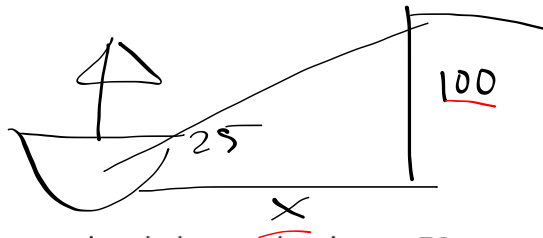


Chapter 6 Review

- 1) A ship, offshore from a vertical cliff known to be 100 feet in height takes a sighting of the top of the cliff. If the angle of elevation is found to be 25° , how far offshore is the ship?

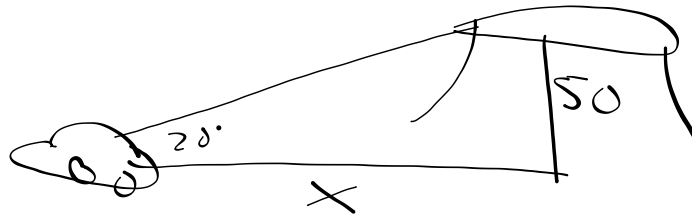


$$x \tan 25 = \frac{100}{\tan 25}$$

$$x = \frac{100}{\tan 25}$$

$$x = 214.5 \text{ ft}$$

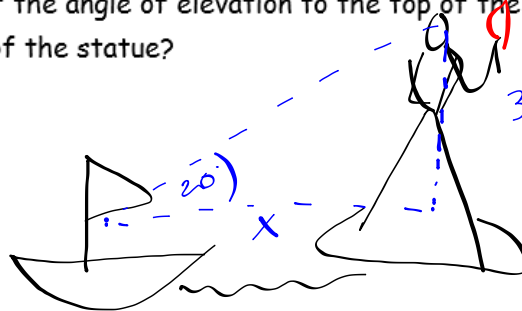
- 2) Suppose that you are headed toward a plateau 50 meters high. If the angle of elevation to the top of the plateau is 20° , how far are you from the base of the plateau?



$$\tan 20 = \frac{50}{x}$$

$$x = 137.4 \text{ ft}$$

- 3) A ship is just offshore of New York City. A sighting is taken of the Statue of Liberty, which is about 305 feet tall. If the angle of elevation to the top of the statue is 20° , how far is the ship from the base of the statue?



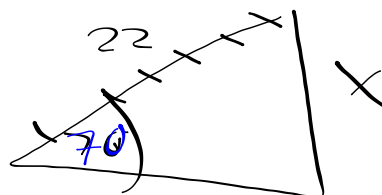
$$\tan 20 = \frac{305}{x}$$

$$x = \frac{305}{\tan 20}$$

$$x = 837.98$$

$$838 \text{ feet}$$

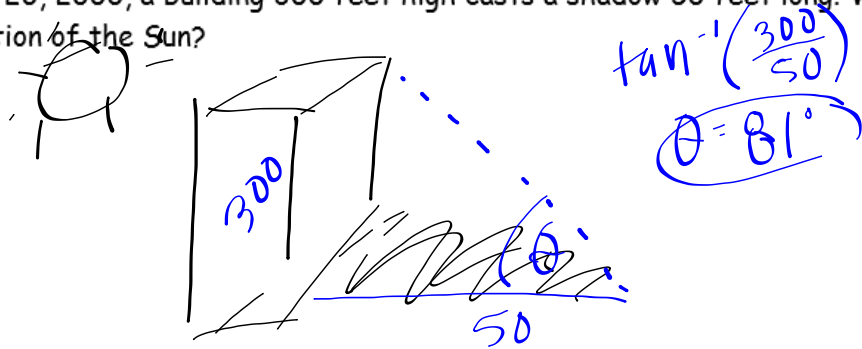
- 4) A 22-foot extension ladder leaning against a building makes a 70° angle with the ground. How far up the building does the ladder touch?



