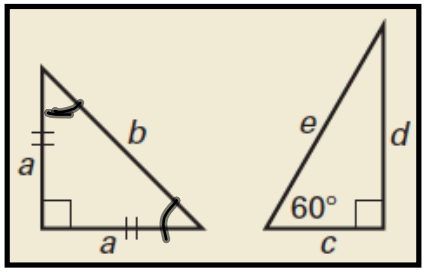
Bellwork
01/16/2012

Find the value of the variable.



1. Find *a* if *b*=10√2.

$h = l \cdot \sqrt{2}$

$\frac{10\sqrt{2}}{\sqrt{2}} = \frac{a \cdot \sqrt{2}}{\sqrt{2}}$

$a = 10$

2. Find *c* and *d* if *e*=50√3.

$h = l_s \cdot 2 \longrightarrow \frac{50\sqrt{3}}{2} = \frac{c \cdot 2}{2}$

$c = 25\sqrt{3}$

$l_l = l_s \cdot \sqrt{3}$

$d = 25\sqrt{3} \cdot \sqrt{3}$

$25 \cdot 3$

$d = 75$

Geometry
7.5 Apply the Tangent Ratio
Standard(s): 2, 4

Vocabulary:

Trigonometric Ratio: A ratio of the lengths of two sides in a right triangle.

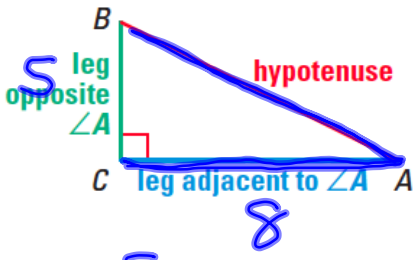
Tangent: The ratio of the legs in a right triangle constant for a given angle measure.

KEY CONCEPT *For Your Notebook*

Tangent Ratio

Let $\triangle ABC$ be a right triangle with acute $\angle A$. The tangent of $\angle A$ (written as $\tan A$) is defined as follows:

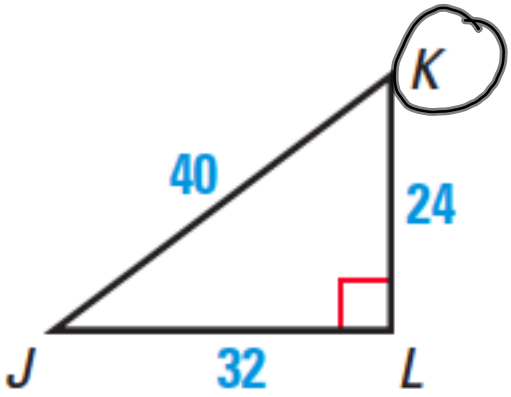
$$\tan A = \frac{\text{length of leg opposite } \angle A}{\text{length of leg adjacent to } \angle A} = \frac{BC}{AC}$$



$\tan A = \frac{\text{opposite}}{\text{adjacent}}$ $\frac{5}{8}$

Find Tan of an Angle

Find tan J and tan K. Round to four decimal places.

