# Diameters of Tire and Wheel Assemblies
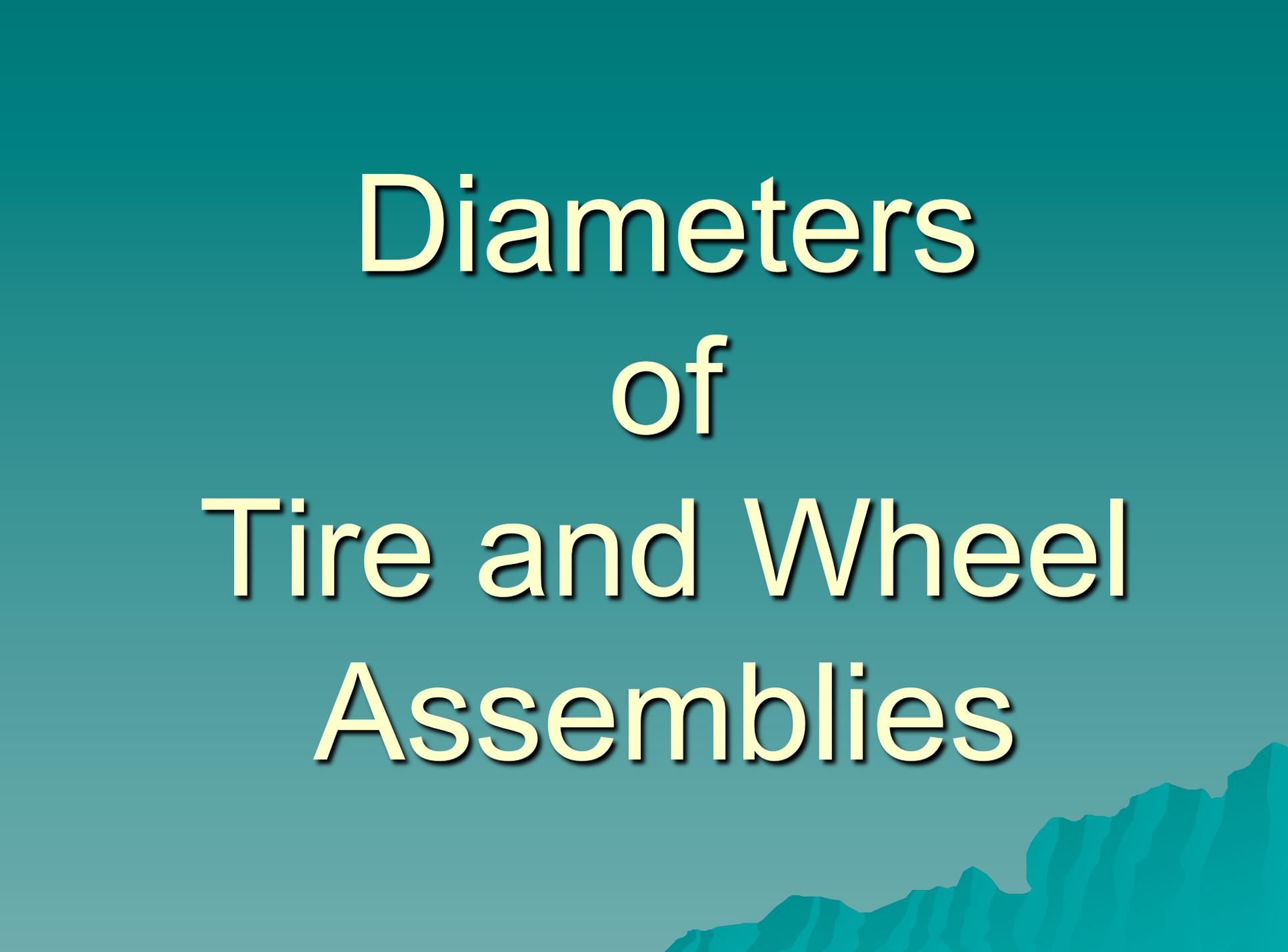
Grandma's Ride

Radius = a segment connecting the center of a circle to any point on the circle
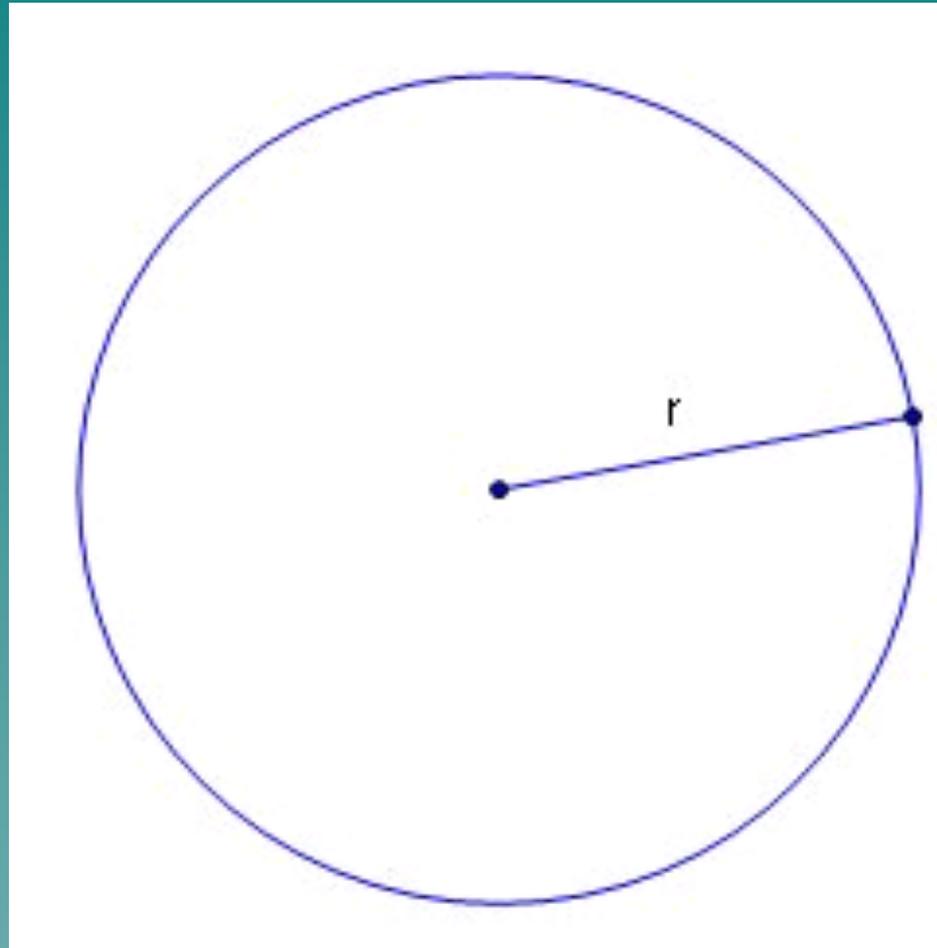
Diameter = a segment connecting two points on the circle and passing through the center
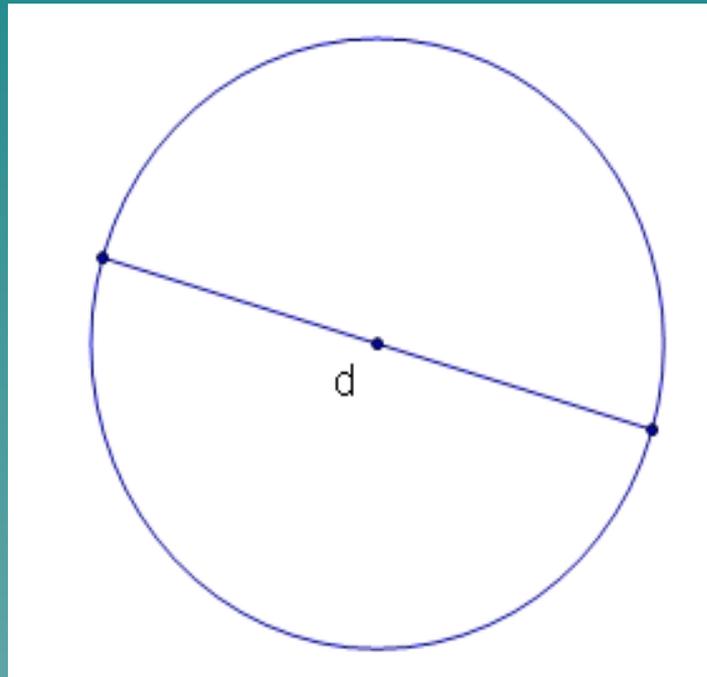
Conversions

- 1 inch = 25.4 mm

How many mm in 3 inches?

$$(3)(25.4) = 76.2 \text{ mm}$$

- 1 mm = .039 inches

How many inches in 75 mm?

$$(75)(.039) = 2.925 \text{ inches}$$

Percent

◆ Decimal to percent – move decimal point two (2) places to the right

.25 = 25%

◆ Percent to decimal – move decimal point two (2) places to the left

35% = .35

Why is it important to keep the diameter of the tire equal if you're changing the wheel/ tire sizes?

255/70 R 15

1.) Convert a measurement.

◆ To convert mm to inches, multiply mm by .039.

$$255(.039) \approx 10 \text{ inches}$$

2.) *Calculate the height of the sidewall of the tire*

◆ To convert a percent to a decimal, move the decimal point two places to the left.

70% = .70

◆ Height of the sidewall of the tire =aspect ratio (as a decimal) the section width (in inches)

Height of the sidewall of the tire = .70 • 10 inches

Height of the sidewall of the tire = 7 inches

3.) *Find the diameter of the tire.*

◆ To find the diameter of the tire, you add the diameter of the wheel and two times the sidewall height.

