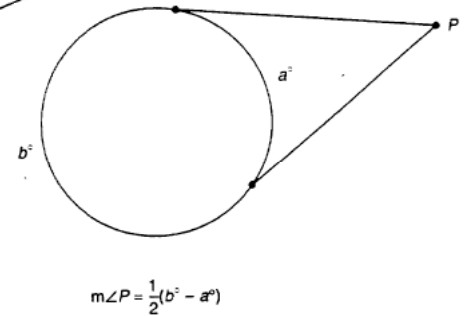
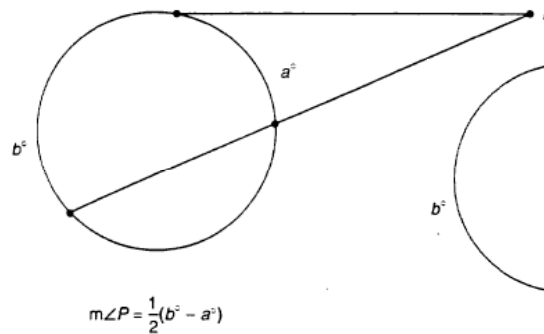
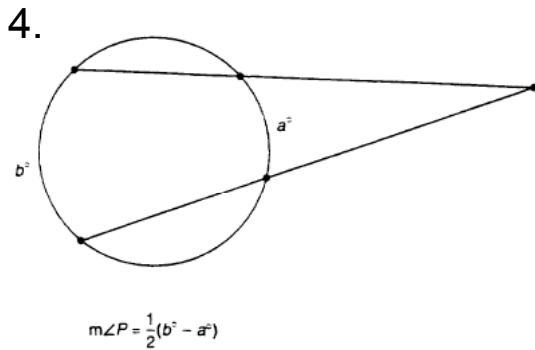
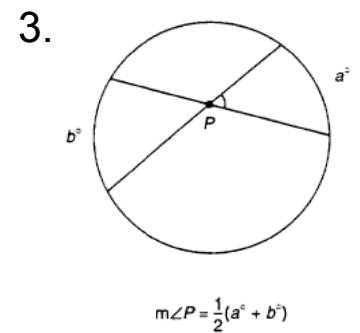
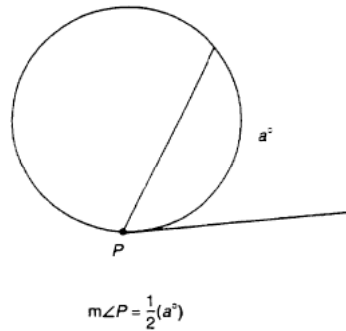
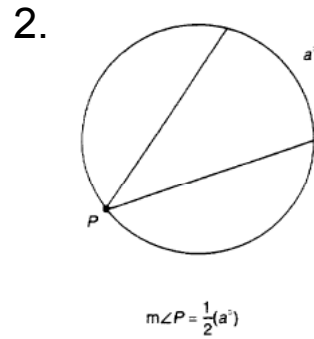
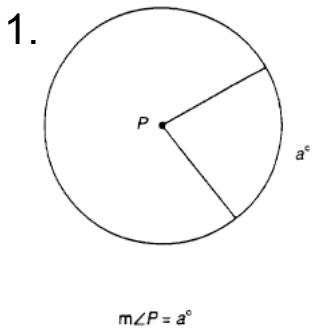


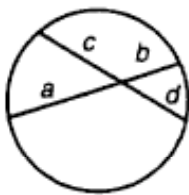
Circles and Angle Measurement

Angle measurement in circles depends on the location of the vertex angle.

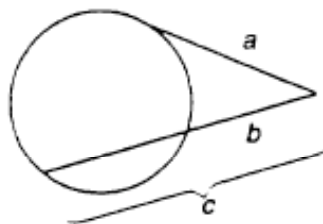
Location of Vertex Angle	Measure of Angle Equals
1. Center of circle	the measure of the intercepted arc
2. On circle	$\frac{1}{2}$ the measure of the intercepted arc
3. Inside circle	$\frac{1}{2}$ the <i>sum</i> of the measures of the intercepted arcs
4. Outside circle	$\frac{1}{2}$ the <i>difference</i> of the measures of the intercepted arcs



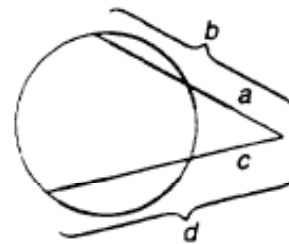
Chord, Tangent, and Secant Relationships



$$a \times b = c \times d$$



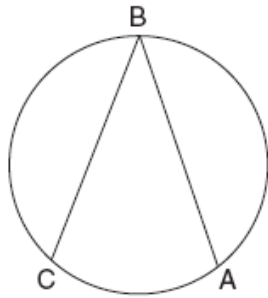
$$a^2 = b \times c$$



$$a \times b = c \times d$$

Examples:

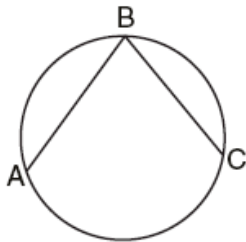
1. The new corporate logo created by the design engineers at Magic Motors is shown in the accompanying diagram.



If chords \overline{BA} and \overline{BC} are congruent and $m\widehat{BC} = 140$, what is $m\angle B$?

- (1) 140 (2) 280 (3) 40 (4) 80

2. In the accompanying diagram, the length of \widehat{ABC} is $\frac{3\pi}{2}$ radians.

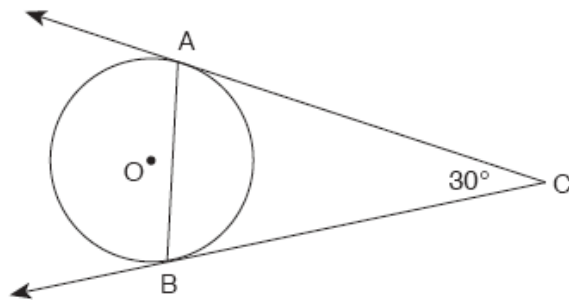


What is $m\angle ABC$?

- (1) 53 (2) 72 (3) 36 (4) 45

(Not drawn to scale)

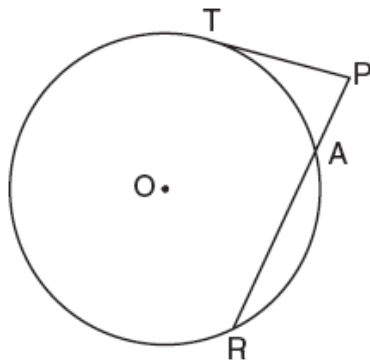
3. The accompanying diagram represents a circular pond O with docks located at points A and B . From a cabin located at C , two sightings are taken that determine an angle of 30° for tangents \overline{CA} and \overline{CB} .



What is $m\angle CAB$?

- (1) 150 (2) 75 (3) 60 (4) 30

4. The accompanying diagram shows a circular part that has rods \overline{PT} and \overline{PAR} attached at points T , A , and R , which are located on the circle; $m\widehat{TA} : m\widehat{AR} : m\widehat{RT} = 1 : 3 : 5$; $RA = 12$ centimeters; and $PA = 5$ centimeters.



Find the measure of $\angle P$, in degrees, and find the length of rod \overline{PT} , to the nearest tenth of a centimeter.