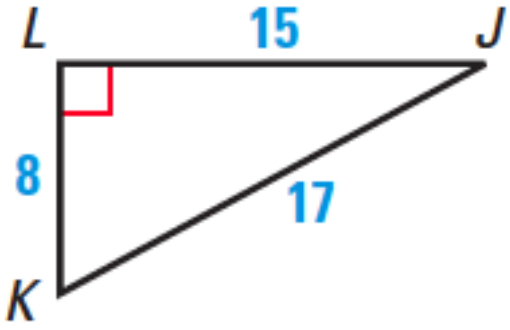


$\tan J = \frac{24}{32}$

0.75

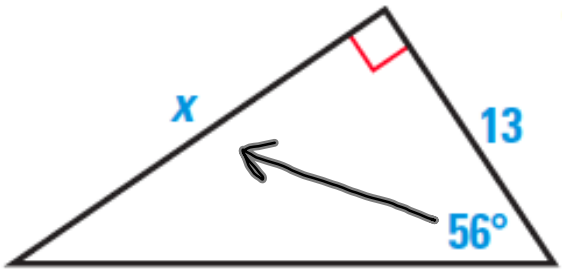
$\tan K = \frac{32}{24}$

1.3333



Find Side Lengths Using Tan

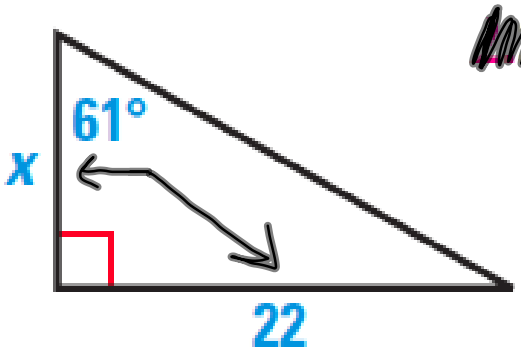
Find the value of *x*.



$13 \cdot (\tan 56) = \frac{x}{13} \cdot 13$

$x = 13 \cdot \tan 56$

$x = 19.3$



$\tan 61 = \frac{22}{x}$

$\frac{x(\tan 61)}{\tan 61} = \frac{22}{\tan 61}$

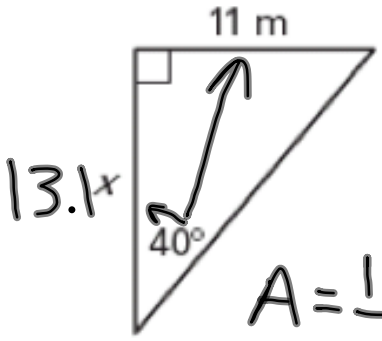
$x = \frac{22}{\tan 61}$

$x = 12.2$

Find Area and Perimeter Using Tan

Found the area of the triangle. Round to the nearest tenth.

$A = \frac{bh}{2}$



$\tan 40 = \frac{11}{x}$

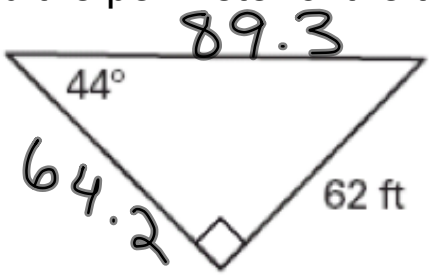
$x = \frac{11}{\tan 40}$

$x = 13.1$

$A = \frac{11 \cdot 13.1}{2}$

$A = 72.1 \text{ m}^2$

Found the perimeter of the triangle. Round to the nearest tenth.



$\tan 44 = \frac{62}{x}$

$x = \frac{62}{\tan 44}$

$x = 64.2$

$(64.2)^2 + (62)^2 = y^2$

$4121.64 + 3844 = y^2$

$y^2 = 7965.64$

$y = 89.3$

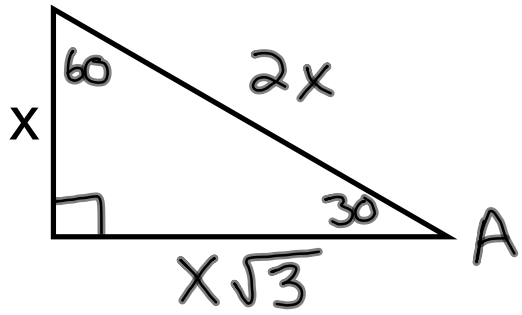
$62 + 64.2 + 89.3$

$P = 215.5 \text{ ft}$

Special Right Triangles

For acute ∠A of a right triangle, find tan A by using the 45-45-90 triangle theorem or the 30-60-90 triangle theorem.

$m\angle A=30°$

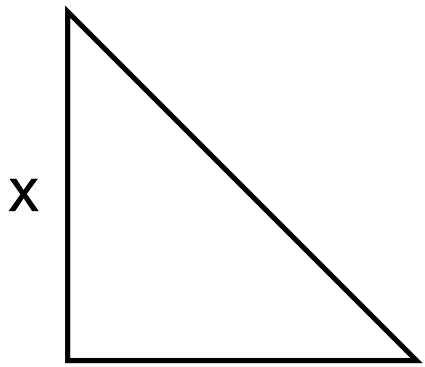


$$\tan A = \frac{x}{x\sqrt{3}}$$

$$\tan A = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$$

$$\tan A = \frac{\sqrt{3}}{3}$$

$m\angle A=45°$



Homework Assignment

Worksheet 7.5B