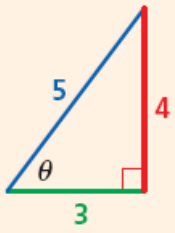
Review of Trig

What are some things we already know about right triangles?

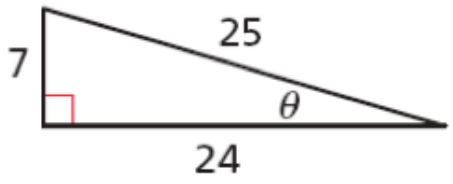
Trigonometric Functions

WORDS	NUMBERS	SYMBOLS
The **sine** (sin) of angle θ is the ratio of the length of the **opposite** leg to the length of the **hypotenuse**.	$\sin\theta = \frac{4}{5}$	$\sin\theta = \frac{\text{opp.}}{\text{hyp.}}$
The **cosine** (cos) of angle θ is the ratio of the length of the **adjacent** leg to the length of the **hypotenuse**.	$\cos\theta = \frac{3}{5}$	$\cos\theta = \frac{\text{adj.}}{\text{hyp.}}$
The **tangent** (tan) of angle θ is the ratio of the length of the **opposite** leg to the length of the **adjacent** leg.	$\tan\theta = \frac{4}{3}$	$\tan\theta = \frac{\text{opp.}}{\text{adj.}}$



Example #1:

Find the value of the sine, cosine, and tangent functions for θ.



Example #2:
A skateboard ramp will have a height of 12 in., and the angle between the ramp and the ground will be 17°. To the nearest inch, what will be the length *l* of the ramp?

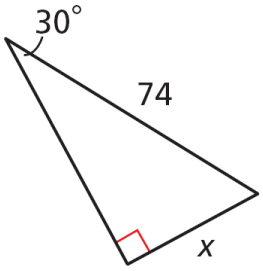
You try: A school is constructing a wheelchair ramp from the ground to a deck with a height of **18in**. The angle between the ground and the ramp must be **4**. **8°.** To the nearest inch, what should be the distance *d* between the end of the ramp and the deck?

Special Right Triangle Trig Ratios:

45-45-90

30-60-90

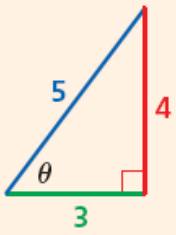
Example #3: **Use a trig function to find the value of *x* without a calculator.**



You try: Now find the other side length of the triangle.

Reciprocal Trigonometric Functions

WORDS	NUMBERS	SYMBOLS
The **cosecant** (csc) of angle θ is the reciprocal of the sine function.	$\csc\theta = \frac{5}{4}$	$\csc\theta = \frac{1}{\sin\theta} = \frac{\text{hyp.}}{\text{opp.}}$
The **secant** (sec) of angle θ is the reciprocal of the cosine function.	$\sec\theta = \frac{5}{3}$	$\sec\theta = \frac{1}{\cos\theta} = \frac{\text{hyp.}}{\text{adj.}}$
The **cotangent** (cot) of angle θ is the reciprocal of the tangent function.	$\cot\theta = \frac{3}{4}$	$\cot\theta = \frac{1}{\tan\theta} = \frac{\text{adj.}}{\text{opp.}}$



Example #4: **Find the values of the six trigonometric functions for *θ*.**

Review of Trig

You try:

1. A boy flying a kite lets out 300 feet of string that makes an angle of 38° with the ground. Assuming that the string is straight, how high above the ground is the kite?

2. A decorative pin is in the shape of an equilateral triangle. The length of each side is 6 centimeters. Josh will attach the fastener to the back along the height of the pin. Will the fastener fit if it is 4 centimeters long?

3. A straight road to the top of a hill is 2500 feet long and makes an angle of 12° with the horizontal. Find the height of the hill.

4. A manufacturer wants to make an equilateral case with a height of 30 centimeters. What is the length of each side of the case? Round to the nearest tenth.

Write about it: **Suppose you are given the measure of an acute angle in a right triangle and the length of the leg adjacent to this angle. Describe 2 different methods that you could use to find the length of the hypotenuse.**