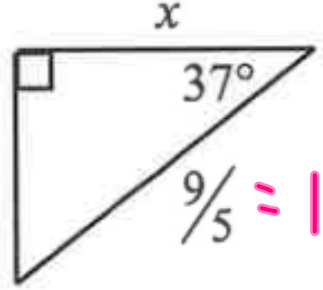
1.2 Solving Right Triangles

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

Happy birthday, Audrey!!

Warm Up Wednesday

Find the indicated missing side length. show all work!



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

$1.8 \cos 37 = x$

1.4

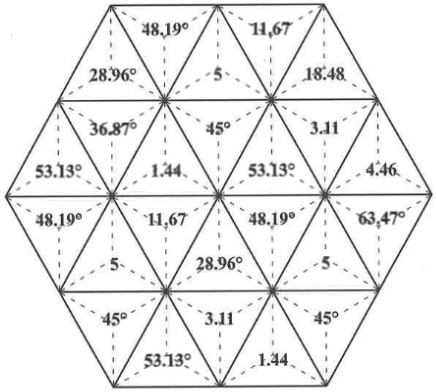
About Me

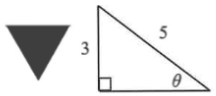
1. If you had to live with one person for the rest of your life, who would you choose?

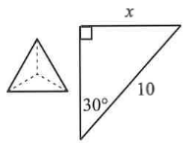
2. Truth or dare?

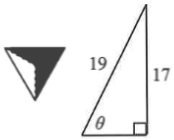
ACTIVITY 23 **Name** _____

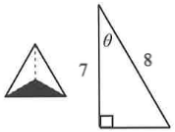
Find the missing side length x or angle θ in each right triangle. Round each answer to two decimal places. The triangles below are not drawn to scale.

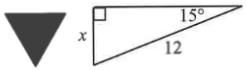


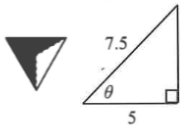


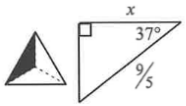


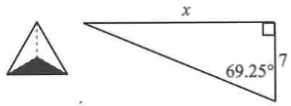


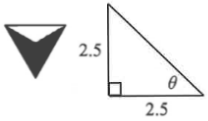


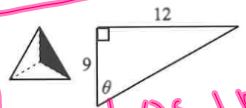




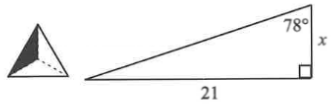








CLOSING



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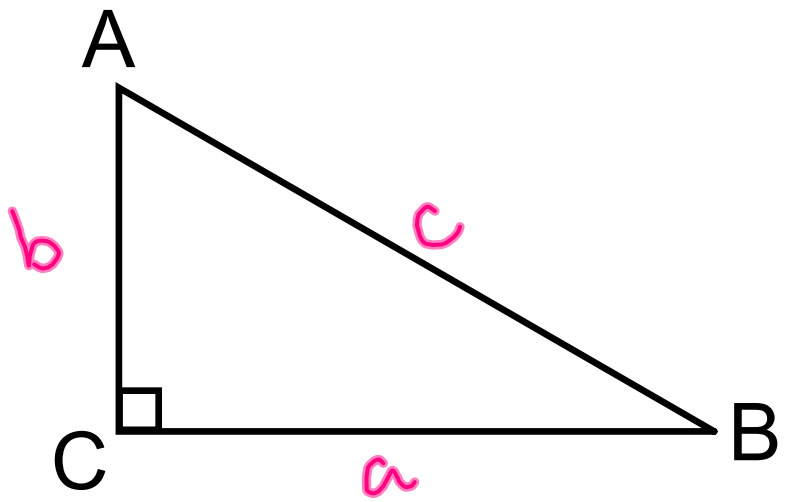
1.2 Solving Right Triangles

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



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

$A + B = 90°$

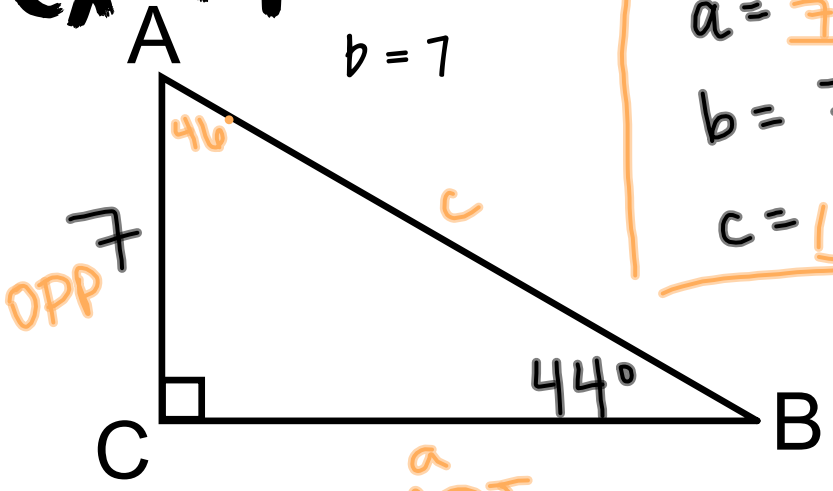
1.2 Solving Right Triangles

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

ex #1 Solve the right triangle with the given measures.

