INTRODUCTION TO EUCLID'S GEOMETRY.

11.08
12.5.21

Exercise-5.1

Q1) True or False

i) Only one line can pass through a single point.

False,

There can be infinite number of lines that can be drawn through a single point.

ii) There are an infinite number of lines which pass through two distinct points.

False,

Through two distinct points there can be only one line that can be drawn.

iii) A terminated line can be produced indefinitely on both the sides.

True,

A line that is terminated can be indefinitely produced on both sides as a line can be extended on both its sides infinitely.

iv) If two circles, are equal, then their radii are equal.

True,

The radii of two circles are equal when the two circles are equal. The circumference and the centre of both the circles co-incide, and thus, the radius of the two circles should be equal.

v) In fig 5.9, if AB = PQ = XY, then AB = XY

True,

According to Euclid's 1st axiom - "Things which are equal to the same thing are also equal to one another."

Q2) Definitions:-

i) Parallel lines:-

Parallel lines are those lines which never intersect each other and are always at a constant distance perpendicular to each other. Parallel lines can be two or more lines.

ii) Perpendicular lines:-

Perpendicular lines are those lines which intersect each other at right angles, then the lines are said to be perpendicular to each other.

iii) Line segment:-

When a line cannot be extended any further because of its two end points then the line is known as a line segment. A line segment has 2 end points.

iv) Radius of circle:-
A radius of a circle is the line from any point on the circumference of the circle to the center of the circle.

v) Square :-
A quadrilateral in which all the four sides are said to be equal and each of its internal angle is right angles.

Exercise → 5.2

~~Types of angles~~:

1. How would you write Euclid's fifth postulate so that it would be easier to understand?

ans:- Euclid's fifth postulate : If a straight line falling on two straight lines makes the interior angles on the same side of it taken together less than two right angles, then the two straight lines, if produced indefinitely, meet on that side on which the sum of angles is less than two right angles.

i.e., the Euclid's fifth postulate is about parallel lines.

Parallel lines are the lines which do not intersect each other ever and are always at a constant perpendicular distance apart from each other. Parallel lines can be two or more lines.

Q2) Does Euclid's fifth postulate imply the existence of parallel lines? Explain.

Yes, Euclid's fifth postulate does imply the existence of the parallel lines.

If the sum of the interior angles is equal to the sum of the right angles, then the two lines will not meet each other at any given point, hence making them parallel to each other.