

NAME: \_\_\_\_\_

*P.I. A2.A.61: Determine the length of an arc of a circle, given its radius and the measure of its central angle*

1. For a circle of radius 4 feet, find the arc length  $s$  cut off by a central angle of  $12^\circ$ .

[A]  $s = 48\pi$  feet      [B]  $s = \frac{4}{5}\pi$  feet

[C]  $s = \frac{4}{15}\pi$  feet      [D]  $s = \frac{8}{15}\pi$  feet

2. For a circle of radius 5 feet, find the arc length of a central angle of  $24^\circ$ . Leave your answer in terms of  $\pi$ .

3. The circumference of a circle is  $116\pi$  cm. Find the diameter, the radius, and the length of an arc of  $50^\circ$ .

4. A circle has a radius 4 ft. Use a calculator to find the length of an arc intercepted by an angle of  $\frac{\pi}{3}$  to the nearest tenth.

5. A circle has center  $(0, 0)$  and radius 6. The vertices of regular hexagon  $ABCDEF$  are on the circle. How long is  $\widehat{AB}$ ? Leave your answer in terms of  $\pi$ .

6. A  $\odot O$  centered at  $(0, 0)$  and with radius 4 is transformed by a dilation centered at the origin with scale factor 2.5. Find the length of arc  $A'B'$  on  $\odot O'$  if  $A$  and  $B$  are on  $\odot O$  and  $m\angle AOB = 144$ . Leave your answers in terms of  $\pi$ .

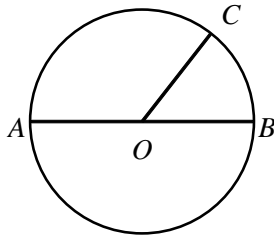
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7. Compare the quantity in Column A with the quantity in Column B.

<u>Column A</u>	<u>Column B</u>
the arc intercepted by an angle of $\frac{2\pi}{3}$ in circle X	the arc intercepted by an angle of $\frac{3\pi}{2}$ in circle Y

- [A] The quantity in Column A is greater.                      [B] The quantity in Column B is greater.  
[C] The two quantities are equal.  
[D] The relationship cannot be determined on the basis of the information supplied.

8. Given:  $\overline{AB}$  is the diameter of circle  $O$  and  $m\widehat{BC} = 52$ . Find  $m\widehat{AC}$ .



9. A circle has center  $(2, 0)$  and contains  $A(-4, 0)$ . Find a point  $B$  so that  $m\widehat{AB} = 90$ .

10. The circle  $x^2 + y^2 = 25$  contains  $A(-3, 4)$  and  $B(3, 4)$ . Find  $m\widehat{AB}$ .

- [1] C
- [2]  $\frac{2}{3}\pi$  feet
- [3] 116 cm; 58 cm;  $16.11\pi$  cm
- [4] 4.2 ft
- [5]  $2\pi$  units
- [6]  $8\pi$
- [7] D
- [8] 128
- [9] (2, 6) or (2, -6)
- [10] about 74