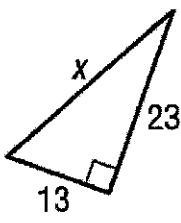
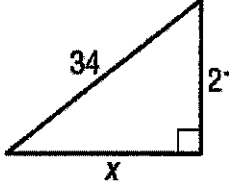
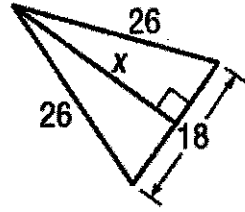
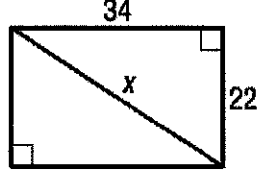
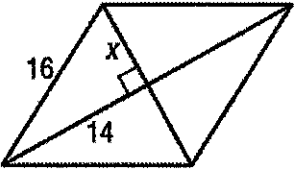



8.1 The Pythagorean Theorem and its Converse

ASSIGNMENT

For #1-6, find the value of  $x$ . Round your answer to 2 decimal places, if needed.

<p>1.</p>  <p>26.42</p>	<p>2.</p>  <p>26.74</p>	<p>3.</p>  <p>24.39</p>
<p>4.</p>  <p>40.50</p>	<p>5.</p>  <p>7.75</p>	<p>6.</p>  <p>11.62</p>

For #7-10, determine whether each set of measures can be the measures of the sides of a right triangle. Then state whether the sides form a Pythagorean triple. Justify your answer mathematically.

7. 9, 40, 41

rt  $\Delta$   $\exists$  pythag. triple

8. 29, 7, 28

no

9. 24, 40, 32

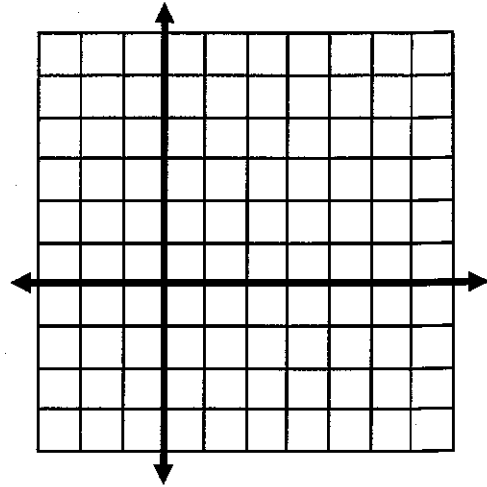
yes - rt  $\Delta$   $\exists$   
pythag triple  
(3, 4, 5)

10. 2,  $\sqrt{12}$ ,  $\sqrt{8}$

yes but not a triple

For #11 determine whether  $\triangle GHI$  is a right triangle for the given vertices.  
Justify your answer mathematically.

11.  $G(2, -1), H(5, 4), I(6, -3)$

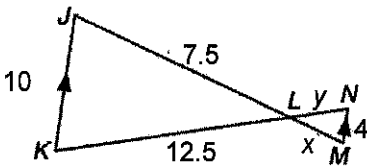


no  $20 + 34 \neq 50$

12. Solve:  $\frac{x+5}{4} = \frac{x-7}{2}$

$x = 19$

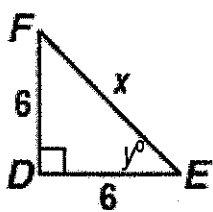
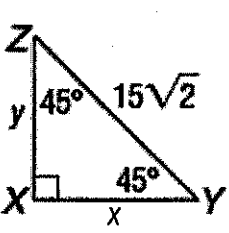
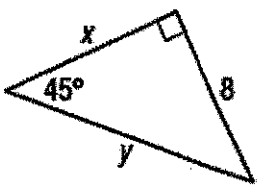
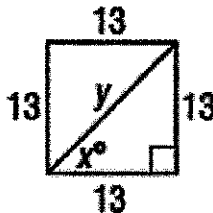
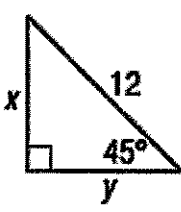
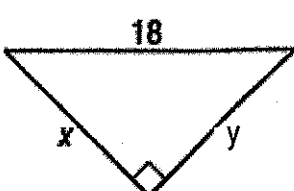
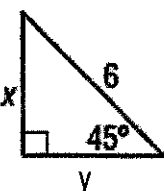
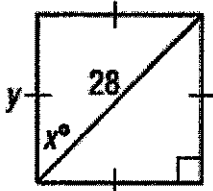
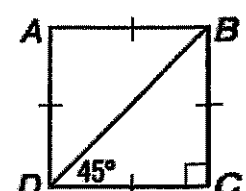
13. Find the values of  $x$  and  $y$ .