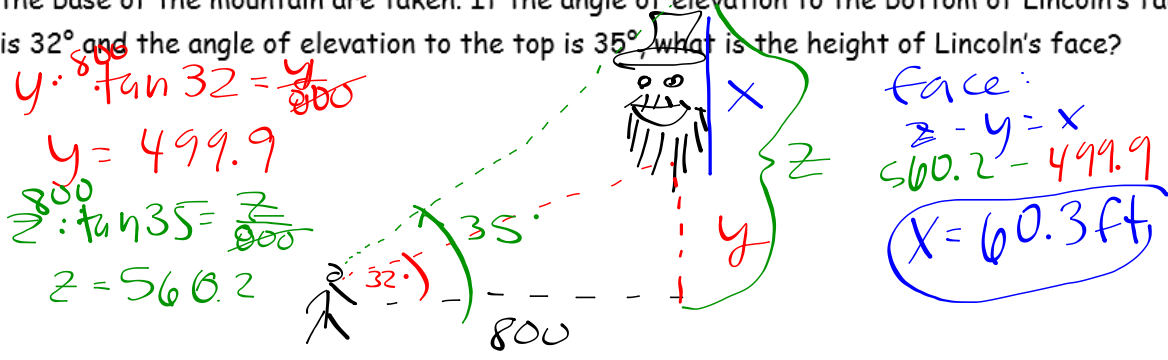
$$22 \sin 70 = \frac{x}{22}$$

$$x = 20.7 \text{ ft}$$

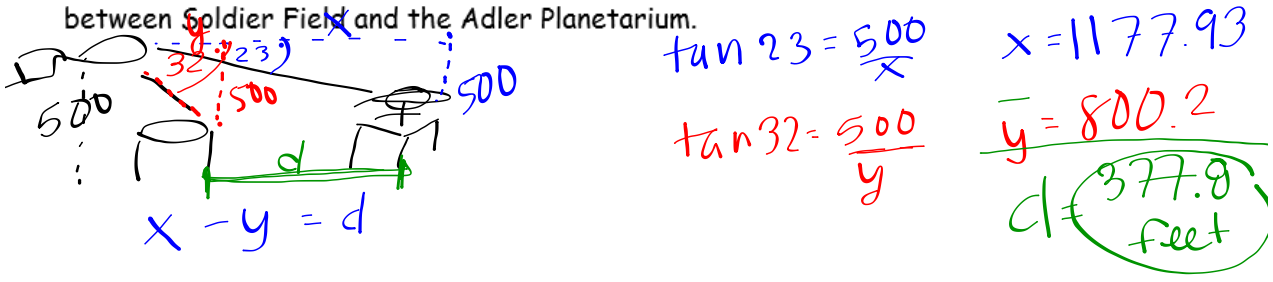
- 5) At 10 AM on April 26, 2000, a building 300 feet high casts a shadow 50 feet long. What is the angle of elevation of the Sun?



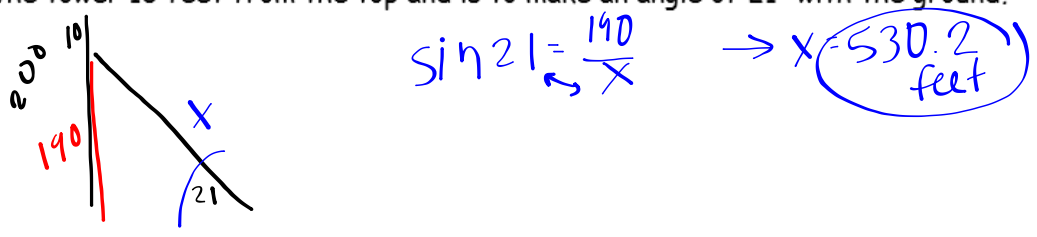
- 6) To measure the height of Lincoln's caricature on Mt. Rushmore, two sightings 800 feet from the base of the mountain are taken. If the angle of elevation to the bottom of Lincoln's face is 32° and the angle of elevation to the top is 35° , what is the height of Lincoln's face?



- 7) A blimp, suspended in the air at a height of 500 feet, lies directly over a line from Soldier Field to the Adler Planetarium on Lake Michigan. If the angle of depression from the blimp to the stadium is 32° and from the blimp to the planetarium is 23° , find the distance between Soldier Field and the Adler Planetarium.



