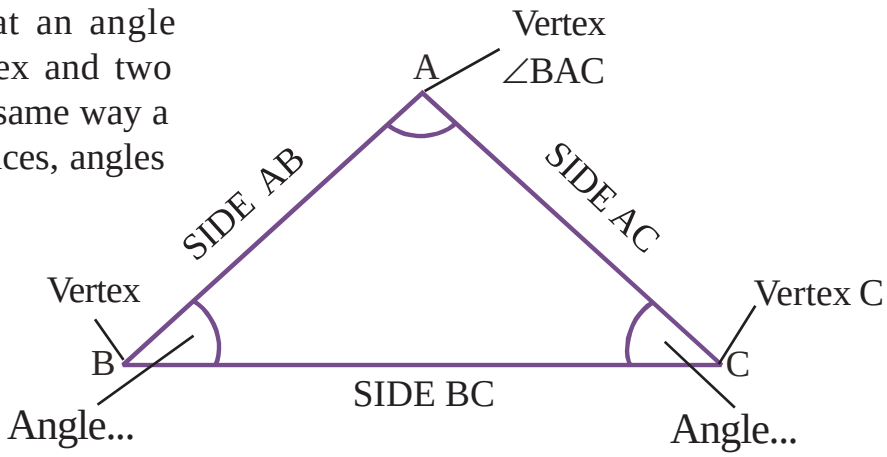
CHAPTER- 11

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.

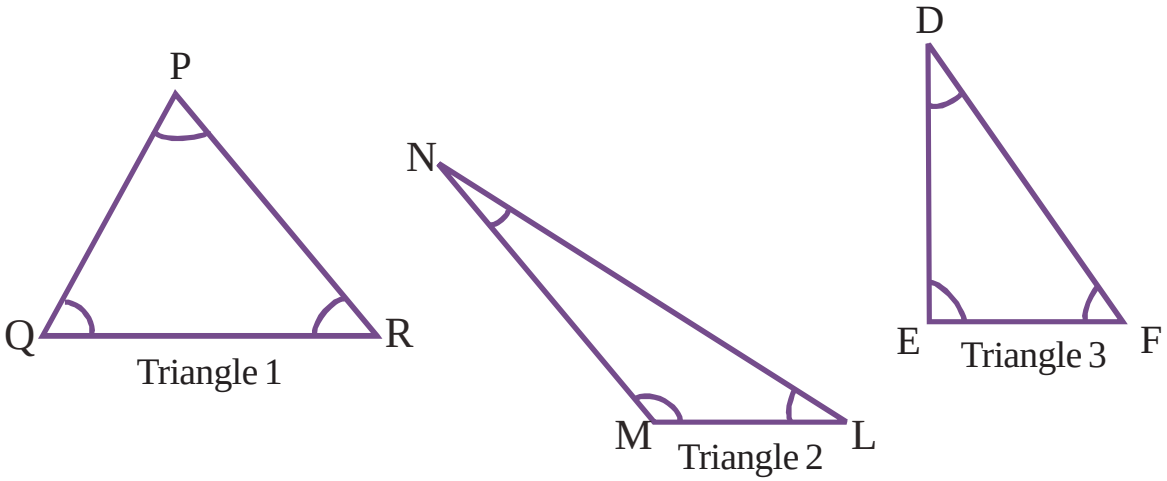
A triangle as the name suggests has three vertices, three angles and three sides.



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 :

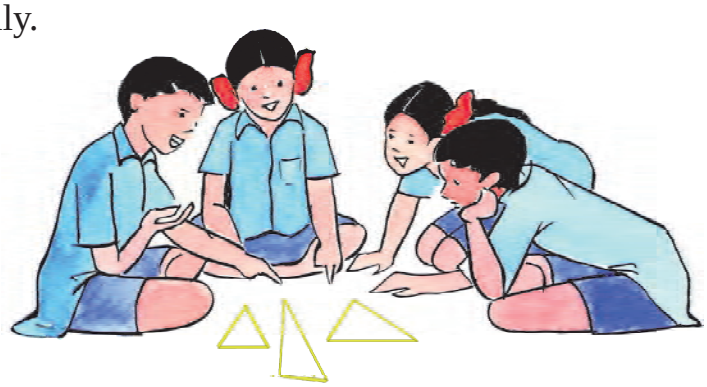


Triangle No.	Name of Triangle	Vertices	Sides	Angles
1	ΔPQR	P,Q,R	PQ, QR, PR	∠PQR, ∠QPR, ∠PRQ

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?

