

Q: What is the meaning of geometry?

The word geometry is derived from two Greek words namely Geo (*means earth*) and Metron (*means measurement*). In fact, geometry means measurement of earth.

Note: The Greek mathematicians (300 to 600 BC) contributed a lot. In particular, *Euclid's Elements* have been taught all over the world.

Q: Define geometry.

Geometry is the branch of mathematics, which deals with the shape, size and position of geometric figures.

Q: Define triangle.

A plane figure formed by three straight edges as its sides is called a triangle.

Q: Define polygon. Also give its some examples.

A plane figure with three or more straight edges as its sides is called a polygon. For examples, triangle, quadrilateral, pentagon, hexagon, octagon etc.

Q: Define regular polygon.

A figure bounded by equal straight lines which has all its sides and angles equal is called a regular polygon.

Q: Define regular pentagon, hexagon & octagon.

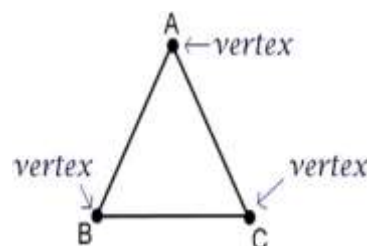
Regular pentagon: A polygon having its five sides are equal in length.

Regular hexagon: A polygon having its six sides are equal in length.

Regular octagone: A polygon having its eight sides are equal in length.

Q: What are the vertices of polygon?

The corners of a polygon are called its vertices. For example, a triangle has three vertices.

**Q: Define locus.**

The path of an object moving according to some rule, is the locus of the object.

Q: Define perimeter.

The perimeter of a closed geometric figure is the sum of its sides.

Q: How can you construct a circle of given radius?

A circle of any radius can be constructed by rotating a compass about a fixed point. The fixed point is the center of circle.

Q: Write the formulae for perimeter of pentagon and octagon.

Perimeter of pentagon = $5 \times \text{length of one side}$

$$P = 5 \times l$$

Perimeter of octagon = $8 \times \text{length of one side}$

$$P = 8 \times l$$

Q: Define circumcircle.

The circle passing through the three vertices of a triangle ABC is known as circumcircle, its radius is called circum radius and center is called circum center.

Q: The length of each side of a regular octagon is 3 cm. Measure its perimeter.

$$\text{length of one side} = l = 3 \text{ cm}$$

As regular octagon has 8 equal sides, so

$$\text{Perimeter of octagon} = 8 \times \text{length of one side}$$

$$P = 8 \times l$$

$$P = 8 \times 3 \text{ cm}$$

$$P = 24 \text{ cm}$$

Q: Define circumscribed circle.

If a circle passes through all the vertices of polygon the circle is said to be circumscribed about the polygon and polygon is said to be inscribed in the circle.

Q: Write down the formula for finding the angle subtended by the side of n -sided polygon at the center of circle.

The formula for finding the angle subtended by the side of a n -sided polygon at the center of circle is $\frac{360^\circ}{n}$.

Note:

$$\text{Interior angle of a polygon with } n \text{ sides} = \frac{180^\circ(n-2)}{n}$$

$$\text{exterior angle of a polygon with } n \text{ sides} = \frac{360^\circ}{n}$$

Q: Define escribed circle.

If a circle touches one side of a triangle externally and other two produced sides internally, is called escribed circle.

Q: The length of the side of a regular pentagon is 5 cm. What is its perimeter?

$$\text{length of one side} = l = 5 \text{ cm}$$

As regular pentagon has 5 equal sides, so

$$\text{Perimeter of pentagon} = 5 \times \text{length of one side}$$

$$P = 5 \times l$$

$$P = 5 \times 5 \text{ cm}$$

$$P = 25 \text{ cm}$$

Q: Define in circle (*inscribed circle*).

A circle which touches the three sides of a triangle internally is known as in circle (*inscribed circle*), its radius is called in-radius and centre is called in-centre.

