

## Math III Geometry Review

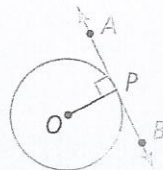
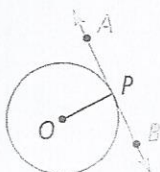
### Circles

Equation of a circle  $(x - h)^2 + (y - k)^2 = r^2$  where  $(h, k)$  is the center and  $r$  is the radius

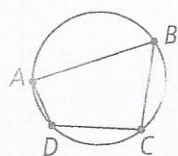
A tangent line and the radius of a circle form a  $90^\circ$  angle.

If ...  
 $\overleftrightarrow{AB}$  is tangent to  $\odot O$  at  $P$

Then ...  
 $\overleftrightarrow{AB} \perp \overline{OP}$

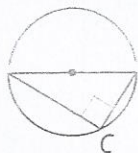


The opposite angles of a quadrilateral inscribed in a circle are supplementary

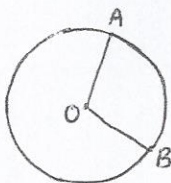


$$\begin{aligned} \angle B + \angle D &= 180 \\ \angle A + \angle C &= 180 \end{aligned}$$

An angle inscribed in a semicircle is a right angle

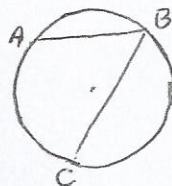


### Central Angle



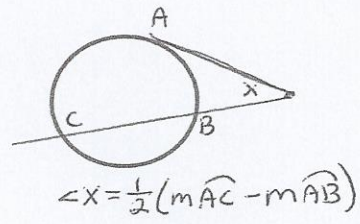
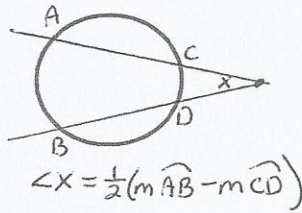
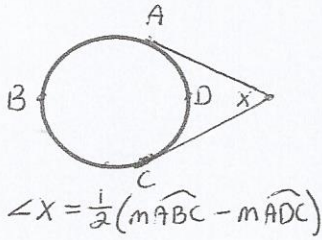
The measure of a central angle  
 is equal to the arc it opens to

### Inscribed Angle



The measure of the inscribed angle  
 is  $\frac{1}{2}$  of the arc it opens to

**Circumscribed Angles**



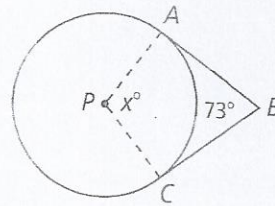
**Area of a sector**

$$\frac{\text{degree}}{360} \pi r^2$$

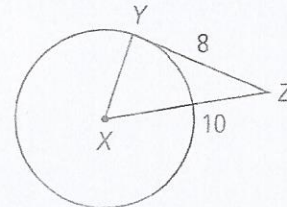
**Length of a sector**

$$\frac{\text{degree}}{360} 2\pi r$$

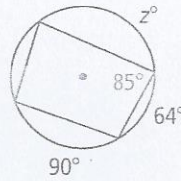
1.  $\overline{AB}$  and  $\overline{BC}$  are tangent to  $\odot P$ . What is the value of  $x$ .  
 A. 73      B. 107      C. 117      D. 146



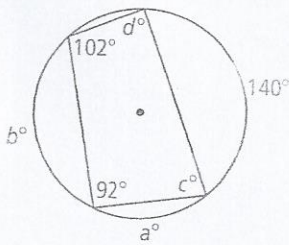
2.  $\overline{YZ}$  is tangent to  $\odot X$ , and  $X$  is the center of the circle. What is the length of the radius of the circle?  
 A. 4      B. 6      C. 12      D. 12.8



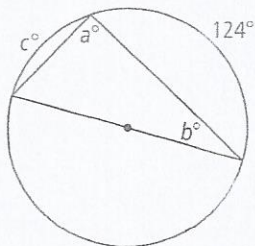
3. What is value of  $z$ ?  
 A. 77      B. 95      C. 126      D. 154



