Questions on 6.10 HW?

Apr 8-8:30 AM

For each story presented below *sketch a picture* **of the situation** *and label as much of the picture as possible.* **No need to answer the question or find the missing values, simply represent the situation with a sketch.**

1. Jill put a ladder up against the house to try and reach a light that is out and needs to be changed. She knows the ladder is 10 feet long and the distance from the base of the house to the bottom of the ladder is 4 feet.

2. Francis is a pilot of an airplane that if flying at an altitude of 3,000 feet when the plane begins its decent toward the ground. If the angle of decent of the plane is 15⁰ how much farther will the plane fly before it is on the ground?

3. Abby is standing at the top of a very tall skyscraper and looking through a telescope at the scenery all around her. The angle of decline on the telescope says 35⁰ and Abby knows she is 30 floors up and each floor is 15 feet tall. How far from the base of the building is the object that Abby is looking at?

Set

Topic: Solving triangles using Trigonometric Ratios

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Mar 20-7:55 AM

2

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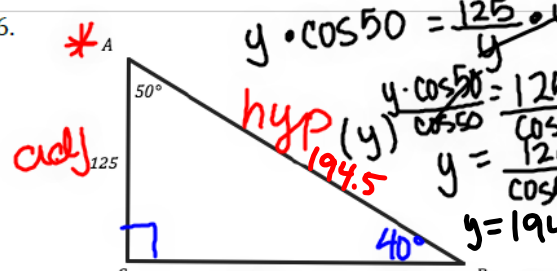File   Edit   View   Window   Help

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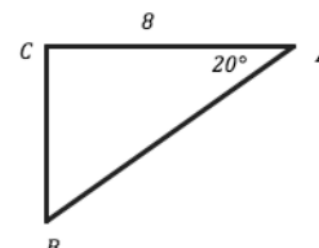
56 / 61   125%

6.

*A

50°

adj 125

$y \cdot \cos 50 = \dfrac{125}{y} \cdot y$

hyp (y) 194.5

$\dfrac{y \cdot \cos 50}{\cos 50} = \dfrac{125}{\cos 50}$

$y = \dfrac{125}{\cos 50}$

$y = 194.5$

C

40°

OPP (x)

B

7.

8

C   20°   A

B

a. $m\angle B =$ **40°**   b. $AB =$ **194.5**   c. $BC =$ **149**

$180 - 90 - 50$
$= 40$

$125 \cdot \tan 50 = \dfrac{x}{125} \cdot 125$

$125 \cdot \tan 50 = x$

$149 = x$

a. $m\angle B =$ b. $AB =$ c. $BC =$

Go

Topic: Trigonometric Ratios

Use the given right triangle to identify the trigonometric ratios. And angles were possible.

8.

x

c

y

b
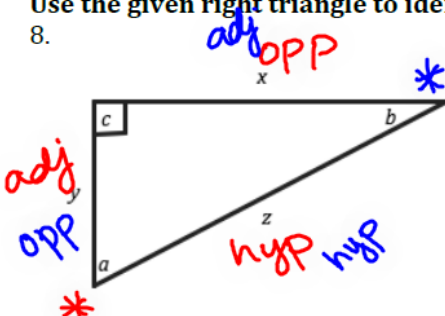
z

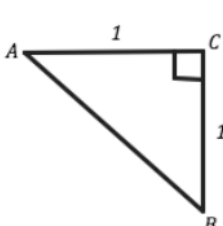a. $\sin(a) =$ b. $\cos(a) =$ c. $\tan(a) =$

d. $\sin(b) =$ e. $\cos(b) =$ f. $\tan(b) =$

8.50 x 11.00 in

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56 / 61   125%

Use the given right triangle to identify the trigonometric ratios. And angles were possible.

8.

adj *opp*

x

c

b

adj *y*

opp

z

a

hyp hyp

a. $\sin(a) = \dfrac{x}{z}$ b. $\cos(a) = \dfrac{y}{z}$ c. $\tan(a) = \dfrac{x}{y}$

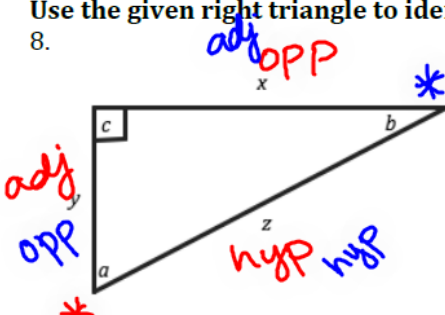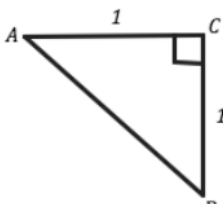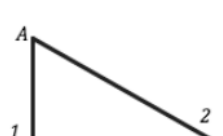d. $\sin(b) = \dfrac{y}{z}$ e. $\cos(b) = \dfrac{x}{z}$ f. $\tan(b) = \dfrac{y}{x}$

9.

