



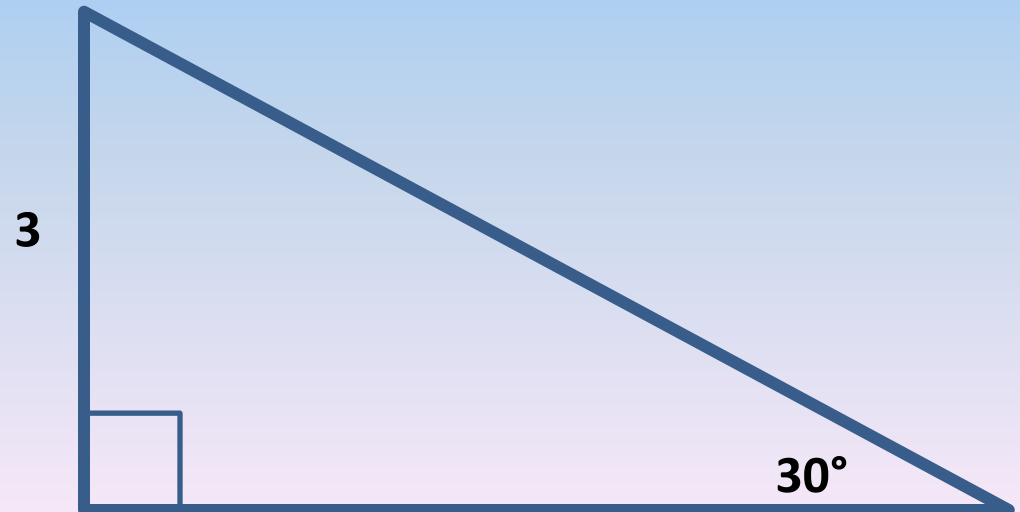
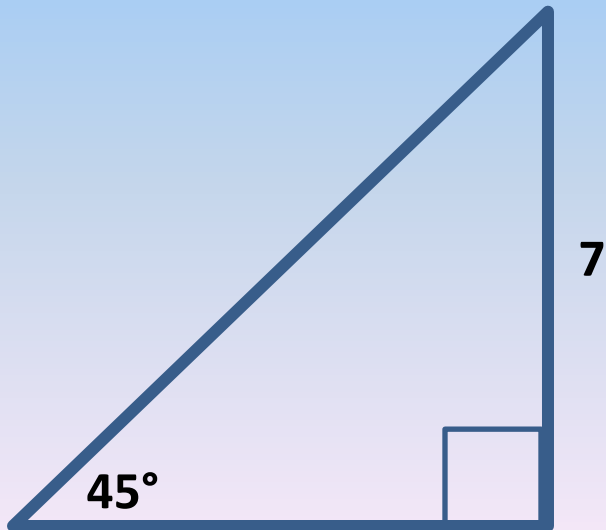
WELCOME

Chapter 8 Day 1: Trigonometric Ratios

Warm-Up

1) Factor:

2) Find the missing sides of the special right triangles:



Chapter 8 Day 1

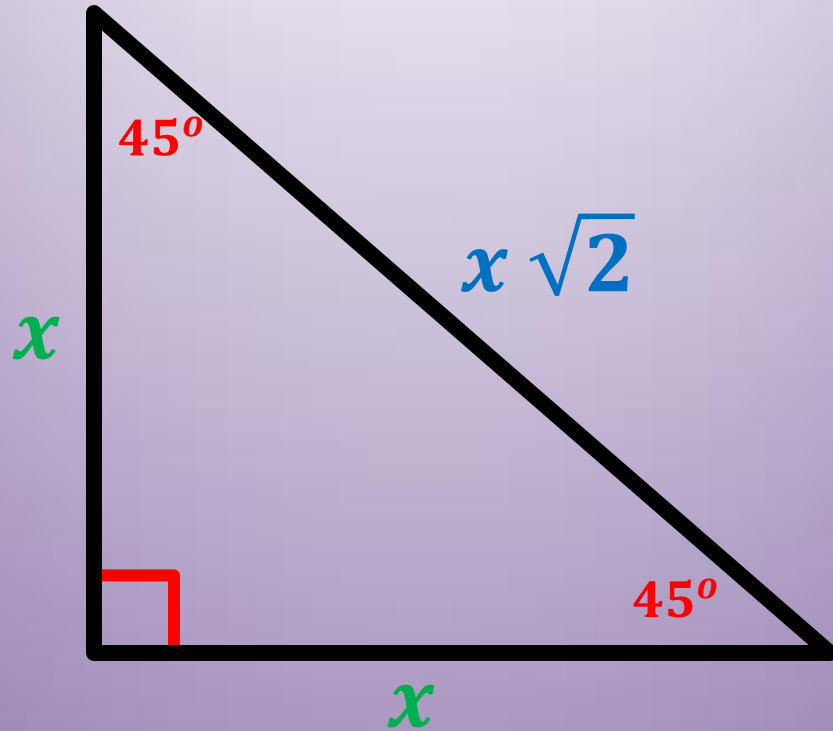
Right Triangle Trig

Chap 8 Day 1 Learning Target

- Find special ratios in Right Triangles.
- Determine Trigonometric ratios and solve for missing sides.

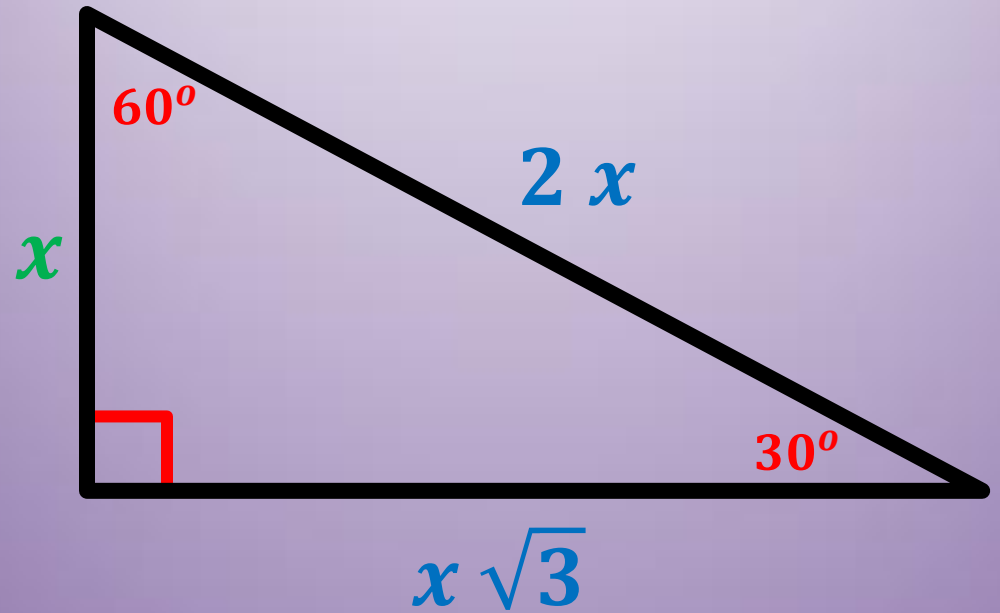
Special Right Triangles

$45^\circ - 45^\circ - 90^\circ \Delta$



Hypotenuse = $\sqrt{2} \cdot \text{leg}$

$30^\circ - 60^\circ - 90^\circ \Delta$



Longer Leg = $\sqrt{3} \cdot \text{Short leg}$

Hypotenuse = $2 \cdot \text{Short leg}$

Trigonometric Ratios

A ratio of the lengths of two sides of a right Δ
it is directly related to the acute \angle s in the Δ

The three basic Trig. Ratios...

