Bell Ringer - Solve the quadratic.

$$x^4 - 9x^2 = 0$$

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$$x^4 - 9x^2 = 0$$

$$x^2(x^2 - 9) = 0$$

$$x^2(x - 3)(x + 3) = 0$$

$$x = 0, 3, -3$$

Trigonometric Ratios Notes Day 2

Trigonometry - Greek for the measurement of triangles.

Trigonometric Ratio - a ratio of the lengths of two sides of a **right** triangle.

Three Basic Ratios are Sine (sin), Cosine (cos), and Tangent (tan).

SOH - CAH - TOA

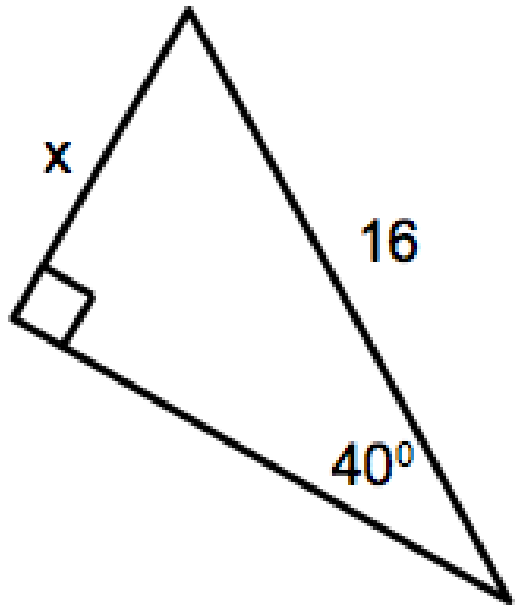
$$\sin \angle = \frac{\text{side opposite the angle}}{\text{hypotenuse}}$$

$$\cos \angle = \frac{\text{side adjacent the angle}}{\text{hypotenuse}}$$

$$\tan \angle = \frac{\text{side opposite the angle}}{\text{side adjacent the angle}}$$

Using a trigonometric ratio, find the missing side measurement.
Round to the nearest hundredth.

1)



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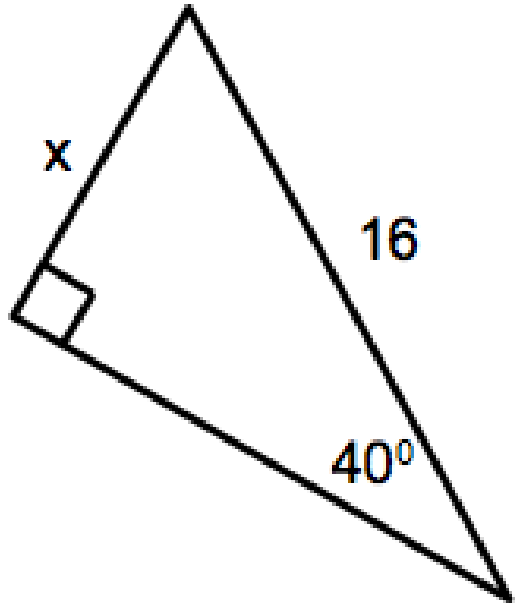
1)



You're given the hypotenuse and an angle measurement. Need to find the opposite side. Use SINE.

$$\sin 40 = \frac{x}{16}$$

$$\sin 40 \cdot 16 = x$$

$$10.28 = x$$

2) A skateboard ramp is 2.3 meters long and rises at a 15^0 angle from the ground.
Find the length of the legs of the wooden support triangles of the ramp. Round to the nearest tenth of a meter.

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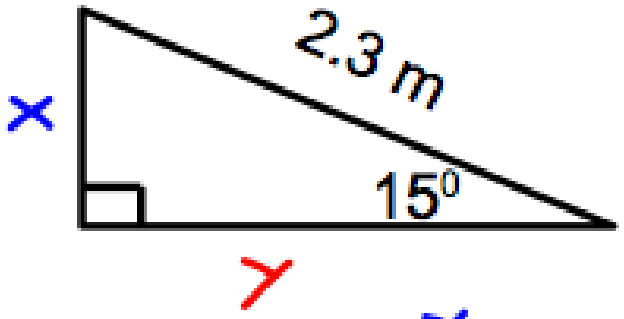


