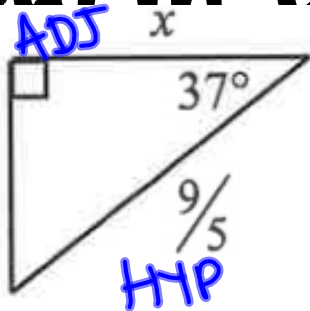


1.2 Solving Right Triangles

How do I calculate missing side lengths & angles of a right triangle?

EQ:

Warm-Up Wednesday



Find the indicated missing side length. show all work!

given: $\theta = 37^\circ$
 $HYP = 1.8$

know: $x = ADJ$

$$\cos \theta = \frac{ADJ}{HYP}$$

$$\cos 37 = \frac{x}{1.8}$$

$$1.8 (\cos 37) = x$$

$$\boxed{1.4}$$

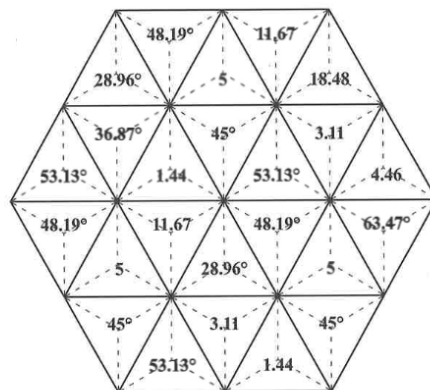
About Me

1. If you had to live with one person for the rest of your life, who would you choose?

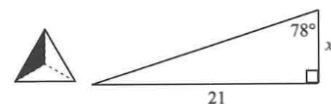
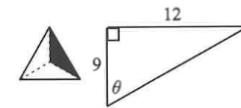
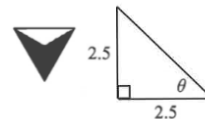
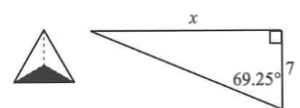
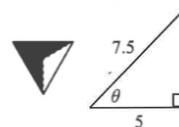
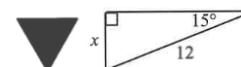
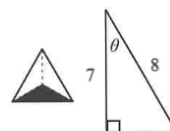
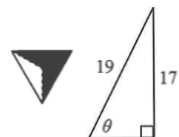
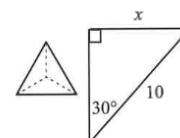
2. Truth or dare?

ACTIVITY 23

Name _____



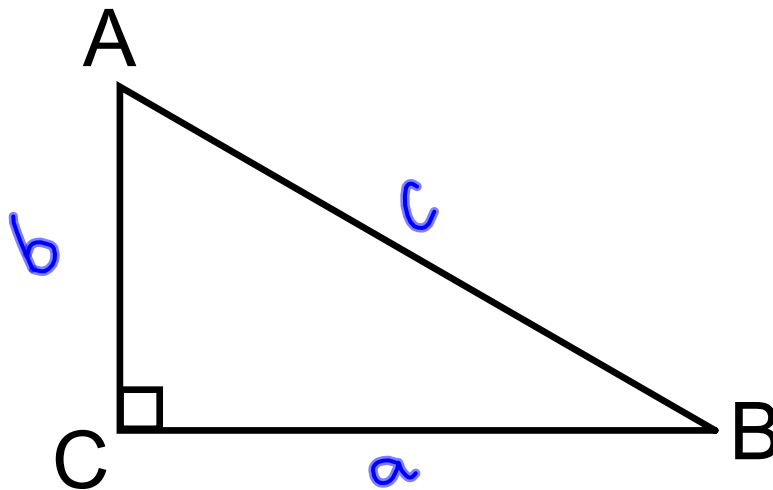
Find the missing side length x or angle θ in each right triangle. Round each answer to two decimal places. The triangles below are not drawn to scale.



1.2 Solving Right Triangles

How do I calculate missing side lengths & angles of a right triangle?

EQ:



- $a^2 + b^2 = c^2$
- SOH CAH TOA
- sum of angles = 180°
 $A + B = 90$

1.2 Solving Right Triangles

How do I calculate missing side lengths & angles of a right triangle?

