amount required for purchasing the cycles.

৩. ৪৬৩৫ metre cloth is made in a factory in one day. What is the total length of cloth produced in the month of January?

৪. A godown has ৮৭৩৪ sacks of grain. If each sack contains ৭৫ kg. of grain. What is the total quantity of the grain in the godown?

৫. Mohan saves Rs. ৭৫০ each month in his savings account. What amount would he saves in 5 years?

Division

You have already learnt how to divide a three digit number by a one digit or a two digit number. Let us see some questions of this type:-

(१) ३६५ ÷ ५ (२) ८१६ ÷ ८ (३) ६७८ ÷ ७

(४) ७३५ ÷ १३ (५) ६२५ ÷ १२ (६) ४३२ ÷ १५

(७) ६६६ ÷ ११ (८) ३८४ ÷ ६ (९) ५८६ ÷ १६

Observe, understand and complete the following :-
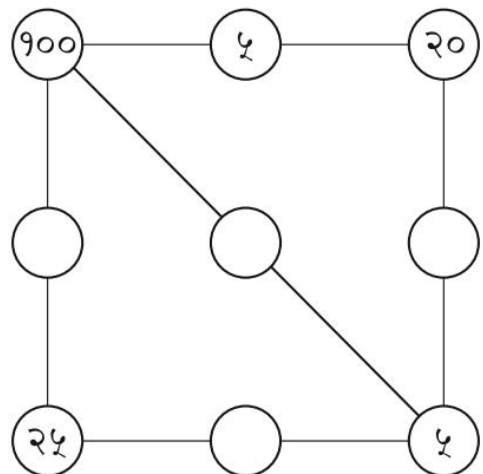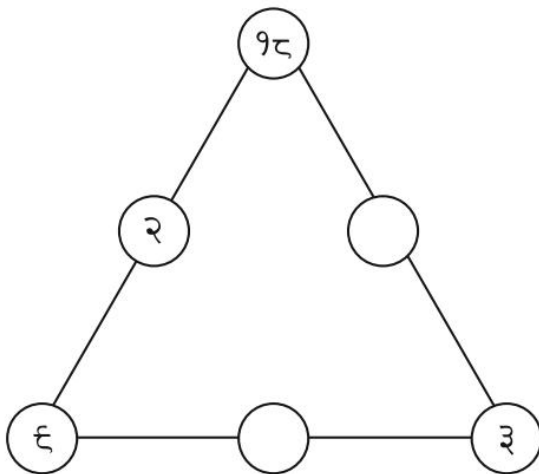
Methods of Vedic Maths

You have already learnt addition, subtraction, multiplication and division. There are a few simple and interesting methods for this processes in Vedic Maths also. Here we will introduce them to you. Before knowing about these methods let us get acquainted with digits.

Digits (Ank)-   0,1,2,3,4,5,6,7,8,9. These are the ten digits. All the numbers are written using these digits.

Bijank-   In Vedic Maths digits from 1 to 9 are called Bijank. To find out the Bijank of any number, the digit of the number are added till a single digit number is obtained.

For example –

To find out the Bijank of 35, we will add its digits.

3 + 5 = 8

So the Bijank of 35 is 8

Similarly -

Bijank of 97

9 + 7 = 16 but 16 has 2 digits So we will add these digits also

1 + 6 = 7

So the Bijank of 97 is 7

Param Mitra Ank –

Any 2 digits whose total is 10 are called Param Mitra of each other.

For example –

1 + 9 = 10

So 1 is Param Mitra of 9

and 9 is Param Mitra of 1

Now let's practice it a bit

Practice

Q. 1 - What are the digits that are used for writing numbers?

Q. 2 - Write the Bijank of following numbers.

(i) 12   (ii) 15   (iii) 17   (iv) 19   (v) 37

(vi) 44   (vii) 56   (viii) 67   (ix) 96   (x) 183

Q. 3 - Write the Param Mitra number of the following numbers.

(i) 2   (ii) 3   (iii) 4   (iv) 5

Ekadhiken Poorven

The meaning of **Ekadhiken Poorven** is take one more than the previous number.

For example - 3 is the ekadhik of 2

Similarly -   4 is the ekadhik of 3

Can you tell the ekadhik of each digit from 1 to 9 ?

Eknyunen Poorven

The meaning of **Eknyunen Poorven** is take one less than the previous number.

For example - 7 is eknyune of 8, Similarly 4 is eknyune of 5

Now you tell the eknyune of all the digit from 1 to 9.

In the methods of Vedic Maths, Ekadhiken Poorven and Eknyunen Poorven are used of many places.

Now tell –

What numbers will you get from the following numbers by doing Ekadhik?

(i) 22   (ii) 43   (iii) 30   (iv) 58

Sometimes it is necessary to do Ekadhik or Eknyun more than once.

For example –

We get 13 by doing Ekadhik of 12 and 14 when we again do Ekadhik of 13 that is get 14 when we do Ekadhik of 12 twice.

