Pre-Algebra
Circle Lengths and Areas

Circumference and Area

$C = 2\pi \cdot r$ is the **circumference** (i.e., the perimeter) of the circle.

$A = \pi r^2$ is the **area** of the circle.

where: r is the radius of the circle.

Length of an Arc on a Circle

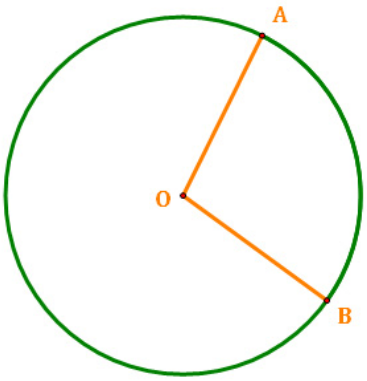
A common problem in the geometry of circles is to measure the length of an arc on a circle.

Definition: An arc is a segment along the circumference of a circle.

$$arc\ length = \frac{m\widehat{AB}}{360} \cdot C$$

where: $m\angle\widehat{AB}$ is the measure (in degrees) of the arc. Note that this is also the measure of the central angle $\angle AOB$.

C is the circumference of the circle.



Area of a Sector of a Circle

Another common problem in the geometry of circles is to measure the area of a sector a circle.

Definition: A sector is a region in a circle that is bounded by two radii and an arc of the circle.

$$sector\ area = \frac{m\widehat{AB}}{360} \cdot A$$

where: $m\angle\widehat{AB}$ is the measure (in degrees) of the arc. Note that this is also the measure of the central angle $\angle AOB$.

A is the area of the circle.