Sine

(sin)

Cosine

(cos)

Tangent

(tan)

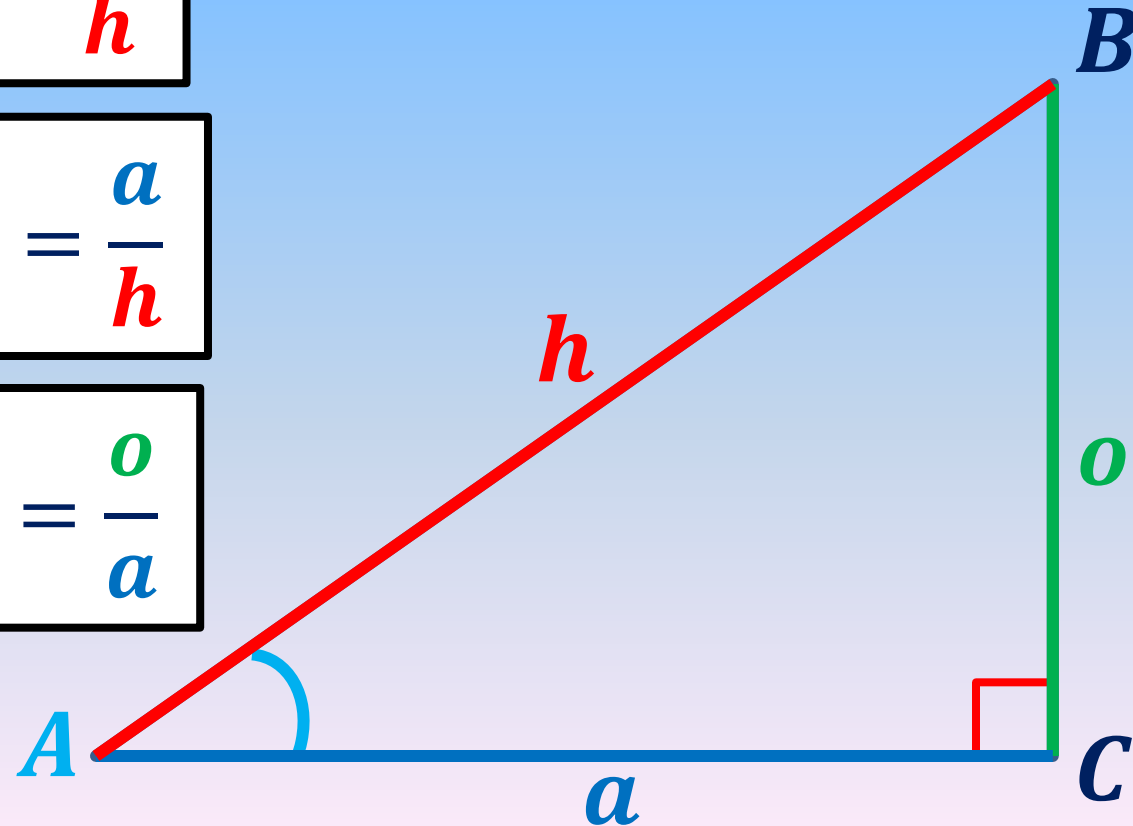
Trigonometric Ratios

Let $\triangle ABC$ be a right \triangle . The sine, cosine and tangent of the acute $\angle A$ are defined as follows.

$$\sin A = \frac{\text{side opposite } \angle A}{\text{hypotenuse}} = \frac{o}{h}$$

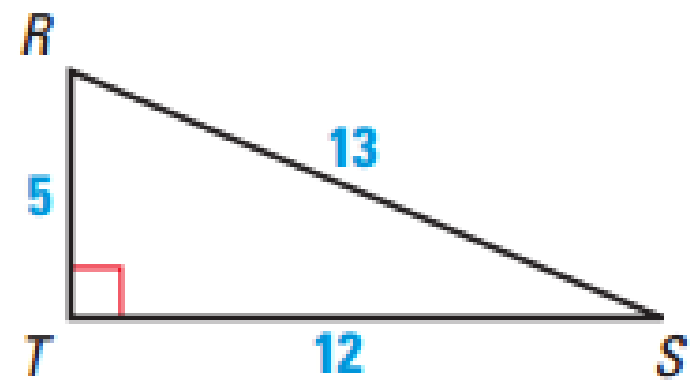
$$\cos A = \frac{\text{side adjacent } \angle A}{\text{hypotenuse}} = \frac{a}{h}$$

$$\tan A = \frac{\text{side opposite } \angle A}{\text{side adjacent } \angle A} = \frac{o}{a}$$

