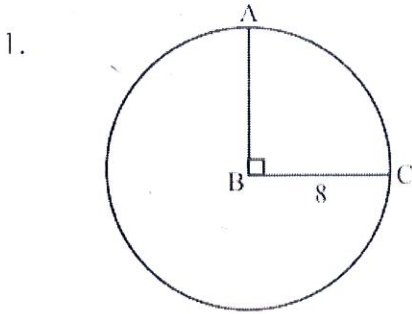


Geometry

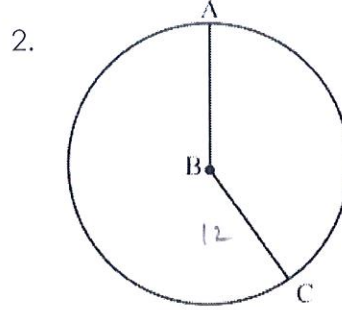
Homework – Circumference and Arc Length

Name key Date _____

For each circle, find arc measure, circumference, and arc length. **Leave your answers in terms of π .**



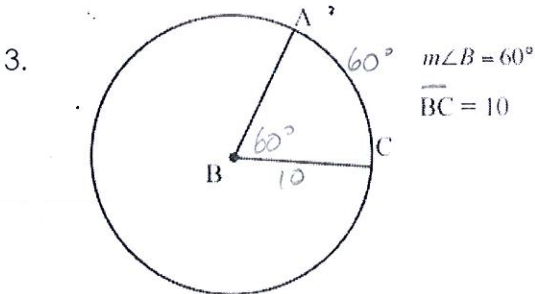
$m\widehat{AC} = 90^\circ$
 circumference = $2\pi \cdot 8 = 16\pi$
 length of $\widehat{AC} = \frac{90}{360} \cdot 16\pi = 4\pi$



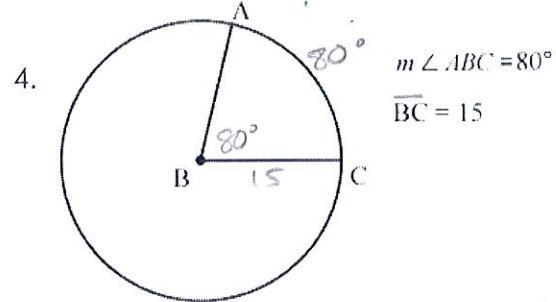
$m\angle ABC = 150^\circ$
 $\overline{CB} = 12$

$m\widehat{AC} = 150^\circ$
 circumference = $2\pi \cdot 12 = 24\pi$
 length of $\widehat{AC} = \frac{150}{360} \cdot 24\pi = 10\pi$

For each circle, find arc measure, circumference, and arc length. **Round to the nearest hundredth.**



$m\widehat{AC} = 60^\circ$
 circumference = $2\pi \cdot 10 = 20\pi \approx 62.83$
 length of $\widehat{AC} = \frac{60}{360} \cdot 20\pi = \frac{10\pi}{3} \approx 10.47$



$m\widehat{AC} = 80^\circ$
 circumference = $2\pi \cdot 15 = 30\pi \approx 92.25$
 length of $\widehat{AC} = \frac{80}{360} \cdot 30\pi = \frac{20\pi}{3} \approx 20.94$

5. In circle D shown below, $\angle EDF$ is congruent to $\angle FDG$. Find the indicated measures.

Leave answer in terms of π .

A. $m\widehat{EG} = 160^\circ$

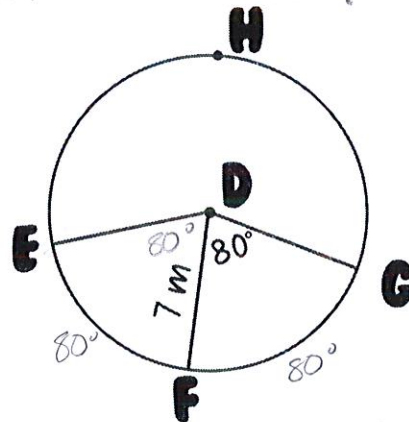
B. $m\widehat{EHG} = 200^\circ$

C. Length of $\widehat{EG} = \frac{160}{360} \cdot 2\pi \cdot 7 = \frac{56\pi}{9}$

D. Length of $\widehat{EHG} = \frac{200}{360} \cdot 2\pi \cdot 7 = \frac{70\pi}{9}$

E. $m\widehat{EHF} = 280^\circ$

F. Length of $\widehat{FEG} = \frac{280}{360} \cdot 2\pi \cdot 7 = \frac{98\pi}{9}$



The circumference of a circle is 128π inches. Find the exact length of a diameter (in terms of π).

$$\frac{128\pi}{\pi} = \frac{\pi d}{\pi}$$

$$d = 128 \text{ inches}$$

7. Find the radius of a circle with circumference 42 meters. Round to 2 decimal places.

$$\frac{42}{2\pi} = \frac{2\pi r}{2\pi}$$

$$r = \frac{21}{\pi} \approx 6.68 \text{ m}$$

8. A measuring wheel is used to calculate the length of a path. The diameter of the wheel is 8 inches. If the wheel rotates 87 times along the length of a path, how long is the path to the nearest foot?

$$C = \pi d = 8\pi$$

$$8\pi (87) = 696\pi \approx 2187 \text{ m.} = 182 \text{ ft.}$$

9. Find the exact radius of a circle with circumference 42 inches.

$$\frac{42}{2\pi} = \frac{2\pi r}{2\pi}$$

$$\frac{21}{\pi} = r$$

→ Leave answer in terms of π for an exact radius

10. Find the perimeter of the figure.

Round to the nearest hundredth.

$$AL = \frac{1}{2} \cdot 2\pi 5 = 5\pi$$

$$\begin{aligned} \text{Perimeter} &= 3(10) + 5\pi \\ &= 30 + 5\pi \\ &= 45.71 \text{ mm} \end{aligned}$$