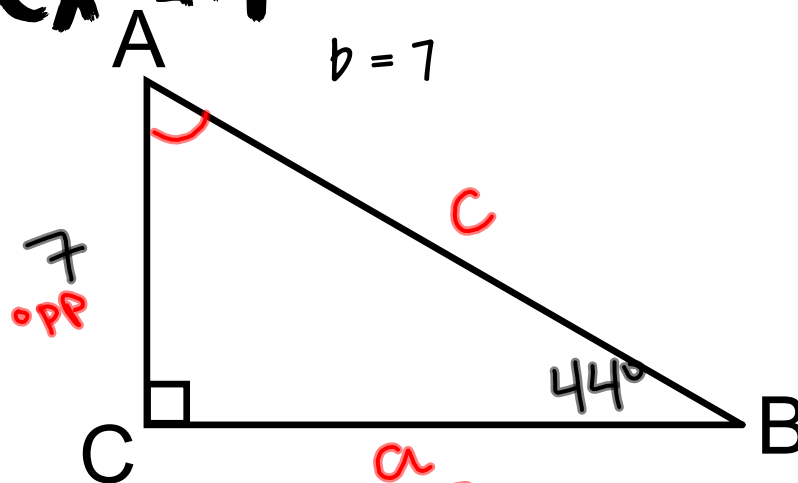
EQ:

Solve the right triangle with the given measures.

ex #1

$$m\angle B = 44^\circ$$

$$b = 7$$



$$a = \underline{7.25}$$

$$\angle A = \underline{46^\circ}$$

$$b = 7$$

$$\angle B = 44^\circ$$

$$c = \underline{10.08}$$

$$\angle C = 90^\circ$$

$$m\angle A = 90 - 44$$

$$a \rightarrow \tan 44 = \frac{7}{a}$$

$$\frac{a \tan 44}{\tan 44} = \frac{7}{\tan 44}$$

$$a = 7.25$$

$$a^2 + b^2 = c^2$$

$$(7.25)^2 + 7^2 = c^2$$

$$\sqrt{101.5} = \sqrt{c^2}$$

1.2 Solving Right Triangles

How do I calculate missing side lengths & angles of a right triangle?

EQ:

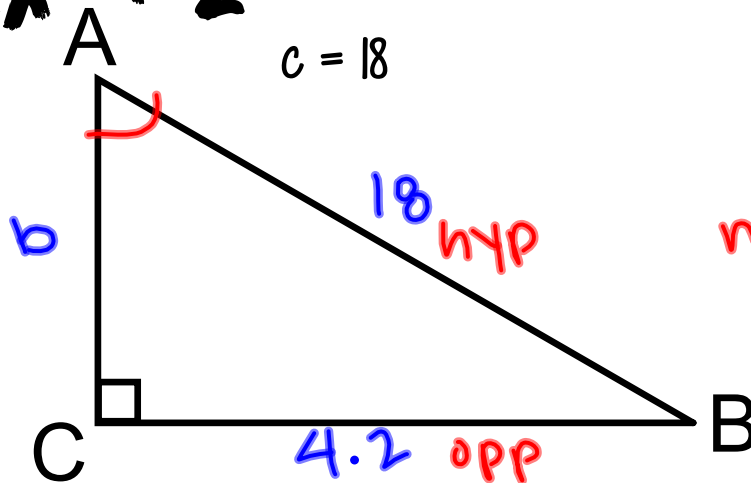
Solve the right triangle with the given measures.

ex #2

$$a = 4.2$$

$$c = 18$$

$$\begin{array}{ll} a = 4.2 & \angle A = 13^\circ \\ b = 17.5 & \angle B = 77^\circ \\ c = 18 & \angle C = 90^\circ \end{array}$$



$$\begin{aligned} a^2 + b^2 &= c^2 \\ (4.2)^2 + b^2 &= 18^2 \end{aligned}$$

$$\begin{aligned} m\angle A &\rightarrow \sin \theta = \frac{\text{OPP}}{\text{HYP}} \\ \sin A &= \frac{4.2}{18} \\ A &= \sin^{-1}\left(\frac{4.2}{18}\right) \\ A &\approx 13^\circ \end{aligned}$$

$$m\angle B \rightarrow 90 - 13$$

1.2 Solving Right Triangles

How do I calculate missing side lengths & angles of a right triangle?