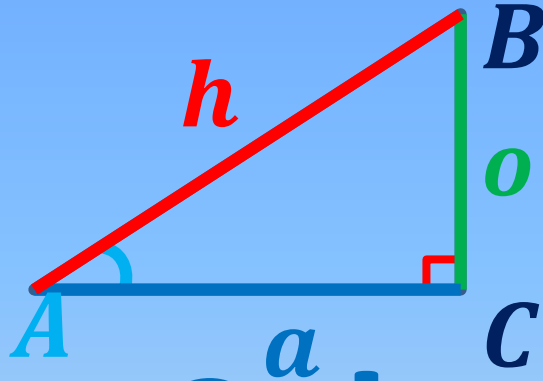


Find the sine, the cosine, and the tangent of the indicated angle.

a. $\angle S$



Helpful Way to Memorize



Soh - Cah - Toa

\swarrow

$$\sin \angle = \frac{o}{h}$$

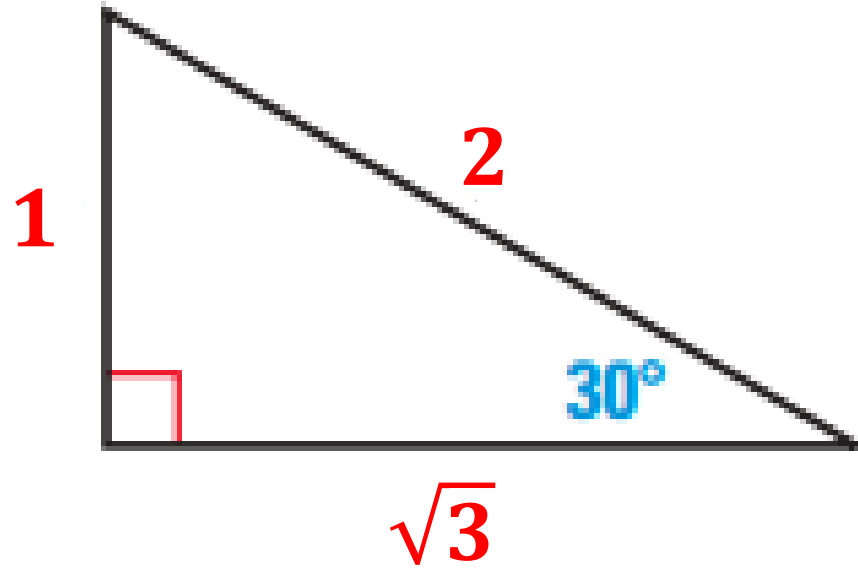
\downarrow

$$\cos \angle = \frac{a}{h}$$

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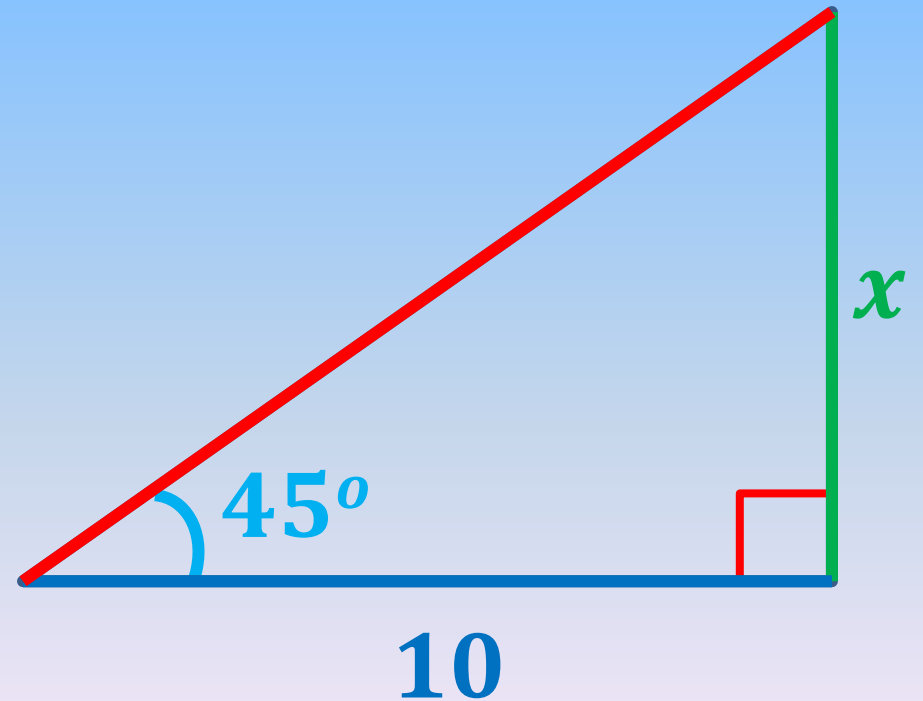
$$\tan \angle = \frac{o}{a}$$

Find the sine, the cosine, and the tangent of 30° .



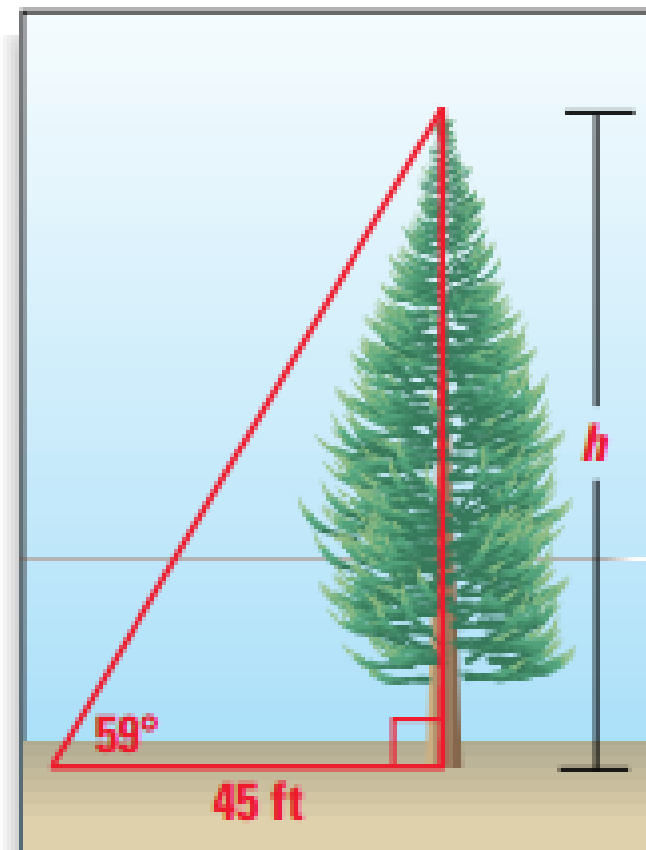
Finding a Side given 1 Side & 1 \angle

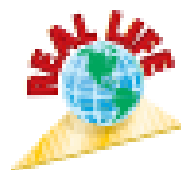
$$\tan(45^\circ) = \frac{x}{10}$$



Real World Problems

FORESTRY You are measuring the height of a Sitka spruce tree in Alaska. You stand 45 feet from the base of the tree. You measure the angle of elevation from a point on the ground to the top of the tree to be 59° . To estimate the height of the tree, you can write a trigonometric ratio that involves the height h and the known length of 45 feet.





ESCALATORS The escalator at the Wilshire/Vermont

Metro Rail Station in Los Angeles rises 76 feet at a 30° angle. To find the distance d a person travels on the escalator stairs, you can write a trigonometric ratio that involves the hypotenuse and the known leg length of 76 feet.

