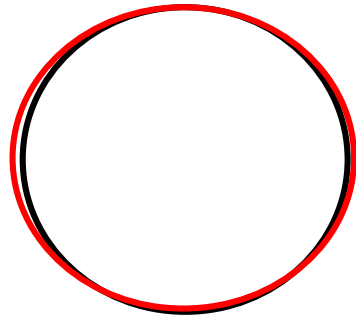


11.4 Circumference and arc length

circumference is the distance around the outside of a circle



pi is the ratio of circumference to the diameter

$$\pi = C/d$$

π is the symbol for pi

2 formulas that you must know:

$$\text{Circumference of a circle} = \pi d$$

$$\text{Area of a circle} = \pi r^2$$

Find the circumference of a circle with a radius of 6m.

$$C = \pi d$$

$$C = \pi(12)$$

$$C \approx 37.7\text{m}$$

The circumference of a circle is 31m.
Find the radius to the nearest hundredth.

$$C = \pi d$$

$$31 = 3.14 d$$

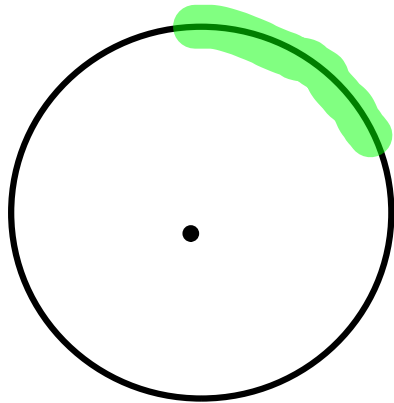
$$9.87 \approx d$$

$$9.87/2 \approx r$$

$$4.94 \approx r$$

Arc length is **part of the circumference** of a circle.

l is the symbol for arc length

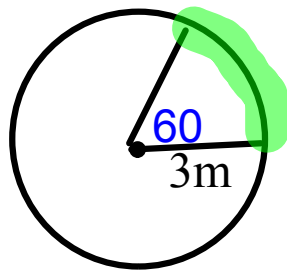


The formula to find **arc length** is :

$$l = m/360 \pi d$$

m is the **central angle**

Find the arc length...

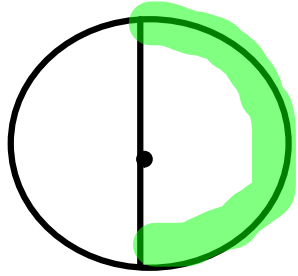


$$l = m/360 \pi d$$

$$l = 60/360 \pi (6m)$$

$$l = 1/6 \pi(6) = \pi$$

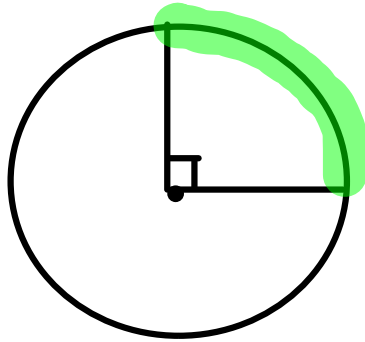
$$l \approx 3.14$$



The **length** of a **semicircle** is **1/2** of the **circumference**

$$\ell = \frac{180}{360} \pi d$$

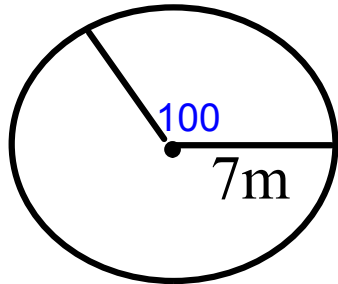
$$\ell = \frac{1}{2} \pi d$$



This arc length would be:

$$\ell = 90/360 \pi d$$

$$\ell = 1/4 \pi d$$



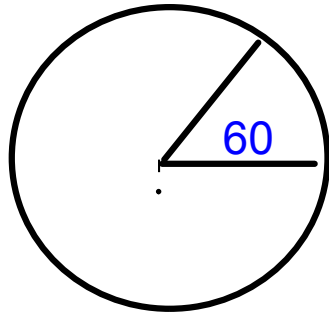
Finding the arc length...

$$\ell = m/360 \pi d$$

$$\ell = 100/360 \pi (14)$$

$$\ell = .28(3.14)(14)$$

$$\ell = 12.3 \text{ m}$$



3.82

Finding the radius...

Find r

$$l = \frac{m}{360} \pi d$$

$$3.82 = \frac{60}{360} (3.14) d$$

$$3.82 = .17(3.14) d$$

$$3.82 = .53 d$$

$$\frac{3.82}{.53} = d$$

$$7.2 \approx d$$

$$3.6 \approx r$$

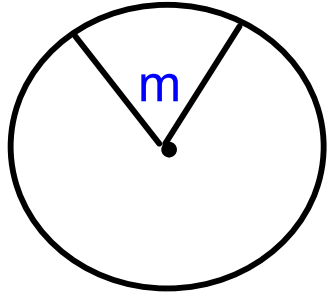
Find C

$$C = \pi d$$

$$C = 3.14(7.2)$$

$$C \approx 22.6$$

Finding the angle...



$$r = 7.64 \text{ in}$$

$$l = 18 \text{ in}$$

$$l = m/360 \pi d$$

$$18 = m/360 (3.14) (15.28)$$

$$\frac{18}{47.9792} = \frac{m/360 (47.9792)}{47.9792}$$

$$.375 \approx m/360$$

$$360(.375) \approx m$$

$$135 \approx m$$

Hw 11.4

p 686-7

15-22 all, 24-26 all