

A Circle plane is the set of all points in a plane that are connected and equidistance from a fixed point of the circle called the center of the circle.

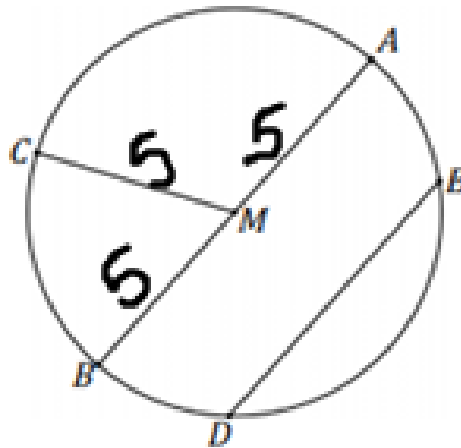
A circle is usually named by its center. $\odot C$

Any segment with an endpoint at the center and an endpoint on the circle is a radius.

Any segment with endpoints that are on the circle is a chord of the circle.

Chord that passes through the center is a diameter of the circle, and it measures twice the radius.

Practice:



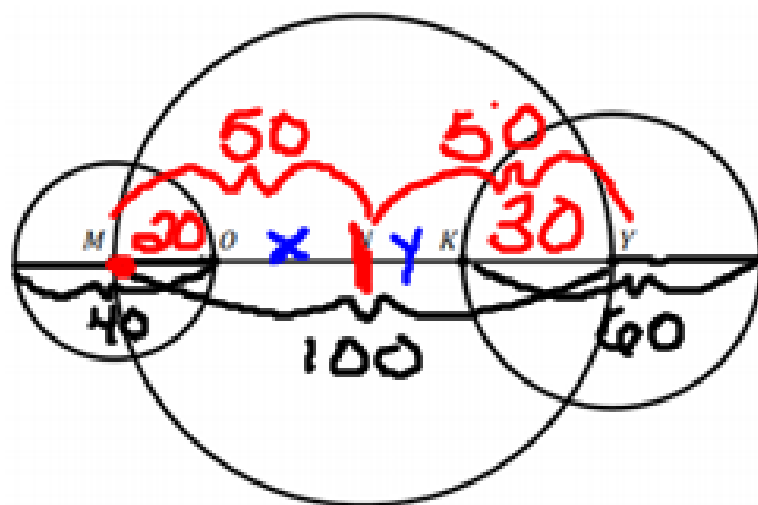
Identify the parts of the circle in each space provided below.

Center	M
Radius	\overline{CM} , \overline{MB} , \overline{MA}
Chord	\overline{DE} , \overline{BA}
Diameter	\overline{BA}

If the diameter of circle M is 10 millimeters, what is the length of the radius of circle M?

5 mm

Your turn:



The diameters of circles M, N, and Y are 40 inches, 100 inches, and 60 inches, respectively.

- a. Determine the measure of ON. Justify your answer.

$$50 - 20 = 30$$

- b. Determine the measure of NK. Justify your answer.

$$50 - 30 = 20$$

What is the term for the distance around a circle?

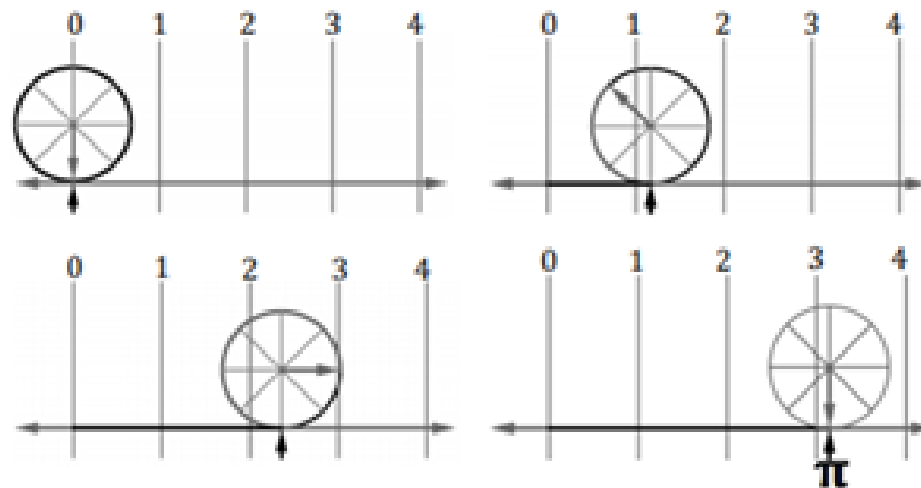
Circumference

We know that the Greek letter pi, π , is very important for circles.

What does π represent?

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

For example, take a circle whose diameter is 1 unit. If you roll it until you get back to the start, how much would it measure?

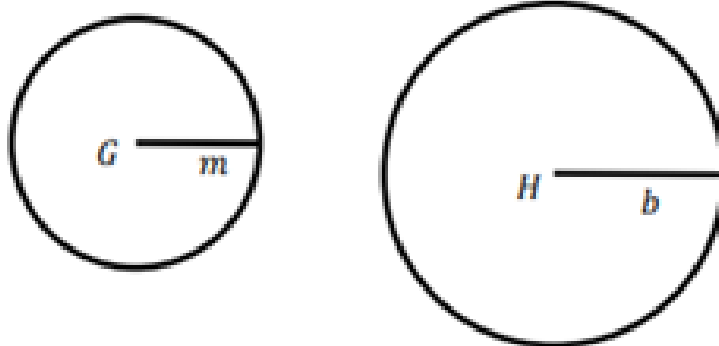


If $\pi = \frac{C}{d}$, then what is the circumference, C , of a circle?