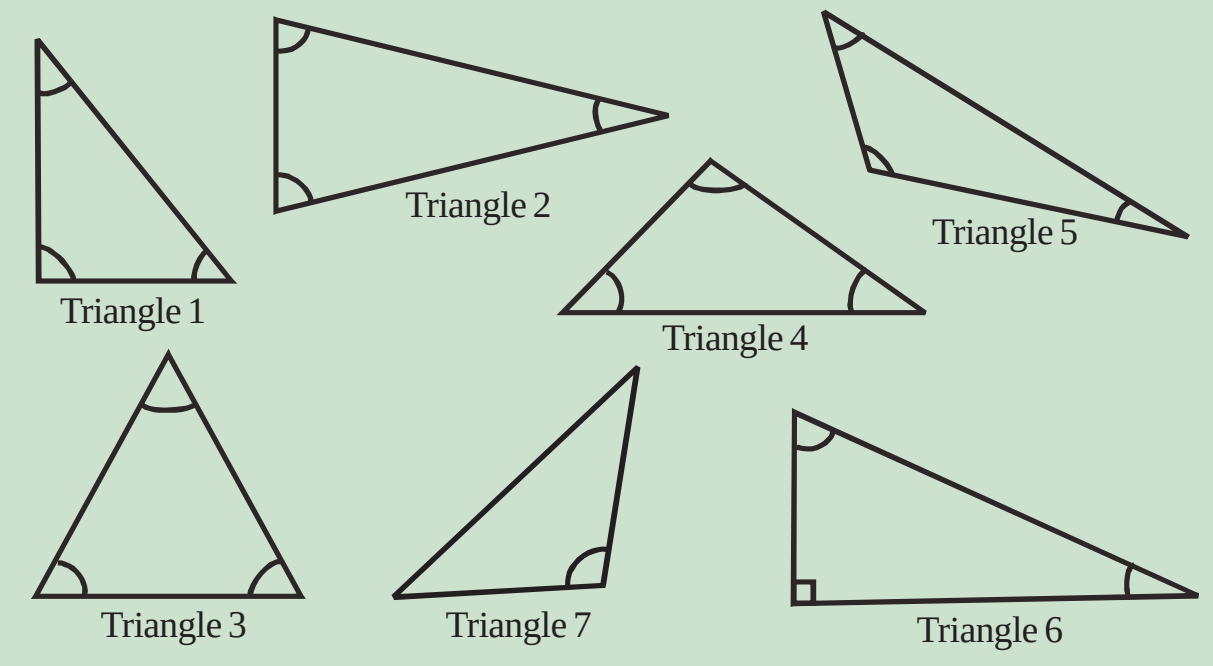
The names, decided according to the length of sides are:

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	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.	∠QRP	=	.....
Side QR	=	..... cm.	∠RSP	=	.....
Side RS	=	..... cm.	∠SPQ	=	.....
Side PS	=	..... cm.	∠PQR	=	.....

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

.....

.....

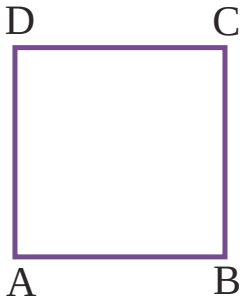
Is there something special about the measures of angles?

.....

.....

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?

.....

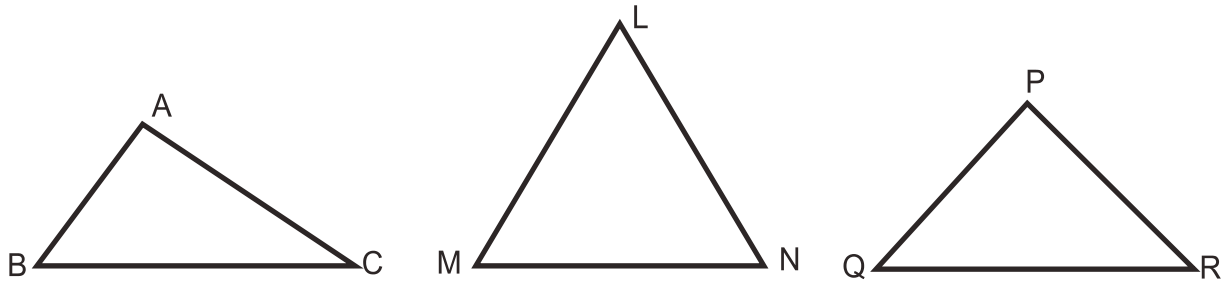
Is there any difference between the two quadrilaterals?

