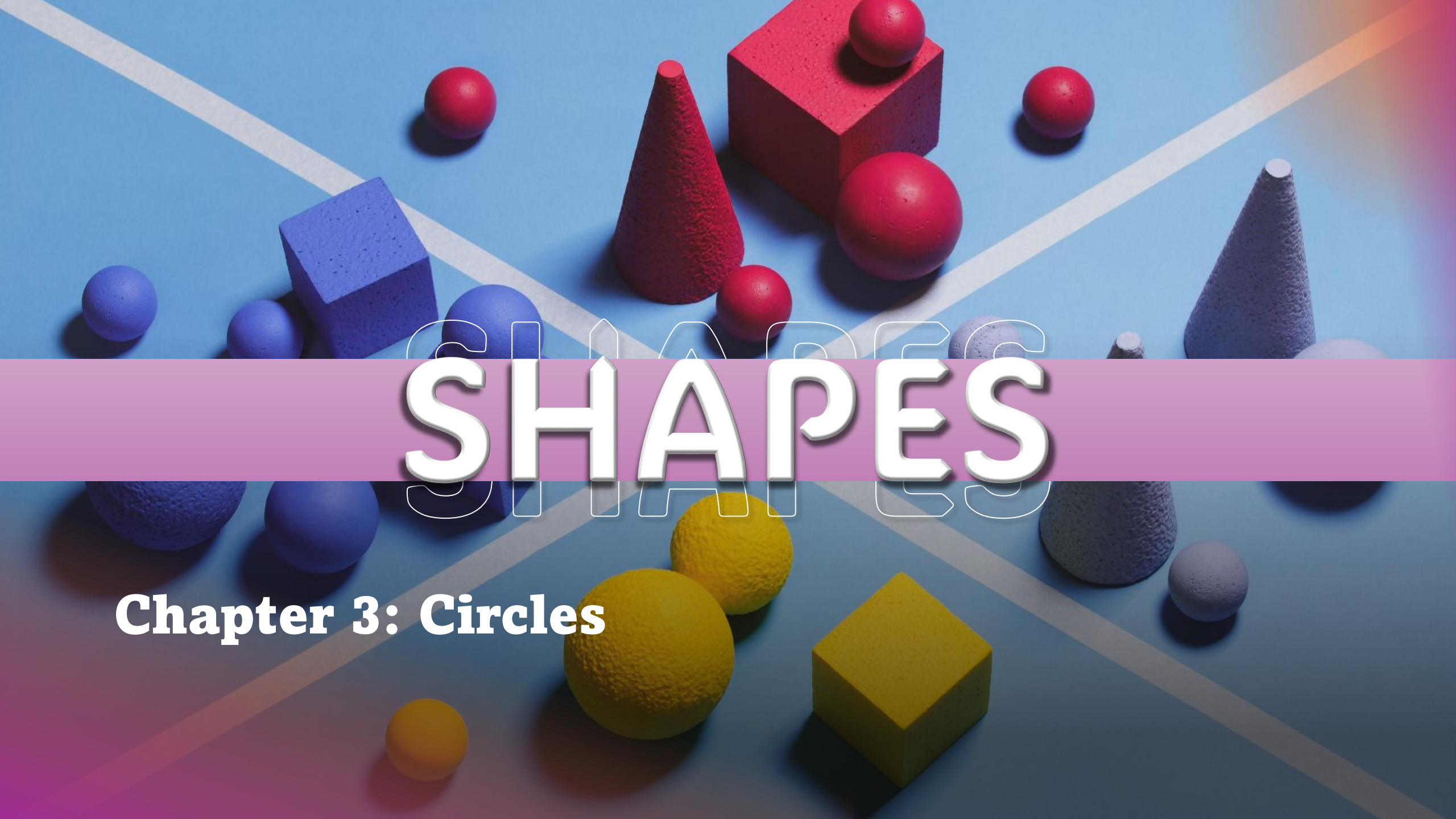
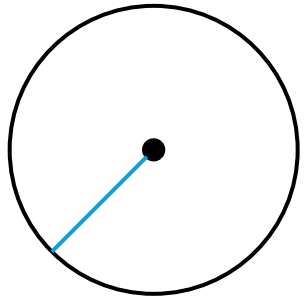