$x = \underline{3} \quad y = \underline{5}$

ASSIGNMENT

Find the values of  $x$  and  $y$ . Write your answer in simplest radical (square root) form.

<p>1.</p>  <p><math>6\sqrt{2}, 45^\circ</math></p>	<p>2.</p>  <p>15, 15</p>	<p>3.</p>  <p>8, <math>8\sqrt{2}</math></p>
<p>4.</p>  <p><math>45^\circ, 13\sqrt{2}</math></p>	<p>5.</p>  <p><math>6\sqrt{2}</math></p>	<p>6.</p>  <p><math>9\sqrt{2}</math></p>
<p>7.</p>  <p><math>3\sqrt{2}</math></p>	<p>8.</p>  <p><math>45^\circ, 14\sqrt{2}</math></p>	<p>9. The perimeter of ABCD is 20 cm. Find <math>BD</math>.</p>  <p><math>5\sqrt{2}</math></p>

For #10-11, determine whether each set of measures can be the measures of the sides of a right triangle. Then state whether the sides form a Pythagorean triple. Justify your answer mathematically.

10. 7, 12, 20

no

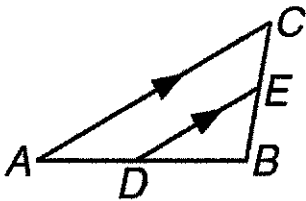
11. 5, 5,  $\sqrt{50}$

yes but not a triple

12. A building casts a 210-foot shadow. A nearby tree that measures 6.5 feet casts a 4-foot shadow. **Make a sketch of the situation.** Write a proportion that could be used to determine the height of the building. Then solve the proportion.

341.25 ft

13. If  $AD = 24$ ,  $DB = 15$ , and  $EB = 10$ , find  $CB$ .



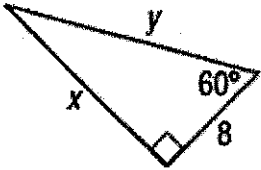
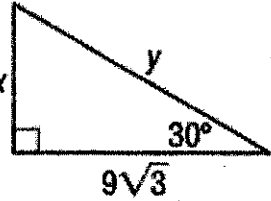
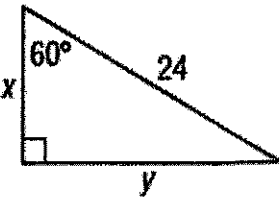
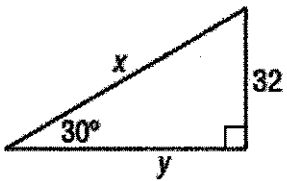
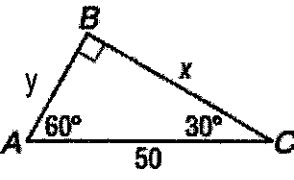
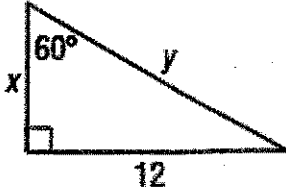
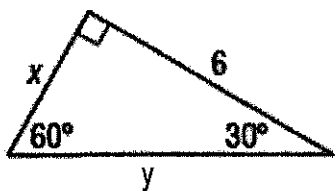
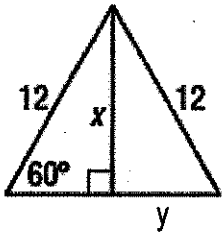
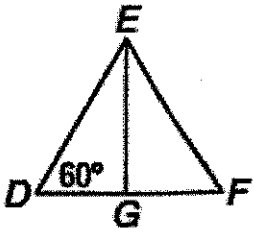
26

14. The ratio of the measures of the three sides of a triangle is 3:4:6. If the perimeter is 91 cm, find the measure of the longest side.