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

Practice:

Consider circle G with radius m and circle H with radius b shown below.



Find the circumference of both circles.

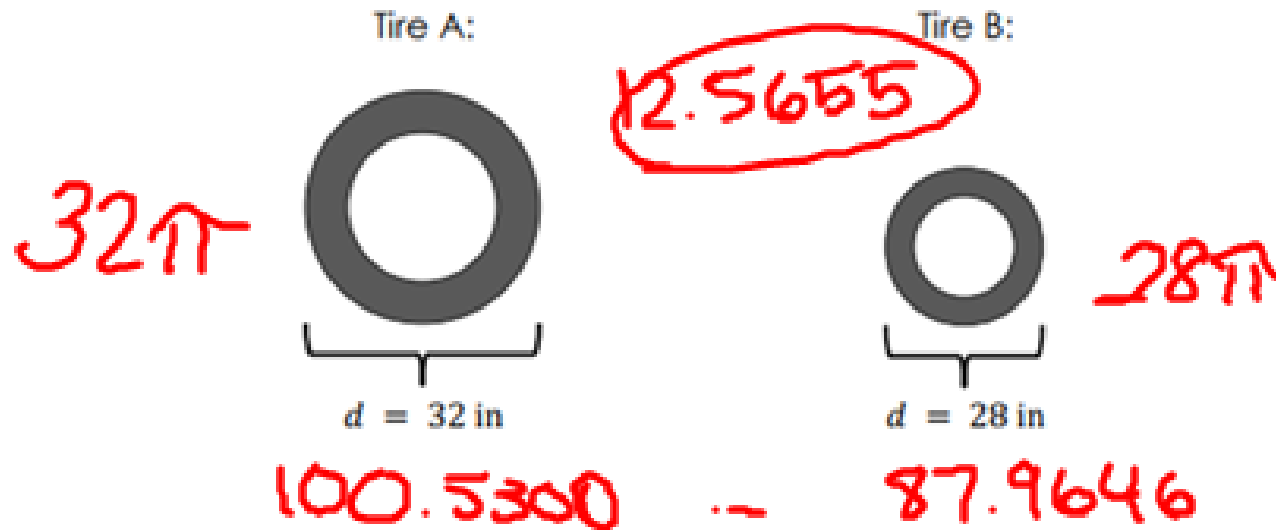
$$C = 2m\pi \quad C = 2b\pi$$

Find the ratio of circumference to radius for each circle.

$$\frac{2m\pi}{m} = 2\pi \quad \frac{2b\pi}{b} = 2\pi$$

Your turn:

Tires from two different trucks are shown. How much farther does Tire A travel compared to Tire B after one revolution?



The army mapped out a war zone in a city. It has a radius of 7 kilometers. What is the circumference of the war zone?

$$d = 14 \quad 14\pi \approx 43.9823$$

Find the radius of a circle with a circumference of 37.68 inches.

Use $\pi = 3.14$.

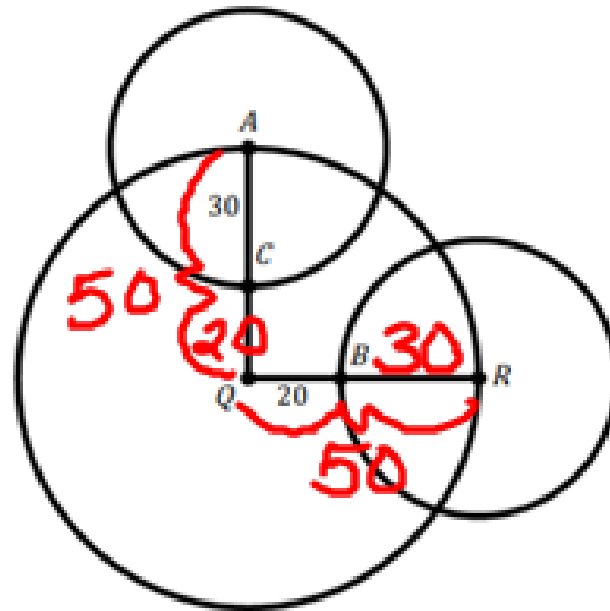
$$d\pi = C$$
$$2r\pi = 37.68$$

$$\frac{d\pi}{3.14} = \frac{37.68}{3.14}$$

$$d = 12$$

$$r = 6$$

Informal Assessment:



$$\begin{array}{r} 120\pi \\ - 100\pi \\ \hline 20\pi \approx 62.8 \end{array}$$

Circle A and circle R are congruent. Which of the following statements are correct? Select all that apply.

- $20 + 30$
- $QC + BR = 50$
 - The radius of circle R is half the radius of circle Q .
 - The combined circumference for circles A and R is almost 63 units larger than the circumference of Q .
 - The radius of circle Q is 40 units long.
 - The diameter of circle A is 30 units long.