$\sin 15 = \frac{x}{2.3}$

$\sin 15 \cdot 2.3 = x$

$.6m = x$

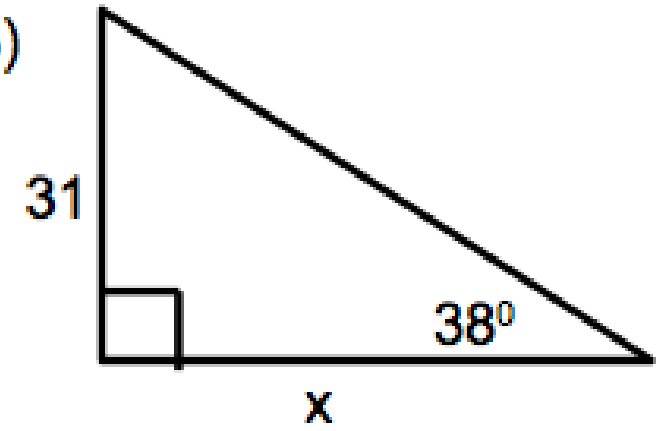
$\cos 15 = \frac{y}{2.3}$

$\cos 15 \cdot 2.3 = y$

$2.2m = y$

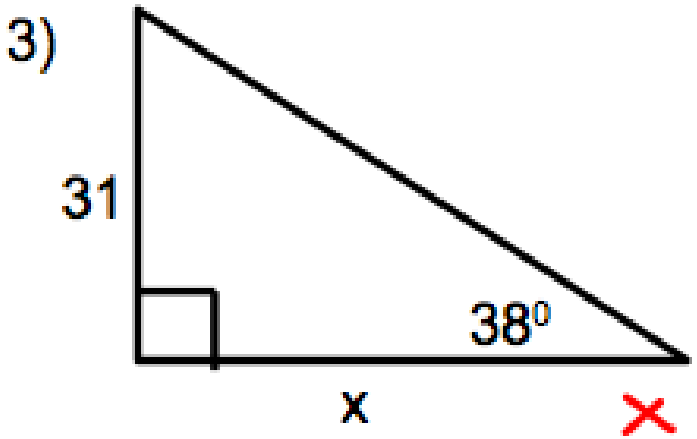
Using a trigonometric ratio, find the missing side measurement.
Round to the nearest hundredth.

3)



Using a trigonometric ratio, find the missing side measurement.
Round to the nearest hundredth.

3)



You're given the opposite side and an angle measurement. Need to find the adjacent side. Use TANGENT.

$x \cdot \tan 38 = \frac{31}{x} \cdot x$

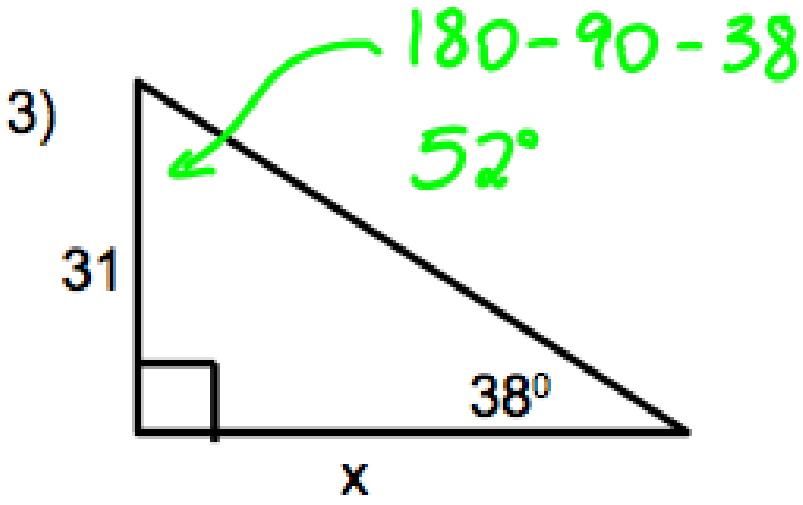
$x \cdot \tan 38 = 31$

$x = \frac{31}{\tan 38}$

$x = 39.68$

Using a trigonometric ratio, find the missing side measurement.
Round to the nearest hundredth.

3)



You're given the opposite side and an angle measurement. Need to find the adjacent side. Find other angle first, then use TANGENT.

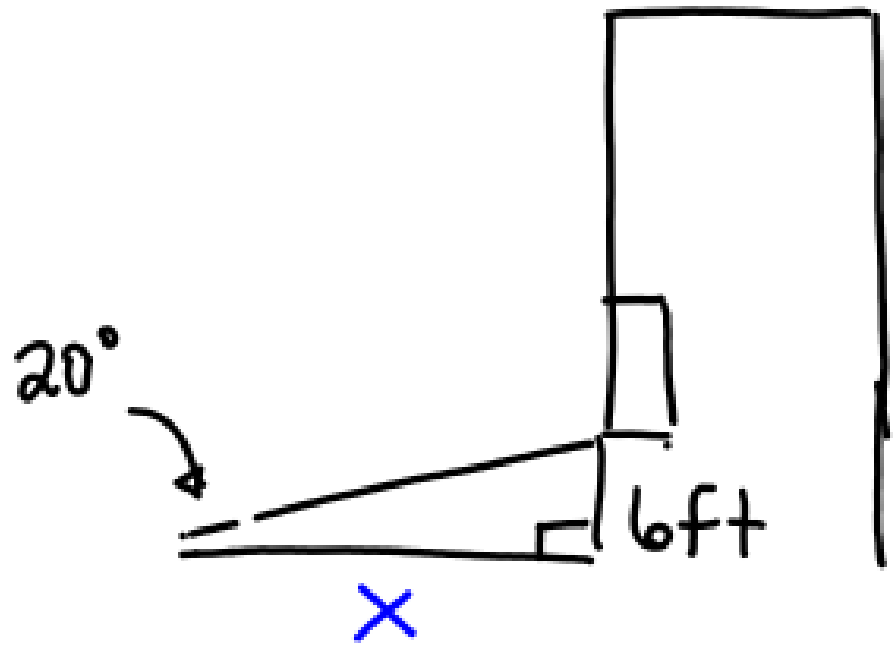
$$\tan 52 = \frac{x}{31}$$

$$31 \cdot \tan 52 = x$$

$$39.68 = x$$

4) A loading ramp is at a 20^{0} angle to the building. The bottom of the building door is 6 feet above the ground. How far away does the ramp begin from the building? Round to the nearest tenth of a foot.

4) A loading ramp is at a 20° angle to the building. The bottom of the building door is 6 feet above the ground. How far away does the ramp begin from the building? Round to the nearest tenth of a foot.



$$\tan 20 = \frac{6}{x}$$

$$x \cdot \tan 20 = 6$$

$$x = \frac{6}{\tan 20}$$

$$x = 16.5 \text{ ft}$$