A 1 *C*

1

B

a. $\sin(A) =$ b. $\cos(A) =$ c. $\tan(A) =$

d. $\sin(B) =$ e. $\cos(B) =$ f. $\tan(B) =$

g. $m\angle A =$ h. $m\angle B =$

10.

A

2

1

a. $\sin(A) =$ b. $\cos(A) =$ c. $\tan(A) =$

d. $\sin(B) =$ e. $\cos(B) =$ f. $\tan(B) =$

8.50 x 11.00 in

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4

Use the given right triangle to identify the trigonometric ratios. And angles were possible.

8.

adj *OPP*

adj *OPP*

hyp *hyp*

a. $\sin(a) = \dfrac{x}{z}$

b. $\cos(a) = \dfrac{y}{z}$

c. $\tan(a) = \dfrac{x}{y}$

d. $\sin(b) = \dfrac{y}{z}$

e. $\cos(b) = \dfrac{x}{z}$

f. $\tan(b) = \dfrac{y}{x}$

9.

a. $\sin(A) =$

b. $\cos(A) =$

c. $\tan(A) =$

d. $\sin(B) =$

e. $\cos(B) =$

f. $\tan(B) =$

g. $m\angle A=$

h. $m\angle B=$

10.

a. $\sin(A) =$

b. $\cos(A) =$

c. $\tan(A) =$

d. $\sin(B) =$

e. $\cos(B) =$

f. $\tan(B) =$

8.50 x 11.00 in

Mar 20-8:08 AM

5

6.11 Solving Right Triangles Using Trigonometric Relationships
A Practice Understanding Task

I.   For each problem:
   - make a drawing
   - write an equation
   - solve (do not forget to include units of measure)

1. Carrie places a 10 foot ladder against a wall. If the ladder makes an angle of 65° with the level ground, how far up the wall is the top of the ladder?
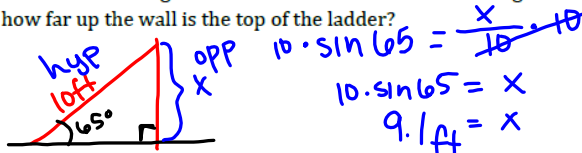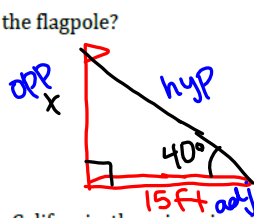
$$10 \cdot \sin 65 = \frac{x}{10} \cdot 10$$
$$10 \cdot \sin 65 = x$$
$$9.1 ft = x$$

2. A flagpole casts a shadow that is 15 feet long. The angle of elevation at this time is 40°. How tall is the flagpole?
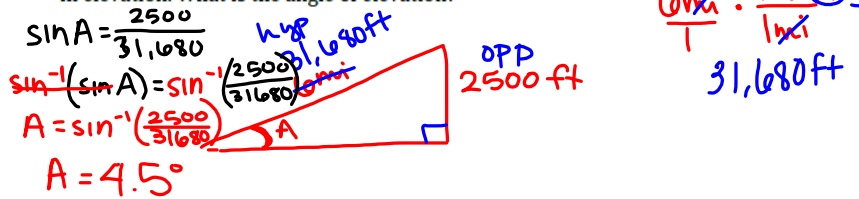
$$15 \cdot \tan 40 = \frac{x}{15} \cdot 15$$
$$15 \cdot \tan 40 = x$$
$$12.6 ft = x$$

3. In southern California, there is a six mile section of Interstate 5 that increases 2,500 feet in elevation. What is the angle of elevation?

$$\sin A = \frac{2500}{31,680}$$
$$\sin^{-1}(\sin A) = \sin^{-1}\left(\frac{2500}{31680}\right)$$
$$A = \sin^{-1}\left(\frac{2500}{31680}\right)$$
$$A = 4.5°$$

$$\frac{6 mi}{1} \cdot \frac{5280 ft}{1 mi} = 31,680 ft$$

4. A hot air balloon is 100 feet straight above where it is planning to land. Sarah is driving to meet the balloon when it lands. If the angle of elevation to the balloon is 35°, how far away is Sarah from where the balloon will land?
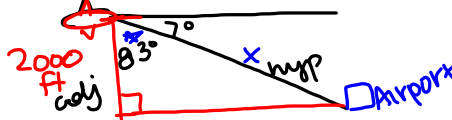
$$x \cdot \tan 35 = \frac{100}{x} \cdot x$$
$$\frac{x \cdot \tan 35}{\tan 35} = \frac{100}{\tan 35}$$
$$x = \frac{100}{\tan 35} = 142.8 ft$$

5. An airplane is descending as it approaches the airport. If the angle of depression from the plane to the ground is 7°, and the plane is 2,000 feet above the ground, what is the distance from the plane to the airport?