42 cm

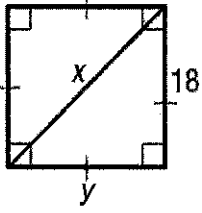
ASSIGNMENT

Find the values of  $x$  and  $y$ . Write your answer in simplest radical (square root) form.

<p>1.</p>  <p><math>8\sqrt{3}, 16</math></p>	<p>2.</p>  <p><math>9, 18</math></p>	<p>3.</p>  <p><math>12, 12\sqrt{3}</math></p>
<p>4.</p>  <p><math>64, 32\sqrt{3}</math></p>	<p>5.</p>  <p><math>25\sqrt{3}, 25</math></p>	<p>6.</p>  <p><math>4\sqrt{3}, 8\sqrt{3}</math></p>
<p>7.</p>  <p><math>2\sqrt{3}, 4\sqrt{3}</math></p>	<p>8.</p>  <p><math>6\sqrt{3}, 6</math></p>	<p>9. The altitude of an equilateral triangle is <math>10\sqrt{3}</math>. Find the perimeter of the triangle.</p>  <p><math>60</math> units</p>

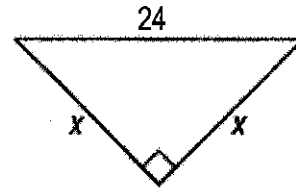
Find the missing length(s) in each figure below. Give exact (radical) answers, where appropriate.

10.



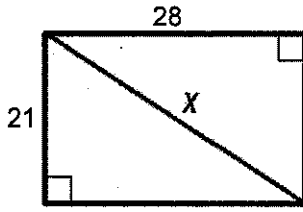
$18\sqrt{2}, 18$

11.



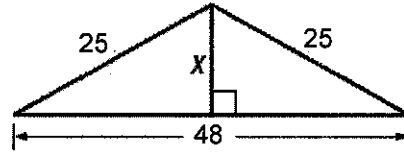
$12\sqrt{2}$

12.



35

13.



7

14.  $\triangle ABC \sim \triangle STR$ , so  $\frac{AB}{CA} =$  \_\_\_\_\_

- A.  $\frac{AB}{BC}$     B.  $\frac{ST}{RS}$     C.  $\frac{TR}{RS}$     D.  $\frac{RS}{ST}$

15. Find the length of  $\overline{MN}$  under a dilation with a scale factor of  $\frac{2}{3}$  if  $M'N' = 18$ .

27

Find each indicated trigonometric ratio as a reduced fraction.

1.  $\sin B$

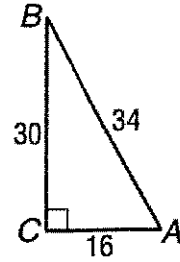
$\frac{8}{17}$

2.  $\cos B$

$\frac{15}{17}$

3.  $\tan B$

$\frac{8}{15}$



Use a calculator to find the following values to the nearest hundredth.

4.  $\sin 5$

.09

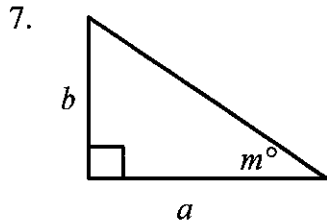
5.  $\tan 23$

.42

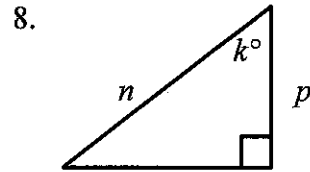
6.  $\cos 61$

.48

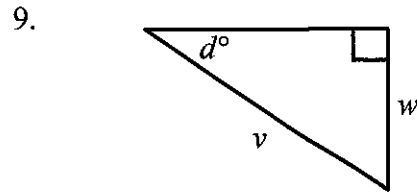
For questions 7-9, decide if sin, cos or tan would be best.



tan

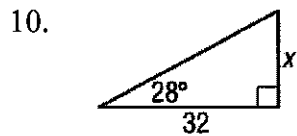


cos

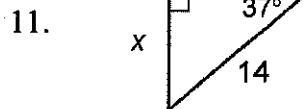


sin

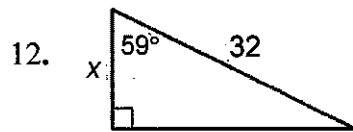
Find x. Round to the nearest tenth.