- 8) A radio transmission tower is 200 feet high. How long should a guy wire be if it is to be attached to the tower 10 feet from the top and is to make an angle of 21° with the ground?



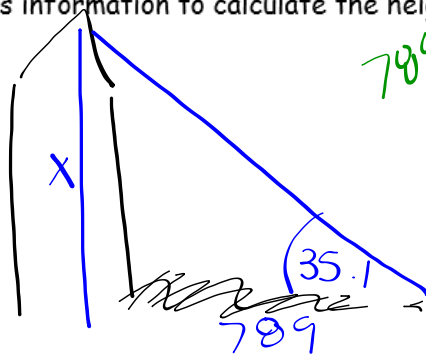
- 9) A guy wire 80 feet long is attached to the top of a radio transmission tower, making an angle of 25° with the ground. How high is the tower?



$$\sin 25^\circ = \frac{x}{80}$$

$$x = 33.9 \text{ ft}$$

- 10) The angle of elevation of the Washington Monument is 35.1° at the instant it casts a shadow 789 feet long. Use this information to calculate the height of the monument.



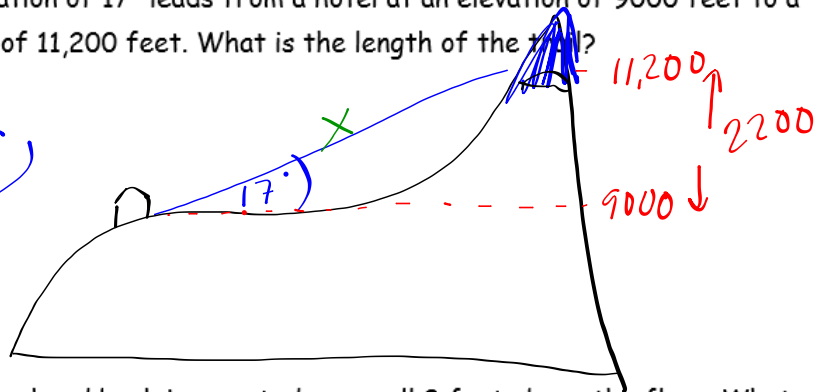
$$\tan 35.1^\circ = \frac{x}{789}$$

$$x = 554.5 \text{ feet}$$

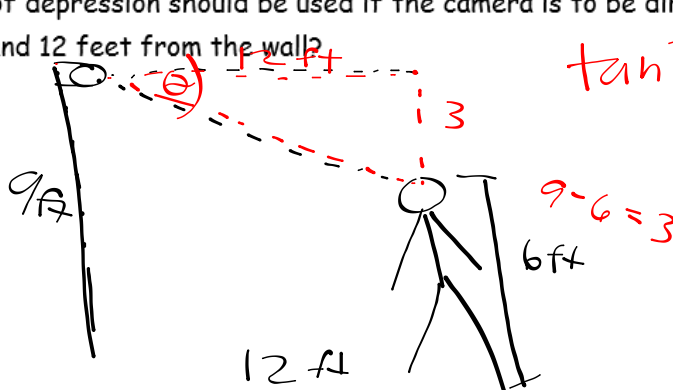
- 11) A straight trail with an inclination of 17° leads from a hotel at an elevation of 9000 feet to a mountain lake at an elevation of 11,200 feet. What is the length of the trail?

$$\sin 17^\circ = \frac{2200}{x}$$

$$x = 7524.7 \text{ feet}$$

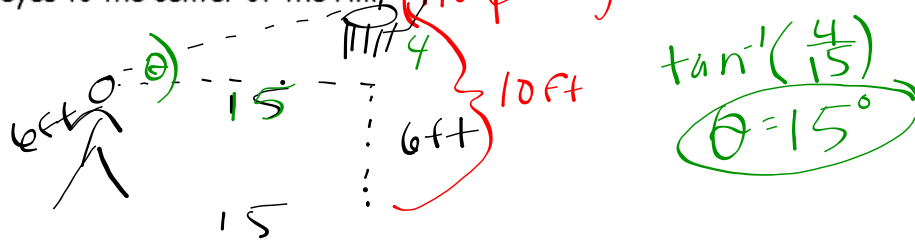


- 12) A security camera in a neighborhood bank is mounted on a wall 9 feet above the floor. What angle of depression should be used if the camera is to be directed to a spot 6 feet above the floor and 12 feet from the wall?