$$x \cdot \cos 83 = \frac{2000}{x} \cdot x$$
$$\frac{x \cdot \cos 83}{\cos 83} = \frac{2000}{\cos 83}$$
$$x = 2015 ft$$

6. Michelle is 60 feet away from a building. The angle of elevation to the top of the building is 41°. How tall is the building?
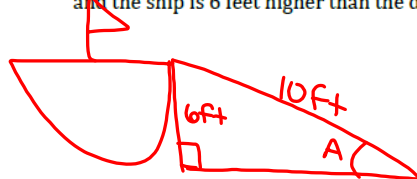
$$60 \cdot \tan 41 = \frac{x}{60} \cdot 60$$
$$60 \cdot \tan 41 = x$$
$$52.2 = x \; ft$$

7. A ramp is used for loading equipment from a dock to a ship. The ramp is 10 feet long and the ship is 6 feet higher than the dock. What is the angle of elevation of the ramp?
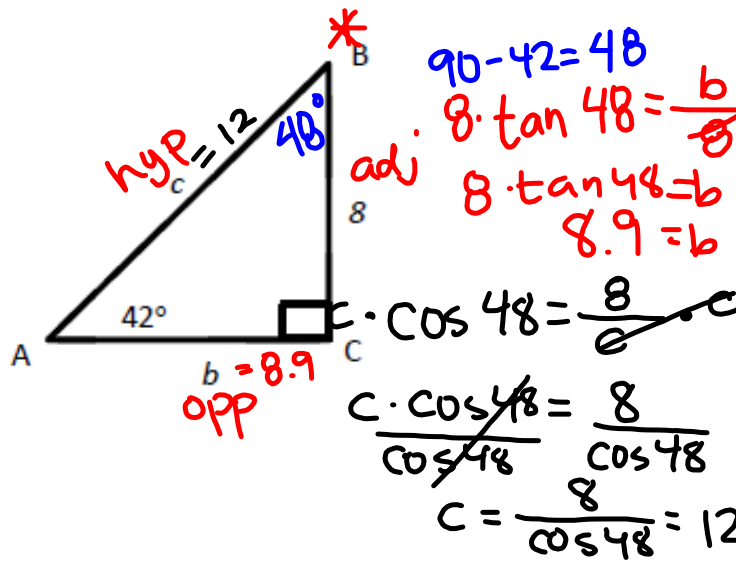
$$\sin A = \frac{6}{10}$$
$$\sin^{-1}(\sin A) = \sin^{-1}\left(\frac{6}{10}\right)$$
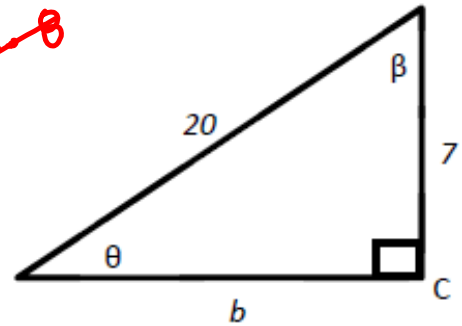$$A = \sin^{-1}\left(\frac{6}{10}\right)$$
$$A = 36.9°$$

Mar 14-2:00 PM

II.   For each right triangle below, find all unknown side lengths and angle measures:

8.

$90 - 42 = 48$

$8 \cdot \tan 48 = \dfrac{b}{8}$

$8 \cdot \tan 48 = b$

$8.9 = b$

$c \cdot \cos 48 = \dfrac{8}{c}$

$\dfrac{c \cdot \cos 48}{\cos 48} = \dfrac{8}{\cos 48}$

$c = \dfrac{8}{\cos 48} = 12$

hyp = 12
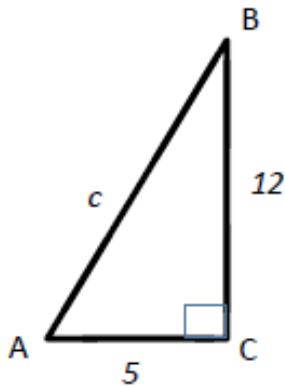adj
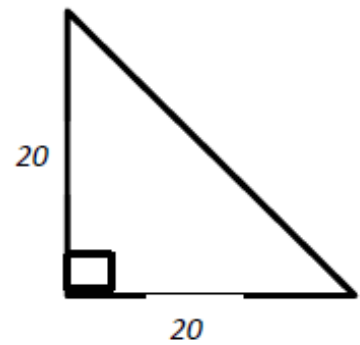8
opp
b = 8.9
42°

9.

β
20
7
θ
b

10.

B
12
c
A
5
C

11.

20
20

12. Draw and find the missing angle measures of the right triangle whose sides measure 4, 6, and 8.

13. $\cos(\alpha) = \dfrac{3}{5}$

14. $\tan(\theta) = \dfrac{8}{3}$

15. $\sin(\beta) = \dfrac{4}{7}$

Homework

Finish 6.11 "Ready, Set, Go"