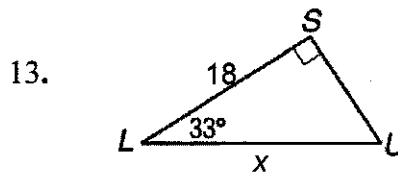
17.0



8.4

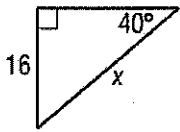


16.5



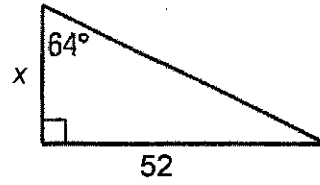
21.5

14.



24.9

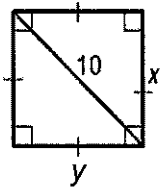
15.



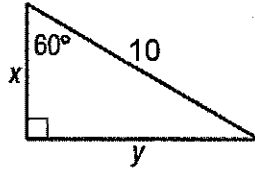
25.4

Find  $x$  and  $y$  in each figure below. Give exact (radical) answer for #16 and 17.

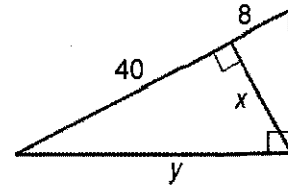
16.

 $5\sqrt{2}$ 

17.

5,  $5\sqrt{3}$ 

18.



17.9, 43.8



Geometry B  
8.5 Solving for a Missing Angle

Name \_\_\_\_\_  
ASSIGNMENT

Find the measure of each acute angle to the nearest degree.

1.  $\cos B = 0.2985$

$73^\circ$

2.  $\tan M = 0.3894$

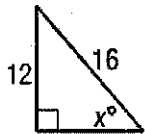
$21^\circ$

3.  $\sin J = 0.1176$

$7^\circ$

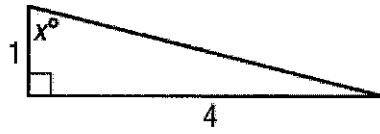
Find  $x$ . Round to the nearest degree.

4.



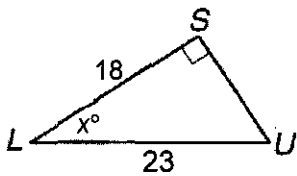
$49^\circ$

5.



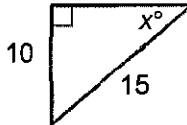
$80^\circ$

6.



$38^\circ$

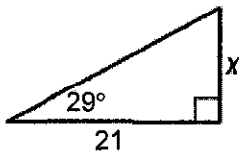
7.



$42^\circ$

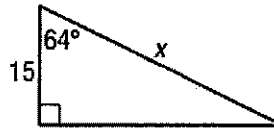
Find the missing lengths in each triangle.

8.



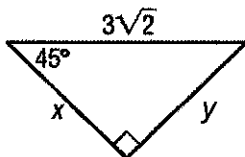
$11.6$

9.



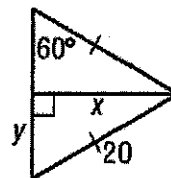
$34.2$

10.



$3$

11.



$10\sqrt{3}, 10$

For #12-13, determine whether each set of measures can be the measures of the sides of a right triangle. Then state whether the sides form a Pythagorean triple. Justify your answer mathematically.

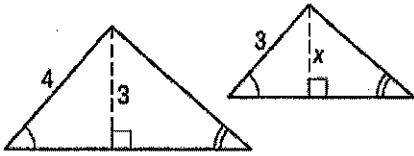
12. 33, 65, 56

yes rt  $\Delta$   
 $\exists$  pythag. triple

13. 3, 4,  $\sqrt{7}$

yes but  
not a triple

14. The two triangles below are similar. Find  $x$ .



2.25

16. A car has a length of 8 feet and a width of 4.8 feet. If the width of a model of the car is 6 inches, what is the length of the model?