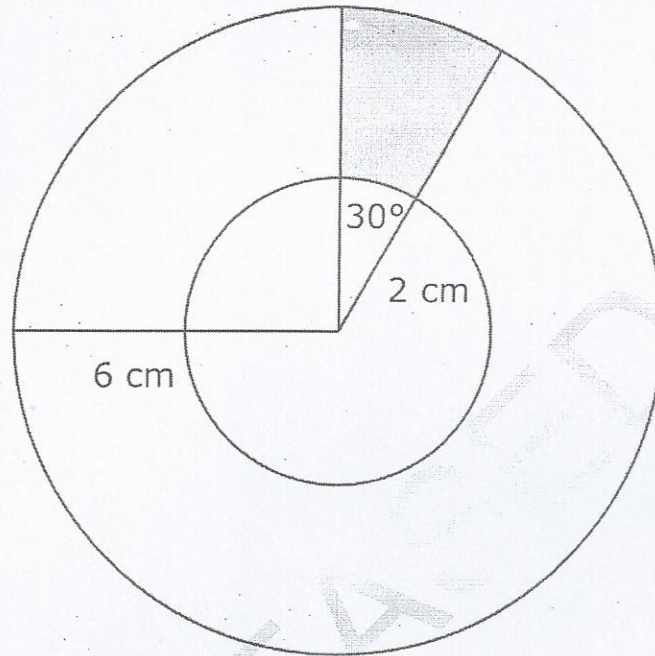
4. What is the value of  $a, b, c,$  and  $d$ ?



5. What is the value of  $a, b,$  and  $c$ ?



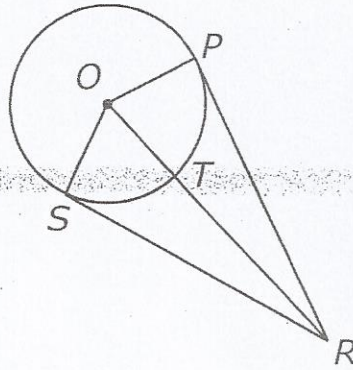
6. In the figure below, the larger circle has a radius of 6 cm, and the smaller circle has a radius of 2 cm.



What is the **approximate** area of the shaded region?

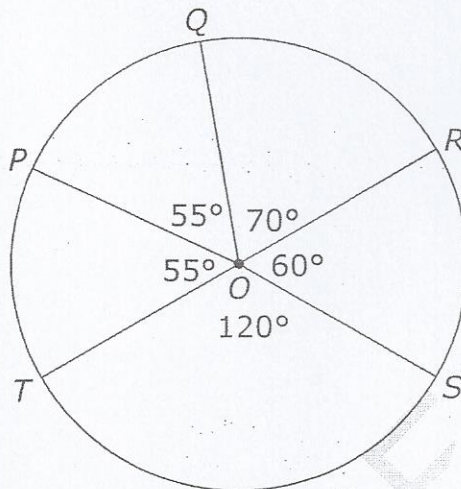
- A 2.1 cm<sup>2</sup>
- B 3.4 cm<sup>2</sup>
- C 4.2 cm<sup>2</sup>
- D 8.4 cm<sup>2</sup>

7. In the figure below,  $\overline{PR}$  and  $\overline{SR}$  are tangent to circle  $O$ .



If  $OT = 11$  cm and  $PR = 60$  cm, what is the length of  $\overline{OR}$ ?

- A 61 cm
  - B 59 cm
  - C 50 cm
  - D 48 cm
8.  $\overline{TR}$  is a diameter of circle  $O$  and has a length of 16 ft.



What is the **approximate** area of the sector bounded by  $\angle POR$  and  $\widehat{PQR}$ ?

- A  $70 \text{ ft}^2$
- B  $67 \text{ ft}^2$
- C  $42 \text{ ft}^2$
- D  $39 \text{ ft}^2$

9. Derive the standard equation of the circle  $x^2 + y^2 + 4x - 6y = -4$

10. Which is the equation of a circle with center  $(-2, 3)$  and a radius  $r = 5$ ?

A.  $(x + 2)^2 + (y - 3)^2 = 10$

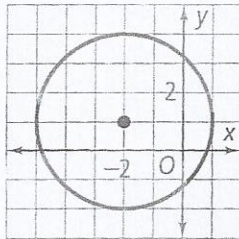
C.  $(x - 2)^2 + (y + 3)^2 = 10$

B.  $(x + 2)^2 + (y - 3)^2 = 25$

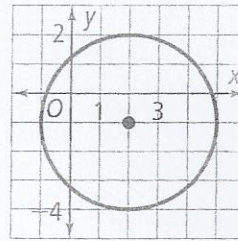
D.  $(x - 2)^2 + (y + 3)^2 = 25$

11. Which of the following is the graph of  $(x - 2)^2 + (y + 1)^2 = 9$

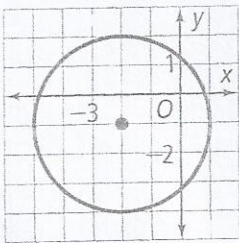
A.



C.



B.



D.

