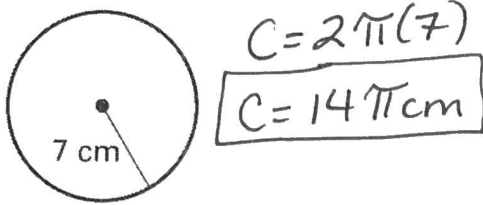


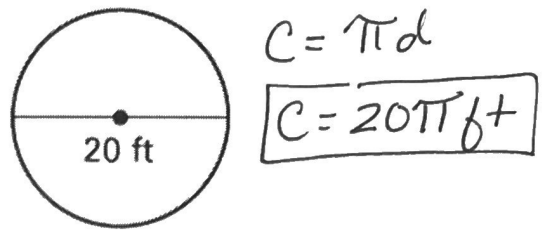
**Skills Practice: Calculating Arc Length and Circumference**

Use the diagram to find the indicated measure. Leave answers in term of pi.

1. Find the circumference.



2. Find the circumference.



3. Find the radius. Find the indicated measure.

a. The exact radius of a circle with circumference 36 meters

$C = 2\pi r$   $\frac{36}{2} = \frac{2\pi r}{2}$

$\frac{18}{\pi} = \frac{\pi r}{\pi} \approx 5.7 \text{ m}$

b. The exact diameter of a circle with circumference 29 feet

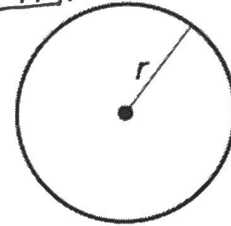
$C = \pi d$   $\frac{29}{\pi} = \frac{\pi d}{\pi} \approx 9.2 \text{ ft}$

c. The exact circumference of a circle with diameter 26 inches

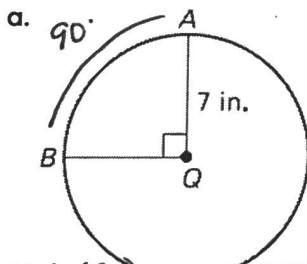
$C = \pi(26) = 26\pi \text{ in}$

d. The exact circumference of a circle with radius 15 centimeters

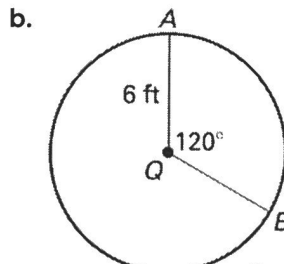
$C = 2\pi(15) = 30\pi \text{ cm}$



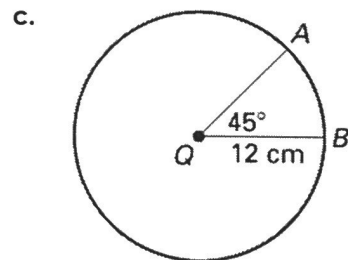
4. Find the length of  $\widehat{AB}$ .



$AL = \frac{2\pi(7)(90)}{360} = \frac{7\pi \text{ in}}{2}$



$AL = \frac{2\pi(6)(120)}{360} = 4\pi \text{ ft}$



$AL = \frac{2\pi(12)(45)}{360} = 3\pi \text{ cm}$

5. In  $\odot D$  shown below,  $\angle ADC \cong \angle BDC$ . Find the indicated measure \*  $360 - 40 = 320/2 = 160^\circ$

a.  $m\widehat{CB}$   $160^\circ$

b.  $m\widehat{ACB}$   $320^\circ$

e.  $m\widehat{BAC}$   
 $40 + 160 = 200^\circ$

c. Length of  $\widehat{CB}$   $AL = \frac{2\pi(4)(160)}{360}$

$\frac{32\pi \text{ in}}{9}$

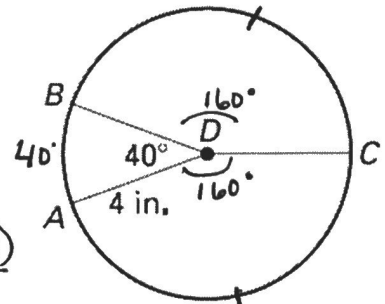
f. Length of  $\widehat{ACB}$

$AL = \frac{2\pi(4)(320)}{360}$

d. Length of  $\widehat{ABC}$

$AL = \frac{2\pi(4)(200)}{360} = \frac{40\pi \text{ in}}{9}$

$\frac{64\pi \text{ in}}{9}$



6. Find the indicated measure.

a. The radius of circle Q

$$15 = \frac{2\pi r (60)}{360}$$

$$\frac{5400}{60} = \frac{2\pi r (60)}{60}$$

$$\frac{90}{(2\pi)} = \frac{2\pi r}{2\pi}$$

$$\boxed{14.3 = r}$$

b. Circumference of  $\odot Q$  and Radius of  $\odot Q$

$$\textcircled{1} 18\pi = \frac{2\pi r (90)}{360}$$

$$\frac{6480\pi}{90} = \frac{2\pi r (90)}{90}$$

$$72\pi = 2\pi r$$

$$\boxed{72\pi = c}$$

$$\textcircled{2} \frac{2\pi r}{2\pi} = \frac{72\pi}{2\pi} = \boxed{36 \text{ in} = r}$$

Find the perimeter of the region. Round to the nearest hundredth.

7. Perimeter

$$AL = \frac{2\pi(4.5)(180)}{360}$$

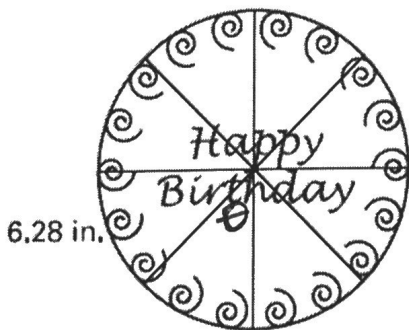
$$AL = \frac{9}{2}\pi \approx 14.14$$

1 semi circle = you need  $\textcircled{2}$ .

$$2(15) + 2(14.1)$$

$$\approx \boxed{58.28 \text{ units}}$$

8. **Birthday Cake** A birthday cake is sliced into 8 equal pieces. The arc length of one piece of cake is 6.28 inches as shown. Find the diameter of the cake.



$$\frac{360}{8} = 45^\circ = \theta$$

$$6.28 = \frac{2\pi r (45)}{360}$$

$$\frac{2260.8}{45} = \frac{2r}{45} \pi (45)$$

$$\frac{50.24}{\pi} = \frac{2r}{\pi} \pi$$

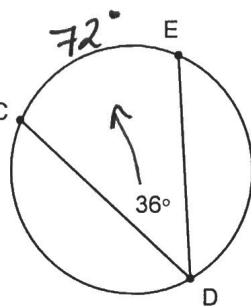
$$\boxed{2r = d = 16.0 \text{ in}}$$

9. Radius = 5 in

Length of Arc CE =  $2\pi$

$$AL = \frac{2(5)\pi(72)}{360}$$

$$2\pi$$



10. Find the radius of the circle.

$$r = \underline{120}$$

$$80\pi = \frac{2\pi r (120)}{360}$$

$$\frac{28800\pi}{120} = \frac{2\pi r (120)}{120}$$

$$120 = \frac{240\pi}{2\pi} = \frac{2\pi r}{2\pi}$$

