

Tender Heart High School, Sec-33B, Chandigarh

Class - VI

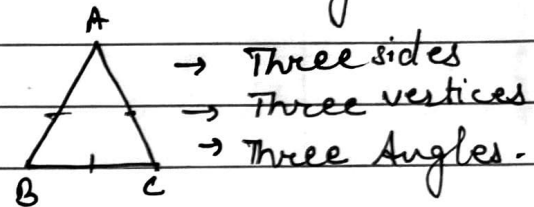
Date - 28-10-24

Subject - Mathematics

Teacher - Ms. Sushma

Chapter - 16 Triangles

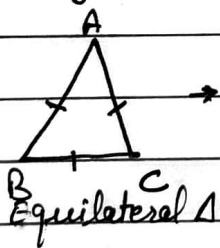
A closed figure bounded by three line segments is called a triangle.



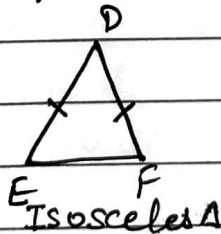
Triangular Region: →

The interior of a triangle together with its boundary is called the triangular region.

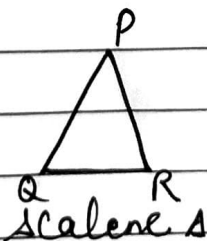
Types of Triangles.



→ If all the three sides of a triangle are equal, then it is called an equilateral triangle.



→ If any two sides of a triangle are equal, then it is called an isosceles triangle.



→ If all the three sides of a triangle are of different lengths, then it is called a scalene triangle.

Two important properties of a triangle.

- * The sum of any two sides of a Δ is always greater than the third side.
- * ~~An~~ in The sum of all the angles of a triangle is always 180°

Exercise 16A

1. Two angles of a triangle are 72° and 63° . Find the third angle.

Soln:- Acc. to angle sum property of triangle:-

$$72^\circ + 63^\circ + \text{third angle} = \cancel{36} 180^\circ$$

$$135^\circ + \text{third angle} = 180^\circ$$

$$\begin{aligned} \text{Third angle} &= 180 - 135 \\ &= 45^\circ \end{aligned}$$

2. The angles of a triangle are in the ratio $2:3:5$. Find the measure of each angle of the triangle.

Soln:- Let the three angles of triangle is $2x, 3x, 5x$

$$2x + 3x + 5x = 180^\circ \quad (\text{Acc. to angle sum property of } \Delta)$$

$$10x = 180^\circ$$

$$x = \frac{180}{10}$$

$$x = 18$$

$$\therefore \text{Three angles are - } \begin{aligned} 2 \times 18 &= 36^\circ, & 5 \times 18 &= 90^\circ \\ 3 \times 18 &= 54^\circ \end{aligned}$$

3. The acute angles of a right triangle are in the ratio 1:2, Find the angles of the triangle.

Soln:- Let the two angles of $\Delta = x^\circ, 2x^\circ$

$$\therefore x + 2x + 90^\circ = 180^\circ \quad (\text{Angle sum property of } \Delta)$$

$$3x + 90^\circ = 180^\circ$$

$$3x = 180 - 90^\circ$$

$$3x = 90^\circ$$

$$x = \frac{90}{3}$$

$$x = 30$$

$\therefore$ The two angles of Δ are $= 30^\circ, 2 \times 30 = 60^\circ$

4. Each of the two equal angles of an isosceles Δ is half the third angle. Find the angles of the Δ .

Soln:- Let the angles of the Δ be x°, x° and $2x^\circ$

$$\therefore x + x + 2x = 180^\circ \quad (\text{Angle sum property of } \Delta)$$

$$4x = 180^\circ$$

$$x = \frac{180}{4} = 45$$

$$x = 45$$

$\therefore$ Angles are :- $45^\circ, 45^\circ, 90^\circ$

Q Which of the following lengths of three line segments can be the lengths of the sides of a triangle?

(i) 5 cm, 4 cm, 9 cm

We know that the sum of any ~~three~~ two sides of a Δ is always greater than the third side.

Here, $(5 \text{ cm} + 4 \text{ cm}) = 9 \text{ cm}$, which is not greater than 9 cm.

So, a Δ ~~which~~ with given lengths of sides is not possible.

(ii) 8 cm, 6 cm, 15 cm

We know that the sum of any two sides of a Δ is always greater than the third side.

Here,

$8 \text{ cm} + 6 \text{ cm} = 14 \text{ cm}$ which is not greater than 15 cm. So, a Δ with given lengths of side is not possible.

(iii) 5 cm, 5 cm, 5 cm

We know that the sum of any two sides of a Δ is always greater than the third side.

Here, $5 \text{ cm} + 5 \text{ cm} = 10 \text{ cm}$ which is greater than 5 cm. So, a Δ with given lengths of sides is possible.