Now lets do Eknyune of 12 twice.

We get 11 by doing Eknyune and 10 when we again do Eknyun of 11 that is we get 10 when we do Eknyune of 12 twice.

What numbers we will get when we do Ekadhik of these numbers thrice?

      (i) 23   (ii) 15   (iii) 36   (iv) 42

Choose some numbers on your own and practice Ekadhik of these numbers.

Now tell –

What numbers will you get by doing Eknyunen twice?

      (i) 16   (ii) 30   (iii) 67   (iv) 75

What numbers will you get from these numbers by doing Eknyunen thrice?

Choose some numbers on your own and practice doing Eknyune twice or thrice.

Addition with the help of Param Mitra.

If we have to add 1,2 or 3 to any digit, we can do it by doing Ekadhik. But if both the digits are greater than 5, it is easy to add with the help of Param Mitra.

Lets, look at an example.

$$
\begin{array}{r}
9 \\
+\ 7 \\
\hline
\end{array}
$$

Here we have to add 9 and 7. Param Mitra Ank of 9 is 1.

So we taken 1 from 7 and add it to 9.

Now 9 + 1 = 10

And taking out 1 from 7 makes it 6. By adding 6 to 10, we get 16

i.e.

$$
\begin{array}{r}
9 \\
+\ 7 \\
\hline
16
\end{array}
$$

Similarly practice addition with the help of Param Mitra.

      (i) 7 + 8   (ii) 8 + 6   (iii) 9 + 8   (iv) 6 + 9

In a similar way, take two digits greater than 5 and try adding them with the help of Param Mitra.

Ekadhik sign {One more} Addition by (.)

You know about addition with carry. Let us from here. Take an example

$$\begin{array}{r} 5\ 4 \\ +1\ 8 \\ \hline \end{array}$$

Solve these

(1)
$$\begin{array}{r} 5\ 4 \\ +\ 1\ 8 \\ \hline 2 \end{array}$$

12 is obtain by addition of unit digits (4+8)

Unit digit 2 of this addition is written as its sum and carry 1 is written upon the 5 in ten's column.

(1)
$$\begin{array}{r} 5\ 4 \\ +\ 1\ 8 \\ \hline 7\ 2 \end{array}$$

1+5+1=7 Is written as sum of ten's digit.

Sum 72 is obtained

If carry obtained from addition of unit place digit 1 is written in the from of point in ten's column then also sum is as usual. See this addition again.

$$\begin{array}{r} 5\ 4 \\ +1\ 8 \\ \hline \end{array}$$

Addition of 4 and 8 gives 12

$$\begin{array}{r} 5\ 4 \\ +\dot{1}\ 8 \\ \hline 2 \end{array}$$

Write 2 of 12 as addition of unit digits and mark carry 1 as one point above 1 of ten's place digit. This point is known as Ekadhik sign(.).

$$\begin{array}{r} 5\ 4 \\ +\dot{1}\ 8 \\ \hline 7\ 2 \end{array}$$

Now add ten's place digits 5+(.)+1=7{count (.) as1}

Total 72 is obtained

Let us one more example

Example2   Solve these

$$\begin{array}{r} 4\ 6 \\ +2\ 4 \\ \hline \end{array}$$

$$\begin{array}{r} 4\ 6 \\ +\dot{2}\ 4 \\ \hline 0 \end{array}$$

Add 6 and 4 of unit place. Will get 6+4=10

Write 0 of 10 of addition in unit column.

```
   4  6
 + 2̇  4
 ─────
   7  0
```

Make carry 1 as(.) above 2.

Now add ten's digits. 4+(.)+2=7 Count (.)as1. Total addition 70 obtained.

This method is easier for addition of more than two numbers

Example 3 Solve these
```
               2  7
               4  8
            + 1  9
            ──────
```

```
2      7
 ̇
4      8 ┐  7+8=
             15
 ̇
1      9 ┐  5+9 =
             14
9      4
```

Add 7 and 8 of unit,15 obtained. Mark a dot(.) for 1 of 15 in the form of ekadhik sign above 4 and add 5 and 9. 14 obtained. Again mark a dot (.) for 1 of 14 as ekadhik sign above 1 of ten's column.

Write 4 as result of addition. Now add digit of ten's 2+(.)+4+(.)+1=9

Example 4 Solve these
```
               1  8
               2  5
            + 1  9
            ──────
```

Solution :
```
   1      8  8+5=
    ̇            13
   2      5
 + 1      9+
```

```
   1      8
    ̇
   2      5
    ̇
 + 1      9 ┐ 9+3=
              12
          2
```

```
   1      8
    ̇
   2      5
    ̇
 + 1      9        1 + (·) + 2 + (·) + 1 = 6
 ──────
   6      2
```

Exercise

Add with Ekadhik sign

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

Subtraction with Ekadhik sign {one more sign}

Problems of subtraction where borrowing of number is required. we use Ekadhik sign for subtraction. Here we have to use one more concept Parammitra of vedic maths. (Any two number whose sum is 10, are called as parammitra. Like 3 is Parammitra of 7 and 7 is Parammitra of 3 since 3+7=10. In this manner 6 and 4 are Parammitra. 5 is Parammitra of itself)

Let us understand this process with an example.

