

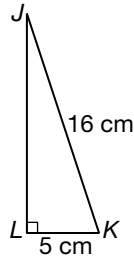
13-7 Using Trigonometric Ratios (Pages 694–697)

You can use trigonometric ratios to find the lengths of either the legs or the hypotenuse of right triangles, or the measures of the angles of right triangles.

EXAMPLES

A Find the measure of $\angle K$ in $\triangle JKL$.

The measure of the leg adjacent to $\angle K$ and the measure of the hypotenuse are known. Use the cosine ratio.

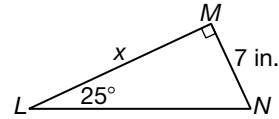


$$\cos K = \frac{\text{measure of the leg adjacent to } K}{\text{measure of the hypotenuse}}$$

$$\cos K = \frac{5}{16}$$

$\cos K = 0.3125$ Change the fraction to a decimal.
 $K \approx 71.8^\circ$ Use the \cos^{-1} key on a calculator.

B Write an equation to solve for x in the figure.



An angle and the measure of the leg opposite it are known. You are looking for the measure of the other leg. Use the tangent ratio.

$$\tan 25^\circ = \frac{\text{measure of leg opposite}}{\text{measure of leg adjacent}}$$

$$\tan 25^\circ = \frac{7}{x}$$

$$x \tan 25^\circ = 7 \quad \text{Multiply each side by } x.$$

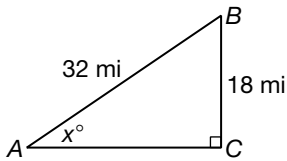
$$x = \frac{7}{\tan 25^\circ} \quad \text{Divide both sides by } \tan 25^\circ.$$

$$x \approx 15 \text{ in.} \quad \text{Use a calculator.}$$

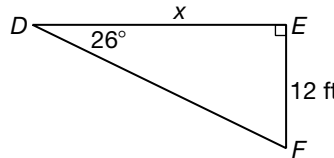
PRACTICE

Write an equation that you could use to solve for x . Then solve. Round decimal answers to the nearest tenth.

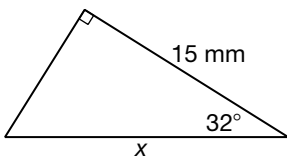
1.



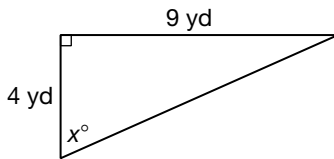
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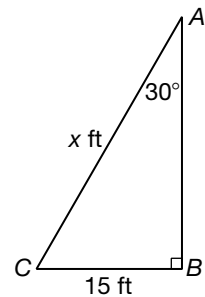
5. Standardized Test Practice Write an expression that you could use to solve for x . Then solve. Round the answer to the nearest tenth if necessary.

A 0.577 ft

B 3 ft

C 26 ft

D 30 ft



Answers: 1. 34.2° 2. 24.6 ft 3. 17.7 mm 4. 66.0° 5. D