

1. Define Locus.

A locus (plural *loci*) is a set of points that follow a given rule. In geometry, loci help define the positions of points relative to one another or to geometric figures.

For example, if a point moves so that it always stays **5 cm away from a fixed point**, then the **locus** of that moving point is a **circle** with a **radius of 5 cm**, centered at the fixed point.

2. Write types of triangles.**Types of Triangles (by sides):**

- **Scalene triangle:** All sides are of different lengths.
- **Isosceles triangle:** Two sides are of equal length.
- **Equilateral triangle:** All sides are of equal length.

Types of Triangles (by angles):

- **Acute-angled triangle:** All angles measure less than 90° .
- **Obtuse-angled triangle:** One angle measures greater than 90° .
- **Right-angled triangle:** One angle measures exactly 90° .

Note:

- An equilateral triangle is acute angled triangle.
- A right-angled triangle cannot be equilateral.

3. What is the Triangle Inequality Theorem?

The sum of the lengths of any two sides of a triangle is always *greater than* the length of the third side.

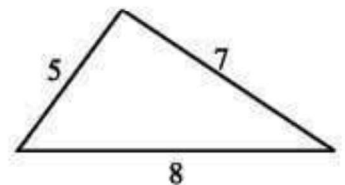
For example, for a triangle with sides 5 cm, 7 cm, and 8 cm:

$$5 + 7 > 8$$

$$5 + 8 > 7$$

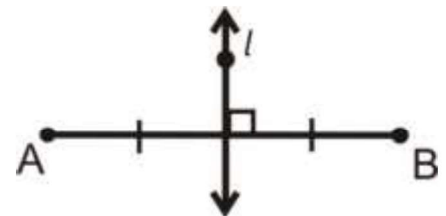
$$7 + 8 > 5$$

So, the triangle satisfies the **triangle inequality rule**.

**4. Define perpendicular bisector.**

A perpendicular bisector is a line that intersects a line segment at right angle and divides it into two equal parts.

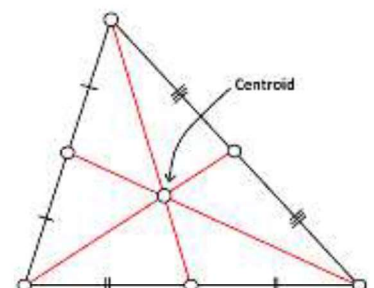
In other words, it intersects the line segment at its midpoint and forms right angles 90° with it.

**5. Define median of a triangle.**

A median of a triangle is a line segment that joins a vertex to the *midpoint* of the side that is opposite to that vertex.

6. What is centroid?

The point of concurrency of the *medians of a triangle* is called centroid of the triangle.

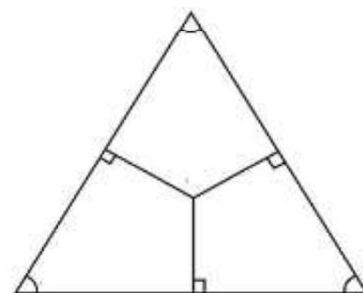


7. What is a point of concurrency?

A point of concurrency is the single point where three or more lines, rays, or line segments intersect or meet in a geometric figure.

8. What is circumcentre?

The point of concurrency of *perpendicular bisector* of the sides of a triangle is called circumcentre.



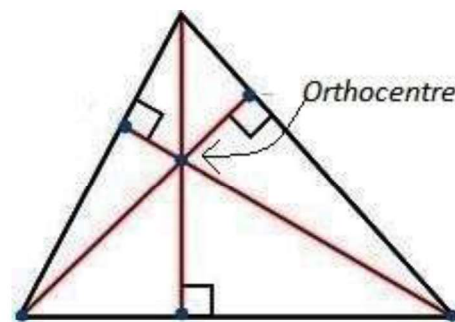
9. What is an angle bisector of a triangle?

An angle bisector of a triangle is a *line* or *ray* that divides an angle into two equal parts, creating two smaller angles that are **congruent** (each having half the measure of the original angle).

10. What is an altitude of a triangle?

Altitude is a ray drawn perpendicular from a vertex to the opposite side of the triangle.

There are three altitudes of the triangle which meet at a single point, i.e. the altitudes of a triangle are concurrent.



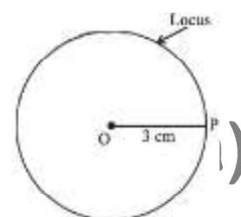
11. What is orthocentre?

The point of concurrency of the altitudes of the triangle is called the orthocentre of the triangle.

12. Define circle as a locus.

The locus of a point whose distance is constant from a fixed point is called a circle.

For example, the locus of a point P whose distance is 3 cm from a fixed point O is a circle of radius 3 cm and centre at O .

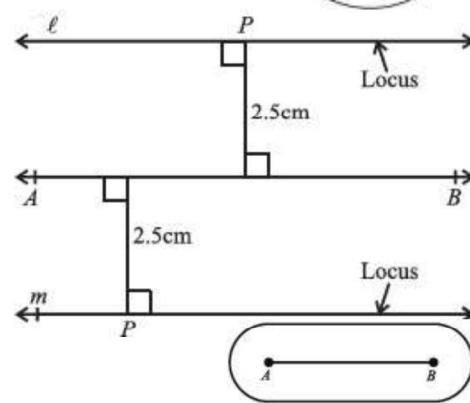


13. Define parallel lines as a locus.

The locus of a point whose distance from a fixed line is constant are parallel lines *i.e.* l and m .

For example, the locus of a point P whose distance is 2.5 cm from a fixed line AB forms two parallel lines.

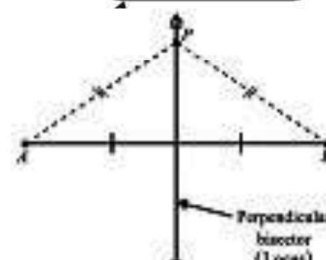
The locus of points equidistant from a line segment forms a long oval-like shape around the line — like a *sausage* or a running track.



14. Define perpendicular bisector as a locus.

The locus of a point whose distance from two fixed points is constant is called a perpendicular bisector.

For example, the locus of a point P equidistant from A and B is the perpendicular bisector of line segment AB .



15. Define angle bisector as a locus.

The locus of a point whose distance is constant from two intersecting lines is called an angle bisector.

For example, the locus of a point P equidistant from lines AB and CD (intersecting at O) is the angle bisector l of $\angle AOC$ and $\angle BOD$.