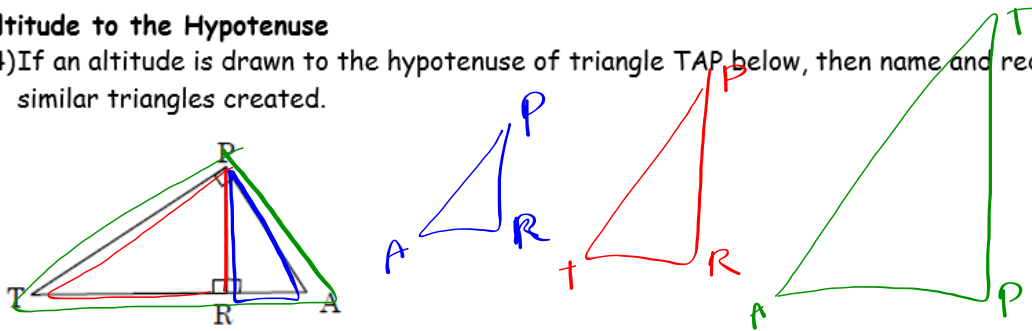
$$\tan^{-1}\left(\frac{3}{12}\right) = 14^\circ$$

13) The eyes of a basketball player are 6 feet above the floor. The player is at the free-throw line, which is 15 feet from the center of the basket rim. What is the angle of elevation from the player's eyes to the center of the rim? (hoop height is 10 feet.)

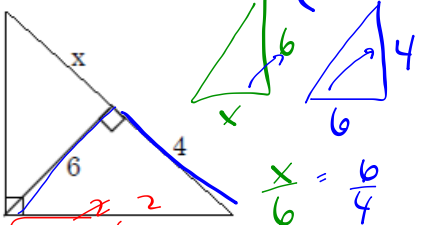


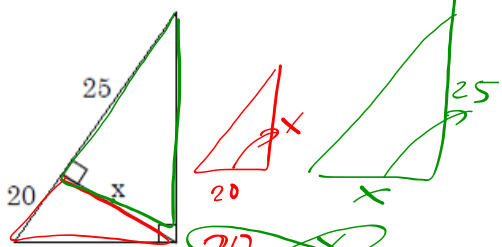
Altitude to the Hypotenuse

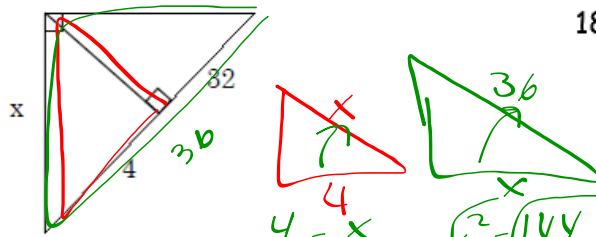
14) If an altitude is drawn to the hypotenuse of triangle TAP below, then name and redraw the 3 similar triangles created.

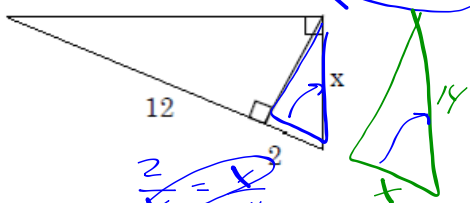


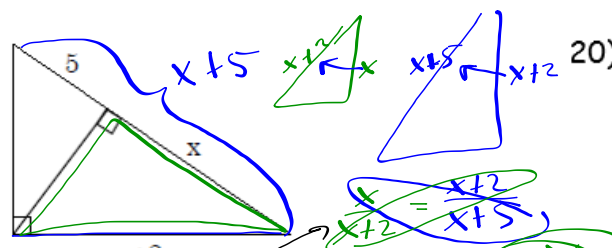
Solve for the variable(s). (No decimals)