Chapter 3: Circles

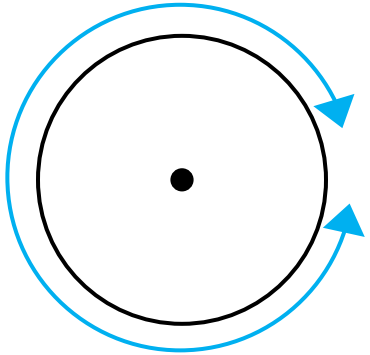
Parts of a Circle

Radius



A straight line that touches circumference of the circle

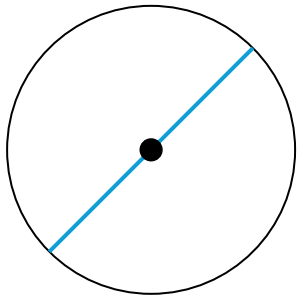
Circumference



Perimeter of a circle

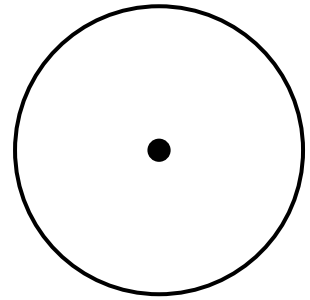
Parts of a Circle

Diameter



A straight line that touches circumference of the circle

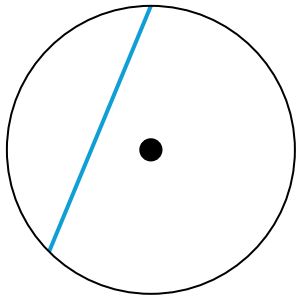
Centre



A fixed point where all points on the circumference are equidistance from it

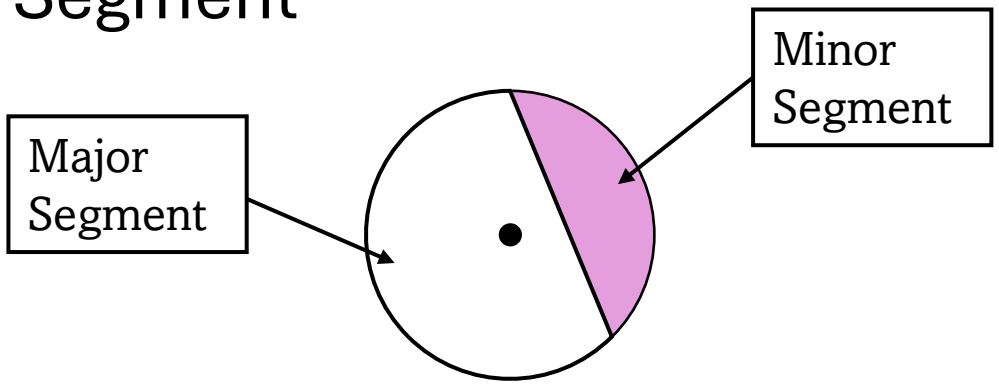
Parts of a Circle

