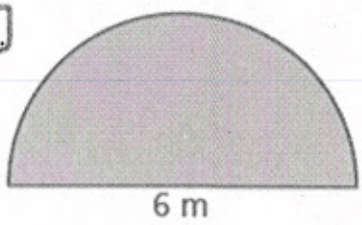
Notes 8.2 Circumference and Semicircles

Finding the Perimeter of a Semicircular Region

A semicircle is one-half of a circle. Use the formula for the circumference of a circle and divide it by 2.

Example 1: Find the perimeter of the semicircular region.

The straight side is 6 meters long. The distance around the curved part is one-half the circumference of a circle with a diameter of 6 meters. Round to the nearest hundredth.

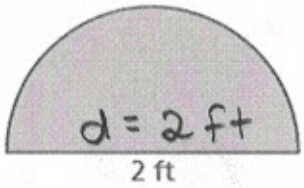


$C = \pi d$	Circumference formula.
$C = \frac{\pi d}{2}$	Divide circle formula by 2.
$P = \frac{\pi d}{2} + d$	Add the diameter.
$P = \frac{\pi \cdot 6}{2} + 6$	Substitute 6 in for d.
$P \approx 9.42 + 6$	Multiply π by 6 and divide by 2.
$P \approx 15.42$	Add. Round to the nearest hundredth.

The perimeter is about 15.42 meters.

Try These: Find the perimeter of the semicircles. Round to the nearest hundredth.

a.



$P = \frac{\pi d}{2} + d$

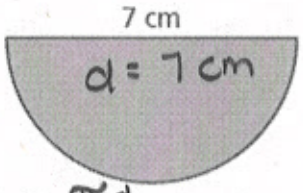
$P = \frac{\pi(2)}{2} + 2$

$P \approx 3.141 + 2$

$P \approx 3.14 + 2$

$P \approx 5.14$ ft

b.



$P = \frac{\pi d}{2} + d$

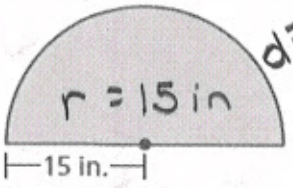
$P = \frac{\pi(7)}{2} + 7$

$P \approx 10.995 + 7$

$P \approx 11.00 + 7$

$P \approx 18.00$ cm

c.



$P = \frac{2\pi r}{2} + d$

$P = \frac{2\pi(15)}{2} + 30$

$P \approx 47.123 + 30$

$P \approx 47.12 + 30$

$P \approx 77.12$ in

Class Practice:

1. Find the circumference of the watch face. Round to the nearest tenth.

$C = \pi d$

$C = \pi(28)$

$C \approx 87.96$

$C \approx 88.0$ mm

$d = 28$mm

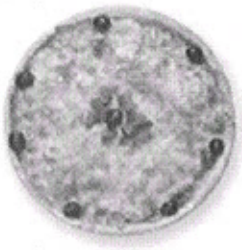
2. Find the circumference of the pizza. Round to the nearest tenth.

$C = 2\pi r$

$C = 2\pi(7)$

$C \approx 43.98$

$C \approx 44.0$ in



$r = 7$in

3. A wire is bent to form four semicircles. How long is the wire? Round to the nearest tenth. ★ 4 semicircles = 2 full circles

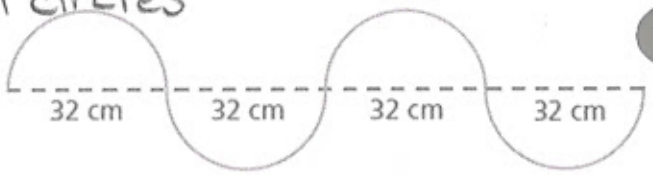
2 full circles

$C = 2(\pi d)$

$C = 2\pi(32)$

$C \approx 201.06$

$C \approx 201.1$ cm



$d = 32$cm

4. Find the circumference of both circles. Round to the nearest tenth.

Circumference Big

$C = 2\pi r$

$C = 2\pi(22)$

$C \approx 138.23$

$C \approx 138.2$ m

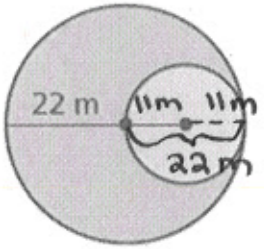
Circumference small

$C = 2\pi r$

$C = 2\pi(11)$

$C \approx 69.11$

$C \approx 69.1$ m



Big $r = 22$m

Small $r = 11$m