10 in

17. The perimeter of a rectangle is 336 inches. The ratio of the length to the width is 9:5. Find the length of the rectangle.

108 in

8.6 Angles of Elevation and Depression ASSIGNMENT

For each problem, draw and label a picture (if not provided). Show all work.

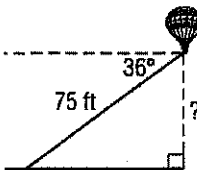
1. A ladder leaning against a building makes an angle of  $81^\circ$  with the ground. If the ladder is 20 feet long, how far up the building will the ladder reach? Round to the nearest tenth.

$19.8 \text{ ft}$

2. Suppose the sun casts a shadow off a 35-foot tall building. What is the angle of elevation to the sun if the shadow is 22 feet long? Round to the nearest tenth of a degree.

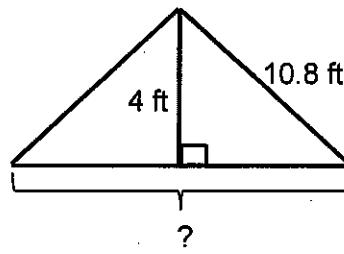
$57.8^\circ$

3. The angle of depression from a balloon on a 75-foot string to the person on the ground is  $36^\circ$ . How high is the balloon?



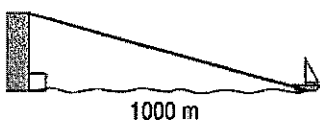
$44.1 \text{ ft}$

4. A builder makes a simple truss for a roof (see below). How wide is base of the truss?



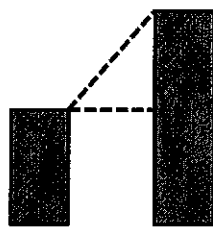
$20.1 \text{ ft}$

5. A boat is 1000 meters from a cliff. If the angle of depression from the top of the cliff to the boat is  $10^\circ$ , how tall is the cliff? Round to the nearest tenth.



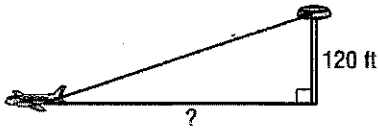
$176.3 \text{ m}$

6. From a window 24 feet above the ground, the angle of elevation to the top of a second building is  $38^\circ$ . The distance between the buildings is 63 feet. Find the height of the second building to the nearest tenth of a foot.



$98.4 \text{ ft}$

7. From the top of a 120-foot control tower, an air-traffic controller looks down at a plane sitting 500 feet down the runway from the base of the tower. What is the angle of depression from the top of the tower to the plane?

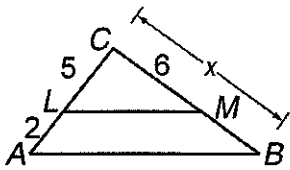


$$x = 135^\circ$$

8. The perimeter of an equilateral triangle is 30 meters. Find the exact length of an altitude of the triangle.

$$5\sqrt{3}$$

9. Find  $x$  so that  $\overline{LM} \parallel \overline{AB}$ .



$$8.4$$

10. Solve:  $\frac{4x-2}{8} = \frac{x+2}{4}$

$$x = 3$$

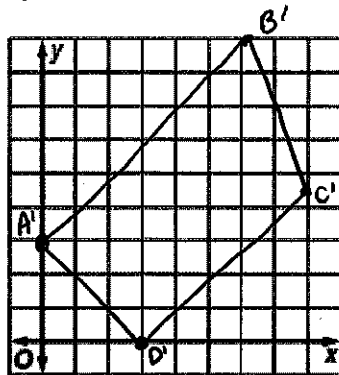
11. Graph the polygon that has the following vertices. Then find and graph the image of the polygon after a dilation centered at the origin with a scale factor of 1.5.

$$A(0, 2) \rightarrow A'$$

$$B(4, 6) \rightarrow B'$$

$$C(6, 3) \rightarrow C'$$

$$D(2, 0) \rightarrow D'$$



12. A photograph 5 inches wide and 3 inches tall is enlarged to make a poster. The poster is 4 feet wide. Find the height of the poster.

$$2.4 \text{ ft}$$