$m\angle B = 44^\circ$

$b = 7$



$a = 7.25$ $\quad m\angle A = 46^\circ$

$b = 7$ $\quad m\angle B = 44^\circ$

$c = 10.08$ $\quad m\angle C = 90^\circ$

$m\angle A: 180 - 90 - 44 = 46$

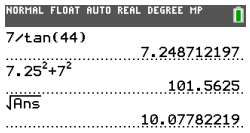
$\tan 44^\circ = \frac{7}{a}$

$a\tan 44 = 7$

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

$a = 7.25$

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



1.2 Solving Right Triangles

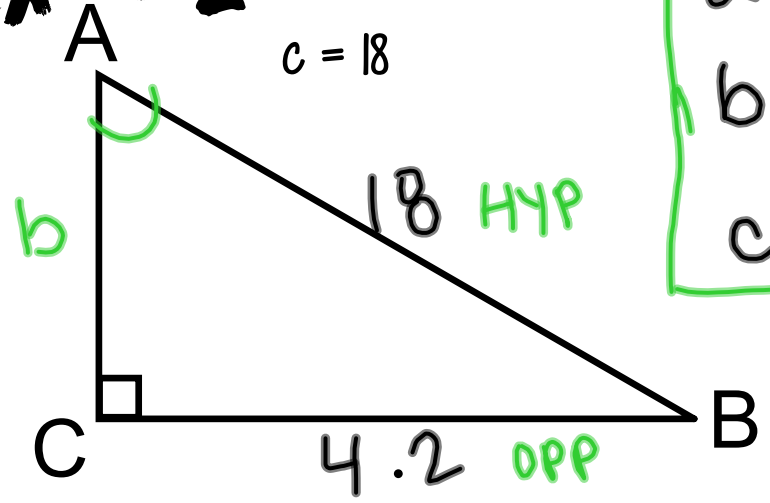
EQ: How do I calculate missing side lengths & angles of a right triangle?

ex #2

Solve the right triangle with the given measures.

$a = 4.2$

$c = 18$



$a = 4.2$ $m\angle A = 13°$

$b = 17.5$ $m\angle B = 77°$

$c = 18$ $m\angle C = 90°$

$\sin A = \frac{4.2}{18}$

$A = \sin^{-1}\left(\frac{4.2}{18}\right)$

$90 - 13 = 77°$

$4.2^2 + b^2 = 18^2$

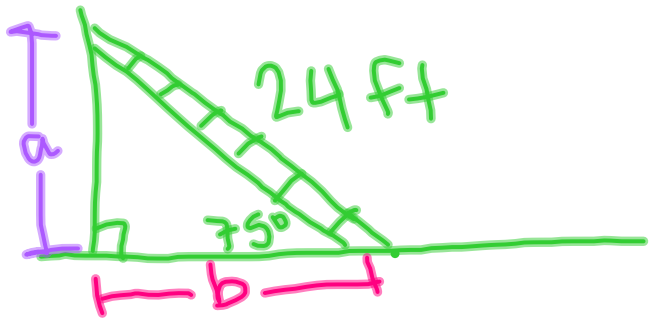
$b = \sqrt{18^2 - 4.2^2}$

1.2 Solving Right Triangles

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

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?



a. $\sin 75 = \frac{a}{24}$

$24 \sin 75 = a$

23.18 ft

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

6.2 ft

1.2 Solving Right Triangles

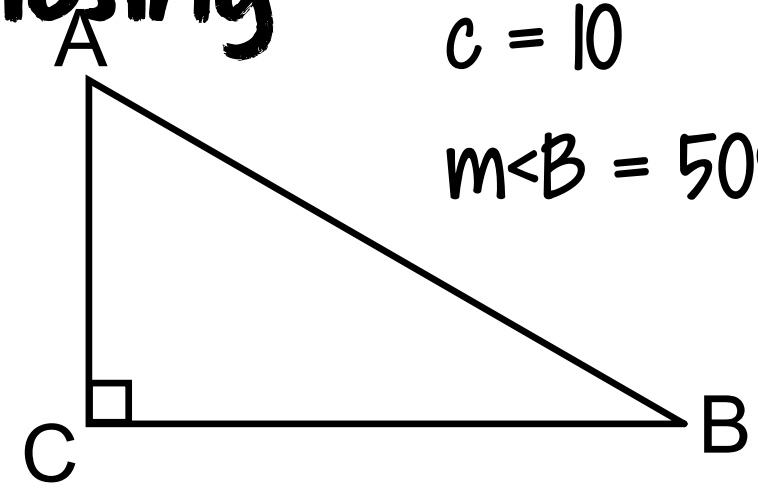
How do I calculate missing side lengths & angles of a right triangle?

EQ:

Closing

#1 - 10 NO 8

Solve the right triangle with the given measures.



$c = 10$

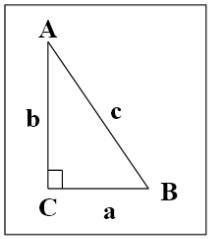
$m\angle B = 50^{\circ}$

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. $c = 10$
$m < B = 50^\circ$



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

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

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

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)

OMIT

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?

OMIT

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**?