

Watch. Practice. Understand. | Lesson 140

The Fastest Way of Solving The Missing Segment of A Right Triangle With SOHCAHTOA ...

Watch the matching video: <https://www.youtube.com/watch?v=EapNuAPiaho>

Practice focus: Right-triangle trigonometry

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

- 01** Relative to angle θ , a right triangle has opposite side 3, adjacent side 4 and hypotenuse 5. Find all six ratios.

- 02** A right triangle has angle 30° and hypotenuse 12. Find the opposite leg.

- 03** A ladder reaches 8 m up a wall and makes a 60° angle with level ground. Find its length exactly.

- 04** In a right triangle, the opposite and adjacent legs are 5 and 12. Find θ to the nearest tenth of a degree.

Worked answers | Lesson 140

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- 01** Relative to angle θ , a right triangle has opposite side 3, adjacent side 4 and hypotenuse 5. Find all six ratios.

$$\sin \theta = 3/5, \cos \theta = 4/5, \tan \theta = 3/4; \csc \theta = 5/3, \sec \theta = 5/4, \cot \theta = 4/3.$$

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- 02** A right triangle has angle 30° and hypotenuse 12. Find the opposite leg.

$$\sin 30^\circ = x/12; x = 12(1/2) = 6.$$

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- 03** A ladder reaches 8 m up a wall and makes a 60° angle with level ground. Find its length exactly.

$$\sin 60^\circ = 8/L, \text{ so } L = 8/(\sqrt{3}/2) = 16\sqrt{3}/3 \text{ m.}$$

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- 04** In a right triangle, the opposite and adjacent legs are 5 and 12. Find θ to the nearest tenth of a degree.

$$\tan \theta = 5/12, \text{ so } \theta = \arctan(5/12) \approx 22.6^\circ.$$