EQ:

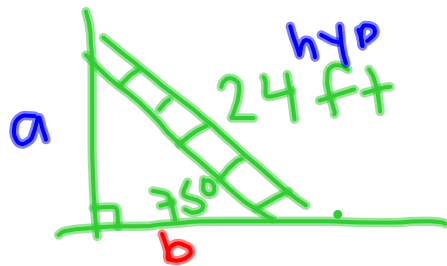
Draw a picture and solve the problem. Round all side measures to two decimal places and all angles measures to the nearest degree.

6. A 24 foot ladder leaning against a wall makes a 75° angle with the ground.

a. How high up the wall does the ladder reach?

SOH CAHTOA

b. How far is the base of the ladder from the wall?



a. KNOW: $HYP = 24$ NEED: $OPP = a$
 $\theta = 75^\circ$

$$\sin \theta = \frac{OPP}{HYP}$$

$$24 \sin 75^\circ = \frac{a}{24} \cdot 24$$

$$\boxed{23.18 \text{ ft}}$$

$$b. \quad a^2 + b^2 = c^2$$

$$(23.18)^2 + b^2 = 24^2$$

$$b = \boxed{6.2 \text{ ft}}$$

1.2 Solving Right Triangles

How do I calculate missing side lengths & angles of a right triangle?

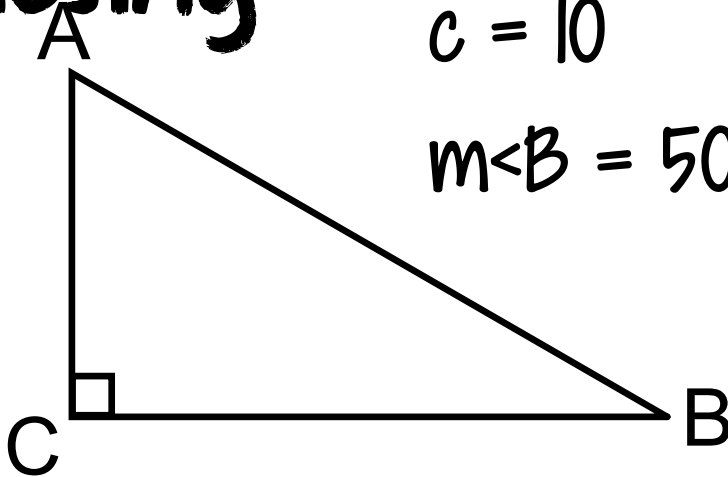
EQ:

Closing

Solve the right triangle with the given measures.

$$c = 10$$

$$m\angle B = 50^\circ$$



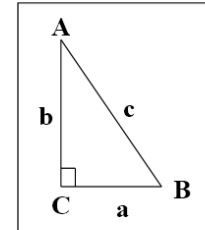
1.2 Solving Right Triangles

Name: _____

OMIT #8 & 11

Solve each triangle (find all missing sides and missing angles). Round side measures to the nearest thousandth and angle measures to the nearest degree.

1. $c = 10$
 $m\angle B = 50^\circ$



2. $a = 4$
 $c = 7$

3. $b = 3.5$
 $m\angle A = 72^\circ$

4. $a = 6$
 $m\angle A = 14^\circ$

5. $a = 2.5$
 $b = 1.4$

Draw a picture and solve the problem. Round all side measures to two decimal places and all angles measures to the nearest degree.

6. A 24 foot ladder leaning against a wall makes a 75° angle with the ground.

- a. How high up the wall does the ladder reach?
- b. How far is the base of the ladder from the wall?

7. A plane takes off at an angle of 5.4° . After traveling 1 mile along its flight path, how high in feet is the plane above the ground? (1 mile = 5280 feet)

8. At a certain time of day, a flagpole that is 24 feet high casts a shadow that is 15 feet long. What is the angle of elevation of the sun?

9. Sammy is flying a kite. The string has a length of 312 feet and the angle that the string makes with the ground is 58° . How high off the ground is the kite?
10. A guy wire stretches from the top of an antenna tower to a point on level ground 18 yards from the base of the tower. The angle between the wire and the ground is 63° . How tall is the antenna tower?
11. A plane passes directly over your head an altitude of 500 feet. Two seconds later you observe that its angle of elevation is 42° .
- a.) How far did the plane travel during those two seconds.
 - b.) How fast is the plane traveling in **miles per hour**?