.....

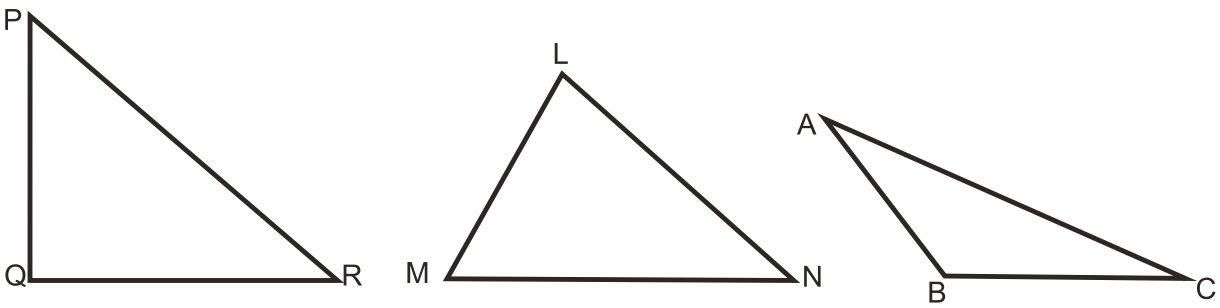
A rectangle in which all sides are equal in length is known as a square.

Exercise

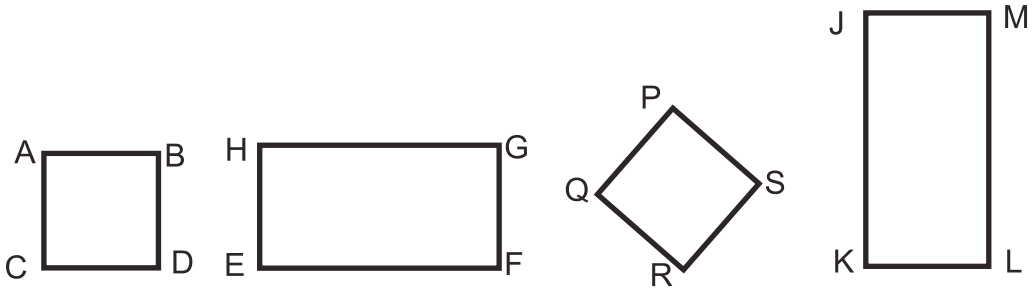
1. Identify the triangle by measuring their sides.



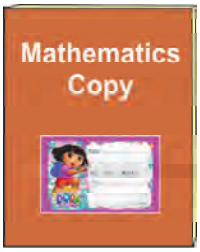
2. Identify the triangle by measuring their angles.



3. Below given are some quadrilaterals. Measuring the sides of these quadrilaterals indentify the squares and rectangles.



Book



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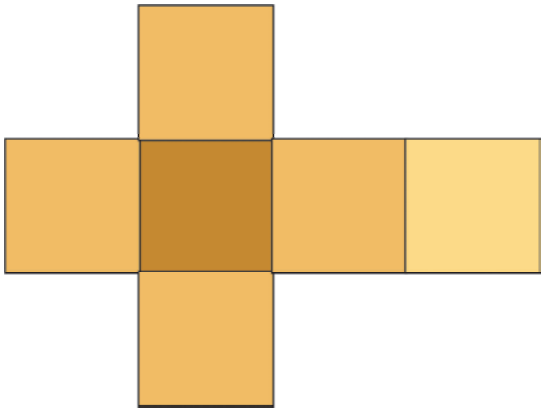
Maths Box

Chalk Box

Bricks

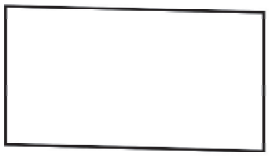
Look at these things carefully. You can see that the surface of each of these is rectangular in shape. Any object with 6 such surface is called a cuboid.

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.

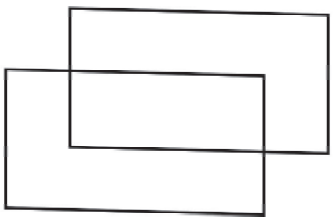


Net of the chalk box.