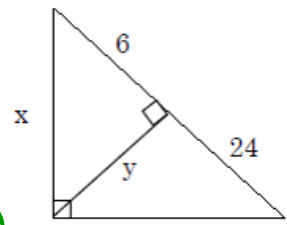
15)  $\frac{x}{6} = \frac{4}{6}$
 $4x = 36$
 $x = 9$

16)  $\sqrt{20 \cdot 25}$
 $x^2 = 500$
 $x = 10\sqrt{5}$

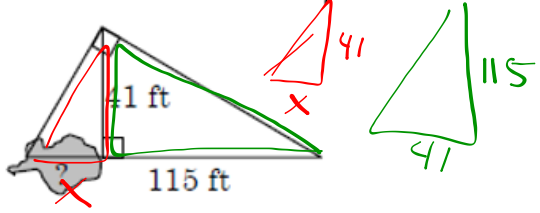
17)  $\frac{4}{x} = \frac{x}{36}$
 $x^2 = 144$
 $x = 12$

18)  $\sqrt{x^2 = 28}$
 $x = 2\sqrt{7}$

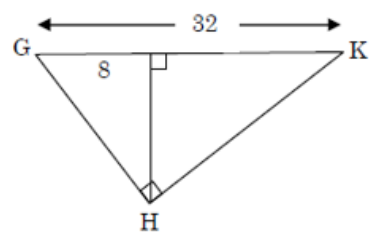
19)  $\frac{6}{4} = \frac{6}{9}$
 $\frac{2}{3} = \frac{2}{3}$
 $x = 4$



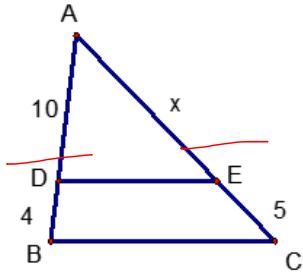
21) How far is it across the quicksand?



22) Find the lengths of GH and HK.