Chord



A straight line that joins at any two points of circumference of the circle

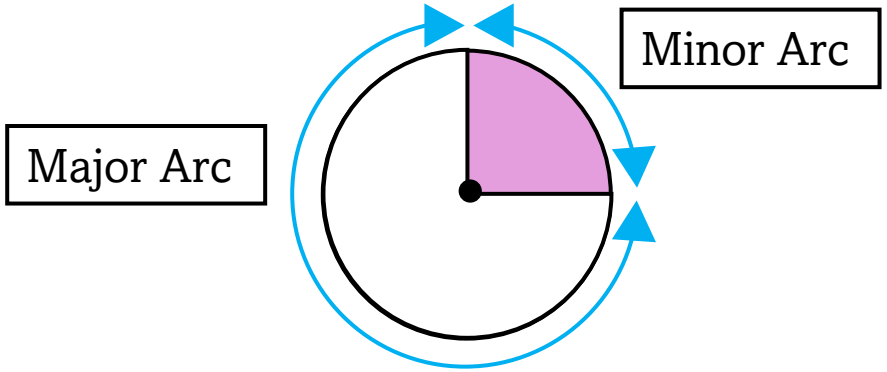
Segment



The region enclosed by a chord and an arc

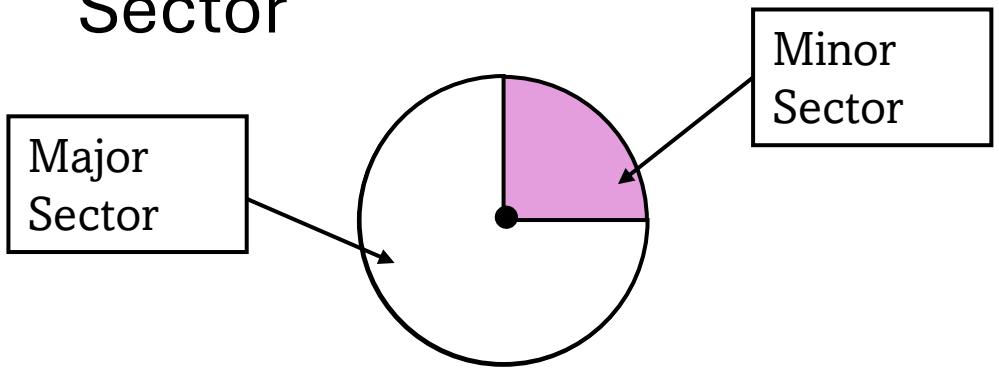
Parts of a Circle

Arc



Part of the circumference

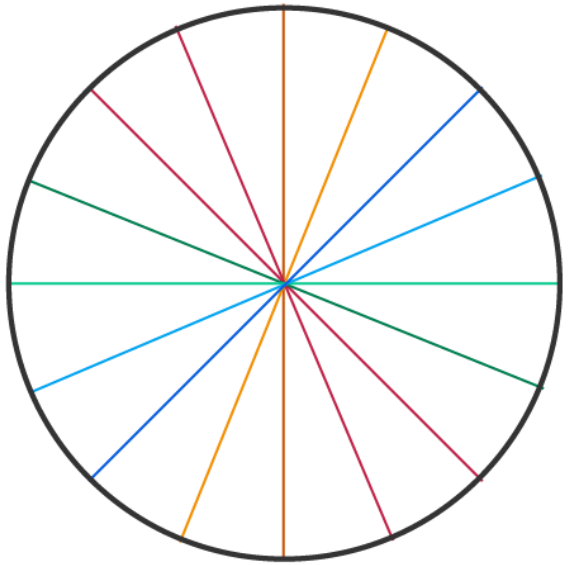
Sector

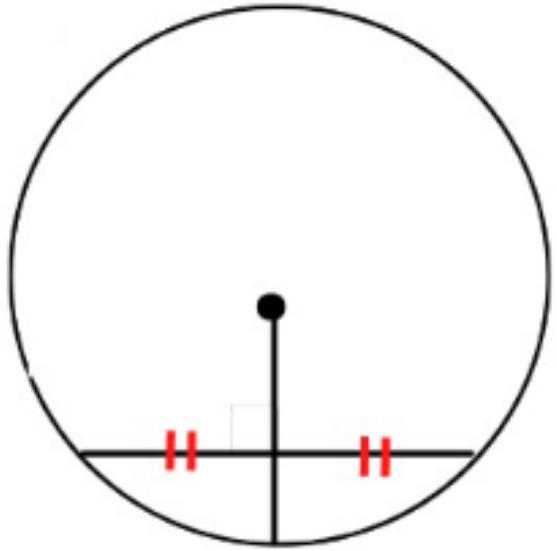


The region enclosed by two radili and an arc

Symmetry & Chords

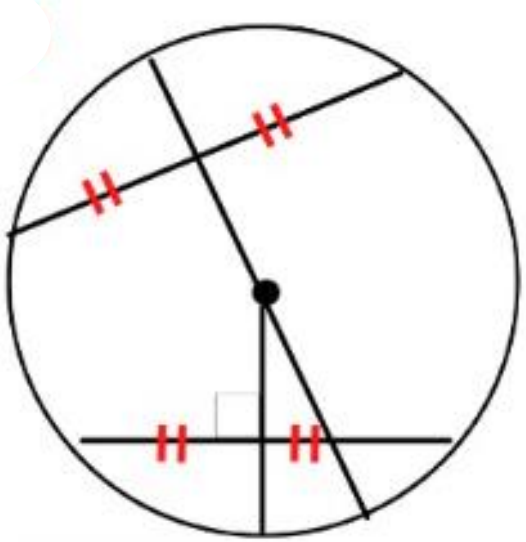
- The diameter of a circle is the axis of symmetry of the circle
