**Sector and Segment of a Circle**

A **sector of a circle** is the region bounded by an arc of the circle and the two radii to the endpoints of the arc. To find the area of a sector of a circle, get the product of the ratio and the area of the circle.

**Example: The radius of circle C is 10 cm. If m*AB* = 60, what is the area of the sector *ABC?***

C

A

B

10 cm

***Solutions:***

a. Determine the ratio.

 b. Find the area (A) of the circle using the equation , where *r* is the length of the radius.

 c. Get the product of the ratio and the area of the circle.

 A **segment of a circle** is the region bounded by an arc and the segment joining its endpoints.

 **The shaded region in the figure below is a segment of circle T. It is the region bounded by PQ and PQ.**

T

P

Q

 **To find the area of the shaded segment in the figure, subtract**

 **the area of the of the triangle PTQ from the area of sector PTQ.**

**Example: If mPQ = 90 and the radius of the circle is 5 cm, find the area of the segment of a circle.**

**Arc Length**

The length of an arc can be determined by using the proportion , where *A* is the degree measure of the

arc, *r* is the radius of the circle, is thearc length. In the given proportion, 360 is the degree measure of the whole circle, while is the circumference.

**Example: An arc of a circle measures 45. If the radius of the circle is 6 cm, what is the length of the arc?**