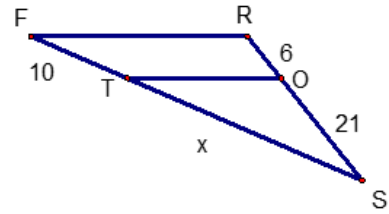


23) Given: $BC \parallel DE$, Find: $AE = \underline{\hspace{2cm}}$

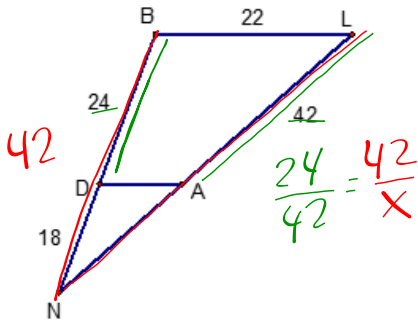


$$\frac{10}{4} = \frac{x}{5}$$

24) Given: $TO \parallel FR$, Find: $ST = \underline{\hspace{2cm}}$

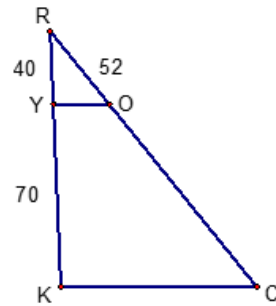


25) Given: $DA \parallel BL$, Find: $NL = \underline{\hspace{2cm}}$



$$\frac{24}{42} = \frac{x}{x}$$

26) Given: $YO \parallel CK$, Find: $RC = \underline{\hspace{2cm}}$



27) Given: $BE \parallel CD$

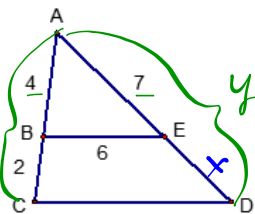
Find: $ED = \underline{\hspace{2cm}}$

$CD = \underline{\hspace{2cm}}$

$$\frac{6}{4} = \frac{7}{y}$$

$$\rightarrow y - 7 = CD$$

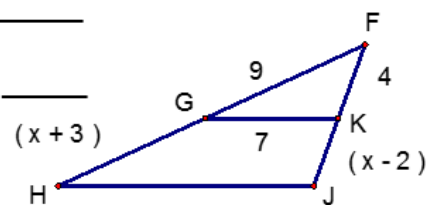
$$\frac{4}{2} = \frac{7}{x}$$



28) Given: $GK \parallel HJ$

Find: $KJ = \underline{\hspace{2cm}}$

$HJ = \underline{\hspace{2cm}}$



29) Given: $a \parallel b \parallel c \parallel d$ and $KP = 24$

Find: $KM = \underline{8}$

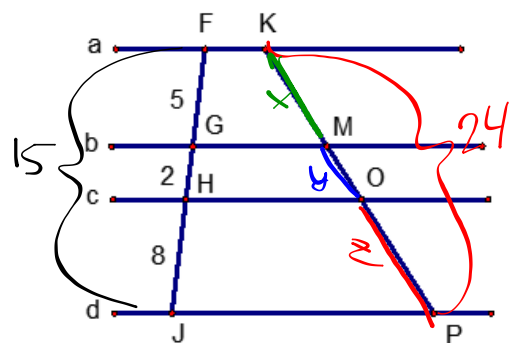
$MO = \underline{3.2}$

$OP = \underline{\hspace{2cm}}$

~~$$\frac{15}{24} = \frac{5}{x}$$~~

$$\frac{15}{24} = \frac{2}{y}$$

$$48 = 15y$$



Find the angle measure to the nearest tenth.

30) $\sin^{-1} 0.2026 = 11.7^\circ$

31) $\cos^{-1} 0.0682 =$

32) $\tan^{-1} 7.9321 =$

Are the following triangle right triangles? Explain.

33) 12, 14, and 19

34) 10, 24, and 26

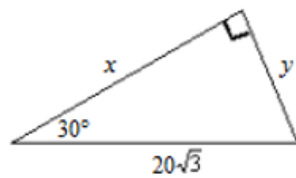
35) 6, 8, and 10

36) 15, 23, and 28

$12^2 + 14^2 \neq 19^2$
false
not a right \triangle

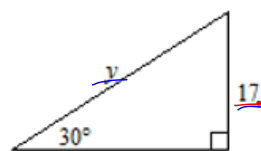
Find the value of the variable(s). Leave answer in simplest radical form.

37)



Not drawn to scale

38)



Not drawn to scale

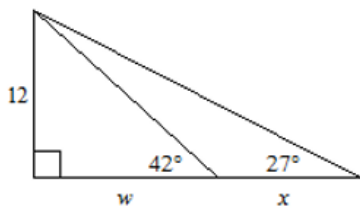
$x \rightarrow \tan 30 = \frac{17}{x} \quad x = 29.4$

$y \rightarrow \sin 30 = \frac{17}{y} \quad y = 34$

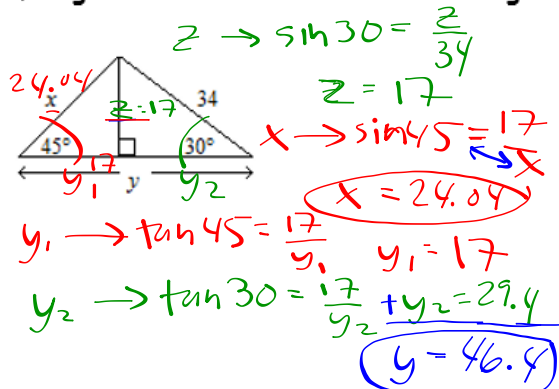
decimal is okay.

Find the value of the variable(s). Round lengths of segments to nearest tenth and angle measure to nearest degree.

39)



40)



$z \rightarrow \sin 30 = \frac{z}{34}$

$z = 17$

$x \rightarrow \sin 45 = \frac{17}{x}$

$x = 24.04$

$y_1 \rightarrow \tan 45 = \frac{17}{y_1} \quad y_1 = 17$

$y_2 \rightarrow \tan 30 = \frac{17}{y_2} \quad y_2 = 29.4$

$y = 46.4$

