

Name: _____ Date: _____

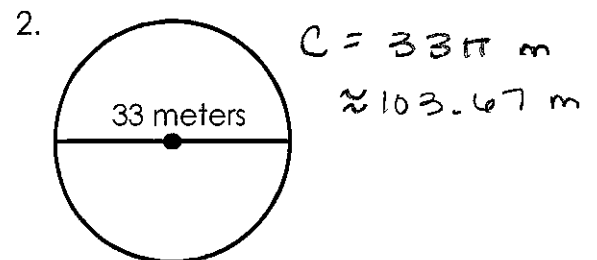
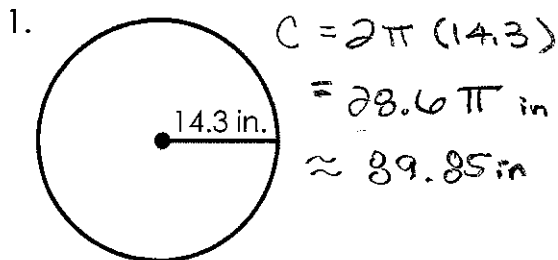
Circles: Arc Length & Area of a Sector

Circumference of a Circle

Distance around the circle

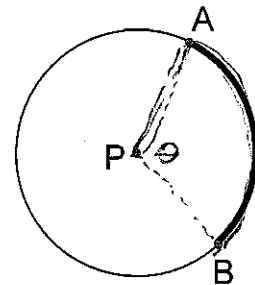
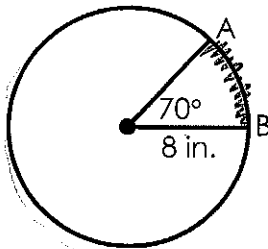
$$C = \pi d \text{ or } C = 2\pi r$$

Find the circumference of each circle:



Arc Length of a Circle

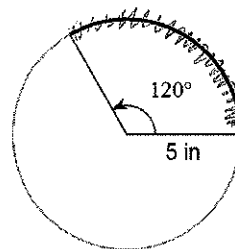
$$\text{Arc Length} = \frac{2\pi r \theta}{360}$$

3. Find the arc length of \widehat{AB} :

$$\frac{70}{360} \cdot 2(8)\pi$$

$$3.1\pi \text{ in}$$

$$\approx 9.77 \text{ in}$$

4. Find the radius of $\square P$:

$$\frac{120}{360} \cdot 2(5)\pi$$

$$\frac{1}{3}(10)\pi$$

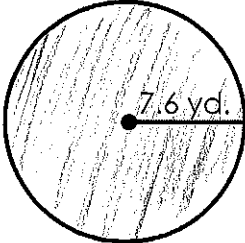
$$3.3\pi \text{ in}$$

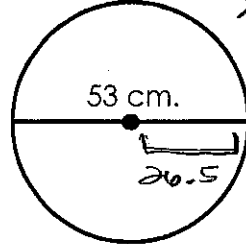
$$\approx 10.47 \text{ in}$$

Area of a Circle

$$A = \pi r^2$$

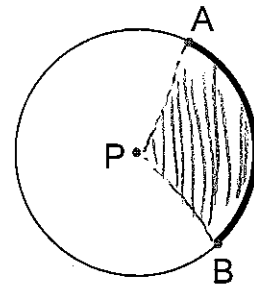
Find the area of each circle:

5.  $A = \pi (7.6)^2$
 $= 57.76\pi \text{ yd}^2$
 $= 181.45 \text{ yd}^2$

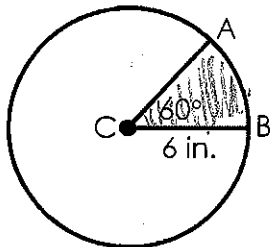
6.  $A = \pi (26.5)^2$
 $= 702.25\pi \text{ cm}^2$
 $= 2,206.18 \text{ cm}^2$

Area of a Sector of a Circle

$$\text{Area Sector} = \frac{\pi r^2 \theta}{360^\circ}$$



7. Find the area of the sector formed by $\angle ACB$.



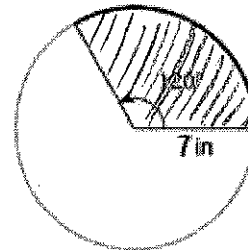
$$\frac{60}{360} \cdot \pi (6)^2$$

$$= \frac{1}{6} 36\pi$$

$$= 6\pi \text{ in}^2$$

$$\approx 18.85 \text{ in}^2$$

8. Find the area of the sector.

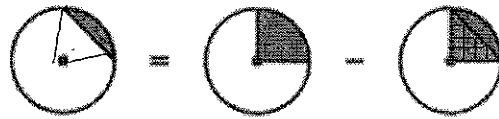


$$\frac{120}{360} \cdot \pi (7)^2$$

$$= \frac{1}{3} \cdot 49\pi$$

$$= 16.3\pi \text{ in}^2$$

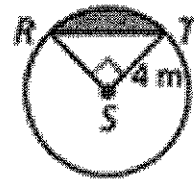
$$\approx 51.31 \text{ in}^2$$

Area of a Segment

area of segment = area of sector - area of triangle

7. Find the area of the segment to the nearest hundredth.

$$\begin{aligned}
 &= \frac{90}{360} \cdot \pi(4)^2 - \frac{1}{2}(4)(4) \\
 &= \frac{1}{4}(16)\pi - \frac{1}{2}(16) \\
 &= 4\pi - 8 \\
 &\approx 4.57 \text{ m}^2
 \end{aligned}$$



8. Find the area of the segment to the nearest hundredth.

$$\begin{aligned}
 &= \frac{90}{360} \cdot \pi(3)^2 - \frac{1}{2}(3)(3) \\
 &= \frac{1}{4} \cdot 9\pi - \frac{1}{2}(9) \\
 &= \frac{9}{4}\pi - 4.5 \\
 &\approx 2.57 \text{ in}^2
 \end{aligned}$$

