Parts of a Circle: Circumference of Circle and Arc of a Circle

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Circumference of Circle

Coin, bangles, bottle caps, the Earth, wheels etc. In layman terms, the round shape is often referred to as a circle. A closed plane figure, which is formed by the set of all those points which are equidistant from a fixed point in the same plane, is known as a circle.

The fixed point is called the center of the circle and the constant distance between any point on the circle and its center is called the radius. The circumference of a circle can be defined as the distance around it.

Circle can be described as the locus of a point moving in a plane, in a way that its distance from a fixed point is always constant.
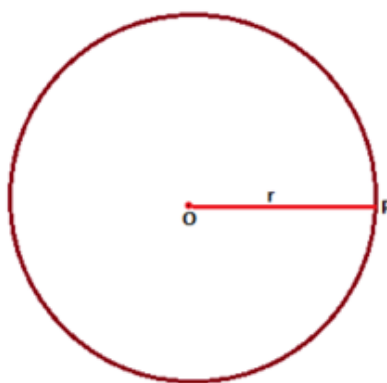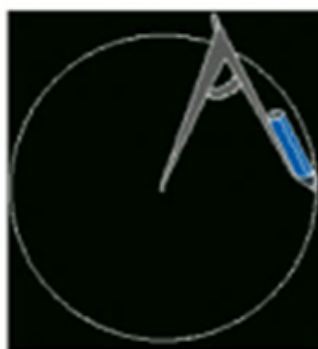

Figure 1 given above represents a circle with radius 'r' and center 'O' . A circle of any particular radius can be easily traced using a compass. The pointed leg of the compass is placed on the paper and the movable leg is revolved as shown. The traced figure gives us a circle.

In the figure shown above, various points are marked lying either outside or inside the circle or on the circle. Based on this any point can be defined as:

- Exterior Point: Points lying in the plane of the circle such that its distance from its center is greater than the radius of the circle are exterior points. A point X is exterior point w. r. t to circle with center 'O' if $OX > r.$ In fig. 2 D, G and B are exterior points.

- Interior Points: Point lying in the plane of the circle such that its distance from its center is less than the radius of the circle is known as the interior point. A point X is interior point w. r. t to

circle with center 'O' if $OX < r$. In fig. 2 $C, F,$ and E are interior points.

- Point on the circumference of a circle: Points lying in the plane of the circle such that its distance from its center is equal to the radius of a circle. In simple words, a set of points lying on the circle are points on the circumference of a circle.

A point X is said to lie on the circumference of a circle with center 'O' if $OX = r$

In fig. 2, points P, S and R lie on the circumference of a circle and on joining these points with center, i.e.. OR, OP and OS will represent the radius of the given circle.

Now that we know about a point and its relative position with respect to a circle let us discuss about a line and its relative position with respect to a circle. Given a line and a circle, it could either be touching the circle or non-touching as shown below:

Secant of a circle   Tangent to a circle   Non intersecting line
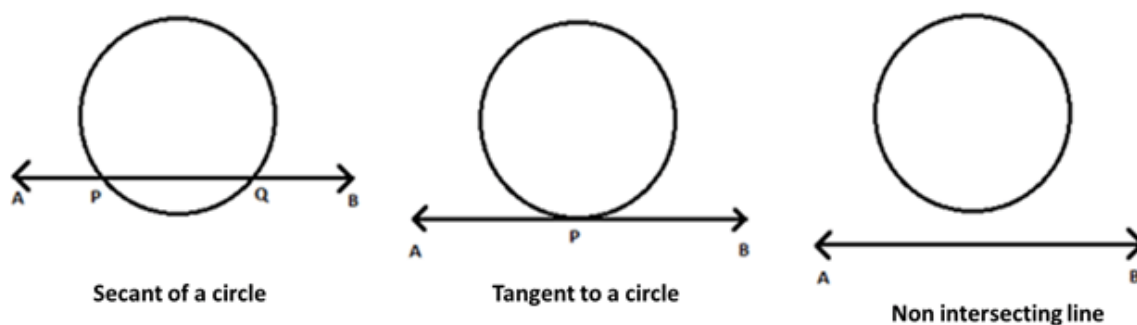
In the first fig. the line AB intersects the circle at two distinct points P and Q. The line AB here is called *secant* of the circle. The line segment PQ is known as the chord of the circle as its endpoints lie on the circumference of the circle. A chord passing through a center of the circle is known as the diameter of the circle and it is the largest chord of the circle.

In the second figure, the line AB touches the circle exactly at one point, P. A line touching the circle at one single point is known as the *tangent* to the circle.

In the last figure the line does not touch the circle anywhere, therefore, it is known as a non-intersecting line.

circular region which is cut off from the rest of the circle by a secant or a chord.

Arc of a Circle

A part of a circumference of the circle is known as an arc. An arc is a continuous piece of the circle.
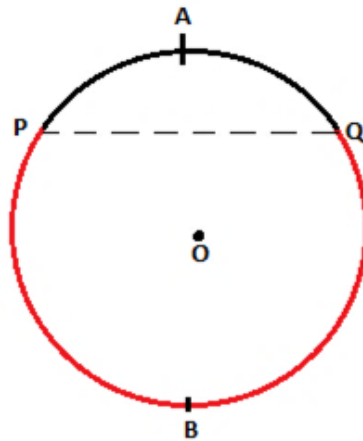
The arc PAQ is known as the minor arc and arc PBQ is the major arc. Part of a circle bounded by a chord and an arc is known as a segment of the circle. The figure given below depicts the major and the minor segment of the circle.
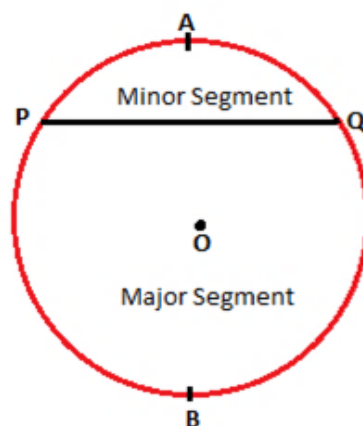
Sector of a circle is the part bounded by two radii and an arc of a circle. In the given fig AOB is a sector of a circle with O as center.
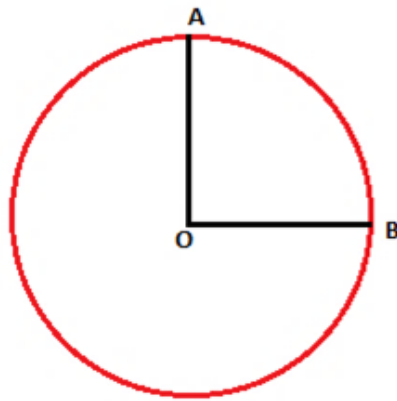
The figure given below illustrates the various terms related to circles as explained above.