Example 1.   Solve these $\begin{array}{r} 3\ \ 6 \\ -1\ \ 7 \\ \end{array}$

$\begin{array}{r} 3\qquad 6\ _{+3} \\ -\overset{.}{1}\qquad 7 \\ \hline 9 \end{array}$

7 can not be subtracted from6. Add Parammitra of 7, 3 to 6. It gives 9. Write it below as result and mark ekadhik sign above1. Now subtract (.)+1 means 2 from 3. 1 obtained. Write it below as result. Solution 19 obtained.

$\begin{array}{r} 3\ \ 6 \\ -\overset{.}{1}\ \ 7 \\ \hline 1\ \ 9 \end{array}$

Example 2 Solve these $\begin{array}{r} 7\ \ 5 \\ -2\ \ 8 \\ \end{array}$

$\begin{array}{r} 7\qquad 5\ _{+2} \\ -\overset{.}{2}\qquad 8 \\ \hline 7 \end{array}$

8 cannot be subtracted from 5. (add 2 Parammitra of 8 to 5, gives 7) Write it below as result. Mark Ekadhik sign(.) above 2. Subtract (.)+2 means 3 from7. Obtained 4. Write it below as result.

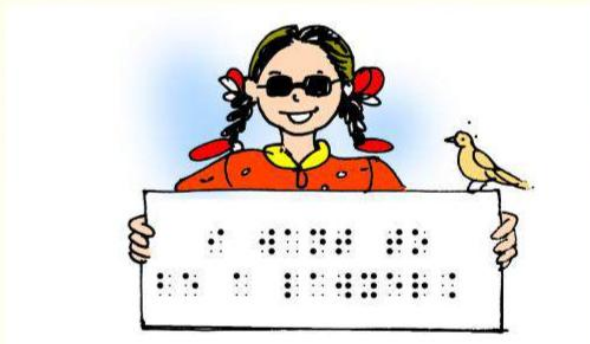$\begin{array}{r} 7\ \ 5 \\ -\overset{.}{2}\ \ 8 \\ \hline 4\ \ 7 \end{array}$

Solution 47 obtained.

Practice

Subtract with Ekadhik sign.

1. 7 2
   − 1 8

2. 3 7
   − 1 9

3. 4 0
   − 2 8

4. 3 5
   − 2 6

5. 4 6
   − 2 8

6. 6 8
   − 3 9

Braille An Introduction

Do you know what is written here?

It is: I want to be a lawyer.

Like devnaagri and Gurumukhi etc. Braille is also a script. Braille script is used by Blind persons to read and write. Braille was invented by Louis Braille in 1829. Braille script is based on six dots. These six dots are referred as the Braille cell. Each cell comprises of one Braille character. To write Braille script Blind person uses Stylus and Braille slate. Braille slate consist essentially of two metal or plastic plates hinged together to permit a sheet of paper to be inserted between the two plates. While writing on a Braille sheet (drawing sheet) it is to be written from right to left and then reverse the normal numbering of the Braille cell. Blind person reads these raised (embossed) dots with the help of their finger tip.

(1)(4)
(2)(5)   Total 63 combinations are possible using these 6 dots.
(3)(6)   Some combinatios given below:

Braille cell

Braille Chart

a	b	c	d	e	f	g	h	i	j

k	l	m	n	o	p	q	r	s	t

u	v	w	x	y	z

A Number sign (⠼) is used before the alphabets 'a' to 'j' to convert them to numbers.

1	2	3	4	5	6	7	8	9	0

If there are Hearing Impaired students in your class:

1. To understand, these students need to see the blackboard, teacher's face, mouth and hands. They learn the pronunciation by looking at the movement of lips so make sure that they sit in the front rows.

2. All new words introduced in the classroom should be written on to the blackboard. If possible make pictures also. Ensure that such students wear their hearing aid at all times.

3. Hearing impaired students generally also have speech related difficulties. Listen to them with patience and give them the opportunity to express themselves.

4. Keep your hands away from your mouth and avoid eating or drinking while talking so that the child is able to observe you.

If there are visually-impaired students in your class, extend your help:

1. Always address visually-impaired students by their names and speak out whatever is written on the blackboard.

2. Familiarize these students with the way to the classroom, staircases, Principal's room, drinking water facility, toilet, playground and library. This will enable them to go about their tasks independently.

3. Visually-impaired students use the Braille script. If your school does not have sufficient resources, contact the nearest DIET office and agencies that provide Braille and audio books, cassettes and CDs.