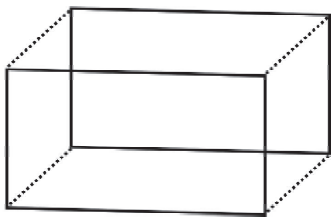
Let us make a figure of cuboid.



step (1)



step (2)

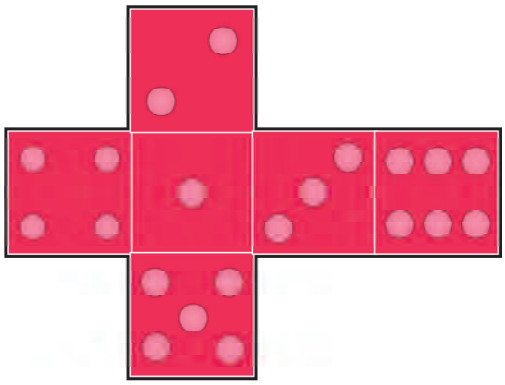


cuboid

step (3)

Cube -

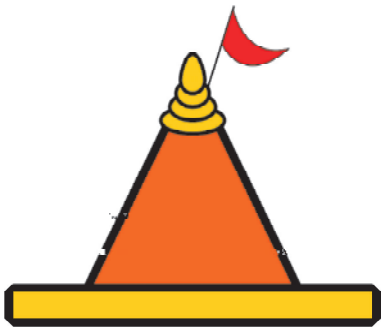
Have you seen a dice? All of its surfaces are square in shape. The shapes of such objects are similar to a cube.



Look at the figures below -

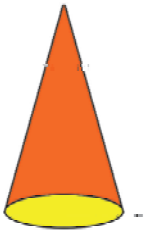
Ice cream cone

Birthday cap

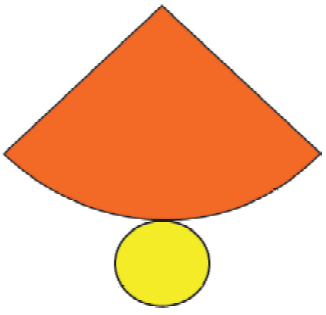


Top of a temple

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



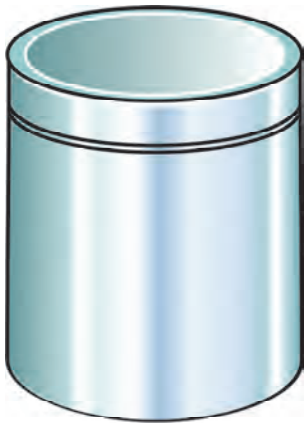
Net of a cone

Cylinder - Look at the figures below -

Battery

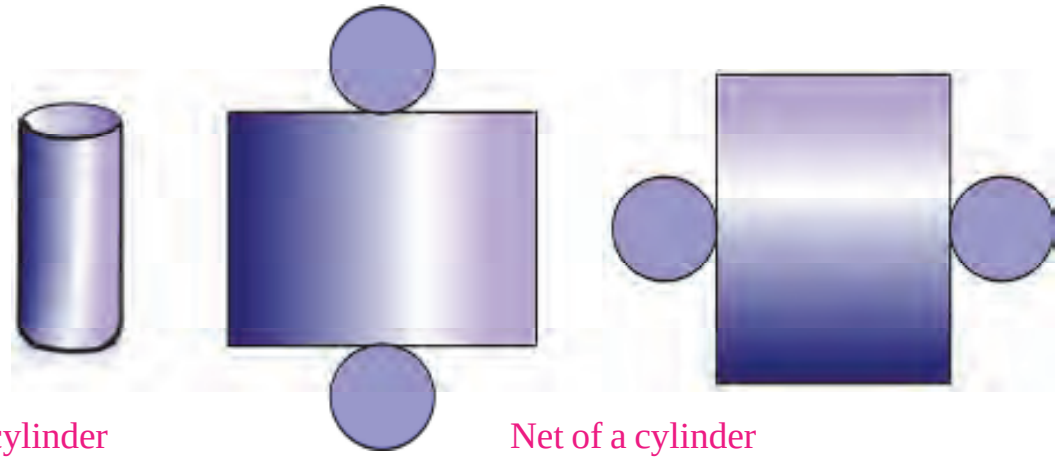
Glass

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

✦✦✦