D=   15 inches + 2(7 inches)

D = 15 inches + 14 inches

D = 29 inches

Putting it all together:

Let's assign variables to our values:

Section width in mm = W

Aspect ratio in decimal form = A

Diameter of the rim = D

Conversion constant = .039

Formula for Finding Diameter of Wheel/Tire Assembly

$$(W)(.039)(A)(2) + D=$$

Diameter of Wheel/ Tire Assembly

You have measured the thickness of a brake lining at .25 inch. The original thickness of the brake lining was 13 mm. What percent of the brake lining do you have left?

In inches:

1. Convert 13 mm to inches.   (13)
(.039) = .507 inches

2. Now we need to write an equation to determine the percent of brake lining left.

What should we do first?

3. Assign a variable for the percent of brake lining left. Let's use p.

Tell me in words how to set up the equation.

(original amount of brake lining)(percent of brake lining left) = new amount of brake lining.

Using our known values, we now have

$$.507p = .25$$

4. Now we need to solve for p.

$.507\,p = .25$

$\dfrac{.507\,p}{.507} = \dfrac{.25}{.507}$ Divide both sides by .507 to isolate p

$\dfrac{.507\,p}{.507} = \dfrac{.25}{.507}$ Remember that $\dfrac{.507}{.507} = 1$

So we end up with

$p = .49 = 49\%$

◆ **Now do the same problem using mm.**

Convert .25 inches to mm.　　　(.25) (25.4) = 6.35

(original amount)(p) = new amount

$$13p = 6.35$$

$$\frac{13p}{13} = \frac{6.35}{13}$$

$$p = .49 = 49\%$$