- A radius which is a perpendicular to the chord bisects the chord

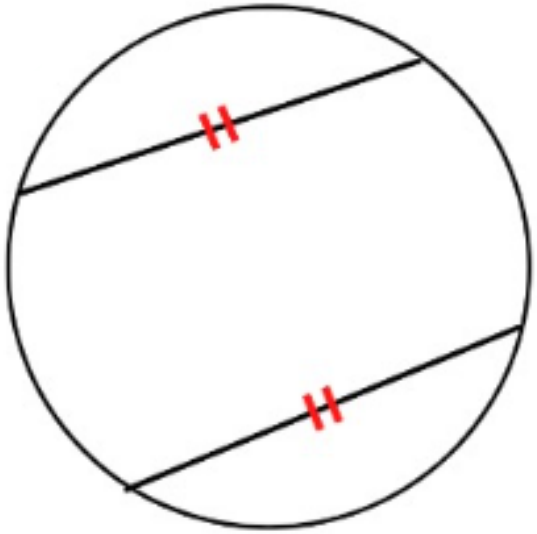




Symmetry & Chords

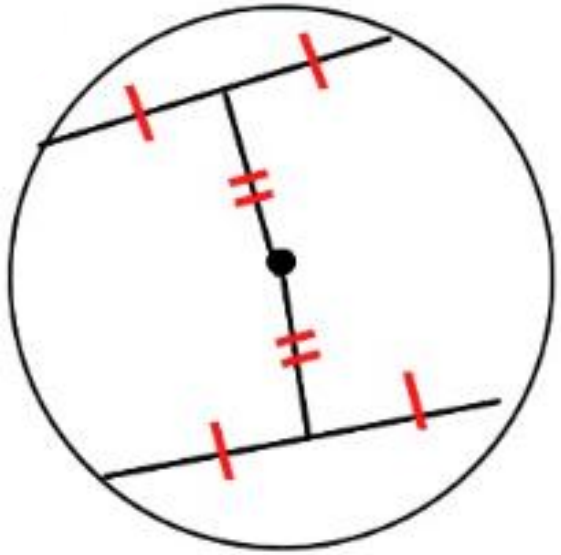
- Perpendicular bisectors of two chords meet at the centre of the circle
- Equal chords or chords of the same length produce arc of the same length





Symmetry & Chords

- Equal chords are equidistant form the centre of the circle
- A perpendicular bisector for any chord will always intersect at the centre of the circle



Area of Circles

- Ratio between circumference and diameter:

$$\frac{\text{Circumference}}{\text{Diameter}} = \pi = 3.142 = \frac{22}{7}$$

- Circumference = **π** x ***diameter***

or

2 x ***radius*** x **π**

Area of Circles

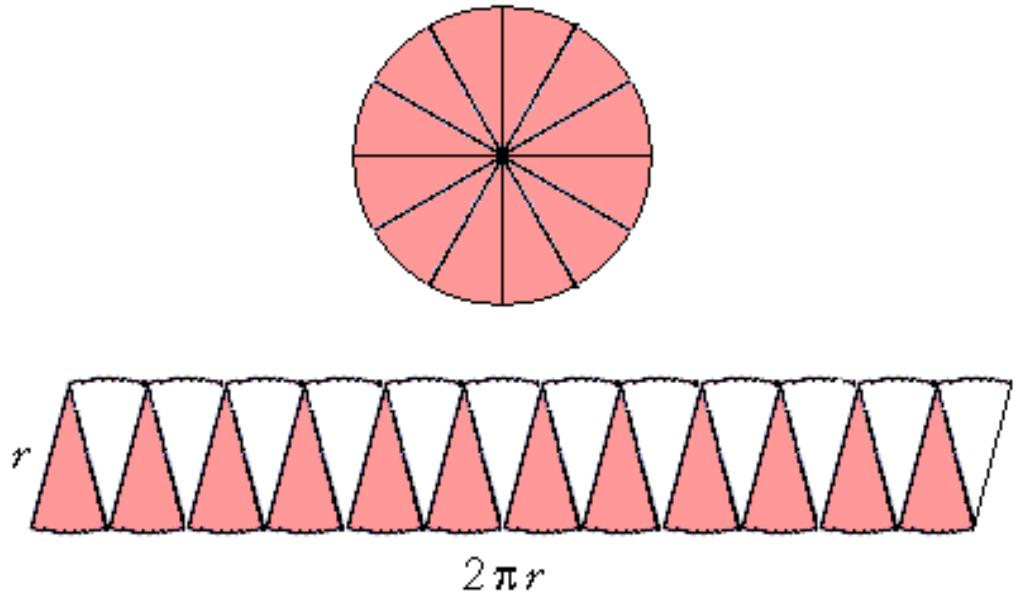
Area of circle = area of rectangle

$$= \text{base} \times \text{height}$$

$$= \frac{1}{2} \times \text{circumference} \times \text{height}$$

$$= \frac{1}{2} \times 2\pi r \times r$$

$$= \pi r^2$$



Therefore, area of circle = πr^2

Area of Circles

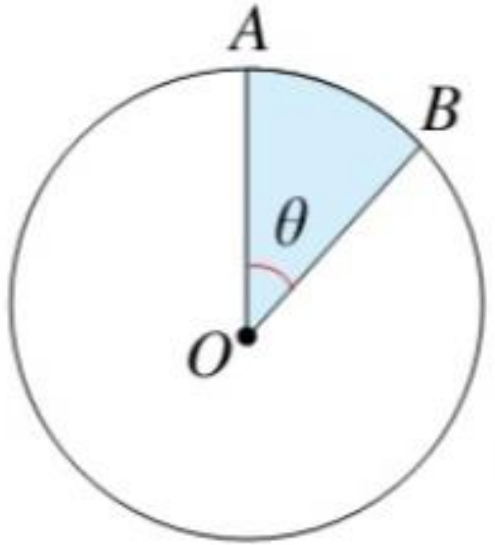
Length of arc in a Circle:

$$\text{Arc length} = \frac{\theta}{360} \times \pi \times d$$

$$\text{Arc length} = \frac{\theta}{360} \times 2 \times \pi \times r$$

θ - angle of the sector

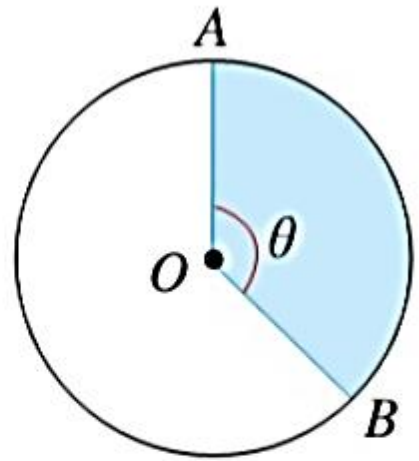
r - radius of the circle



Area of Circles

The area of a sector is a region bounded by an arc and two radii. The area of the sector is proportional to the area of the circle.

$$\frac{\text{Area of sector}}{\text{Area of circle}} = \frac{\text{Angle at centre}}{360°}$$



Therefore,

$$\frac{\text{Area of } AOB}{\pi r^2} = \frac{\theta}{360°}$$