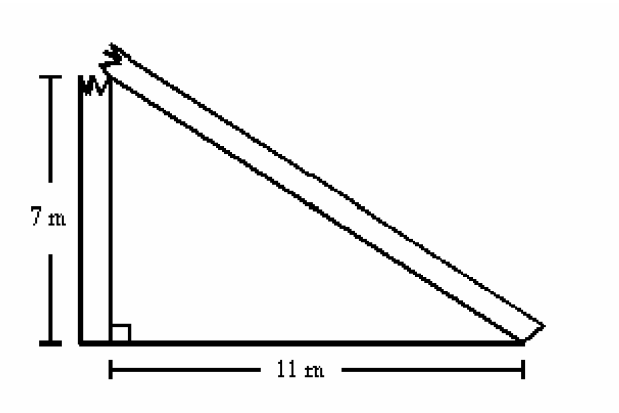
Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Geometry Mastery Test #7 Review

Numeric Response

1. A power pole broke and fell as shown.

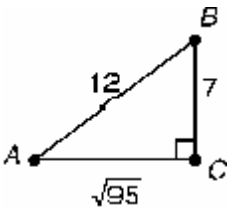


To the nearest tenth of a meter, what was the original height of the pole?

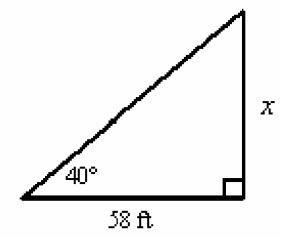
2. A ship in calm seas steamed 12 km in one direction, turned and steamed 12 km in another direction, and then returned 8 km back to its original position. The captain then plotted the ship's course on a nautical chart. She asked her first officer to look at the chart and describe the ship's path. Did the first officer describe it as an acute, obtuse, or right triangle? Then the second officer said she could further identify whether the path was scalene, isosceles, or equilateral. What did she determine?

3. Mark went for a mountain-bike ride in a relatively flat, wooded area. He rode for 7 km in one direction, then turned and peddled 5 km in another. Finally he turned and rode 7 km in yet another direction. Stopping, Mark took out a map and drew his path. Could Mark be back at his starting point? Could his path be a right triangle?

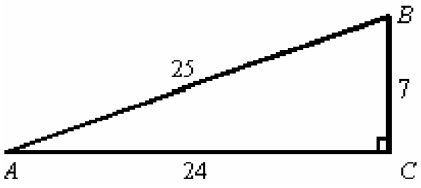
4. The tangent of $\angle B$ is _____.



5. A photographer shines a camera light at a particular painting forming an angle of 40° with the camera platform. If the light is 58 feet from the wall where the painting hangs, how high above the platform is the painting?



6. Write cos *B*.

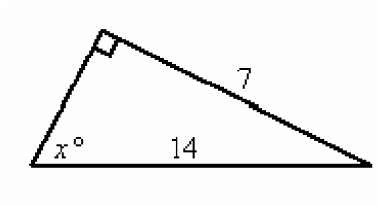


7. To find the height of a tower, a surveyor positions a transit that is 2 meters tall at a spot 95 meters from the base of the tower. She measures the angle of elevation to the top of the tower to be 32°. What is the height of the tower, to the nearest meter?

8. A slide 4.1 m long makes an angle of 27° with the ground. How high is the top of the slide above the ground?

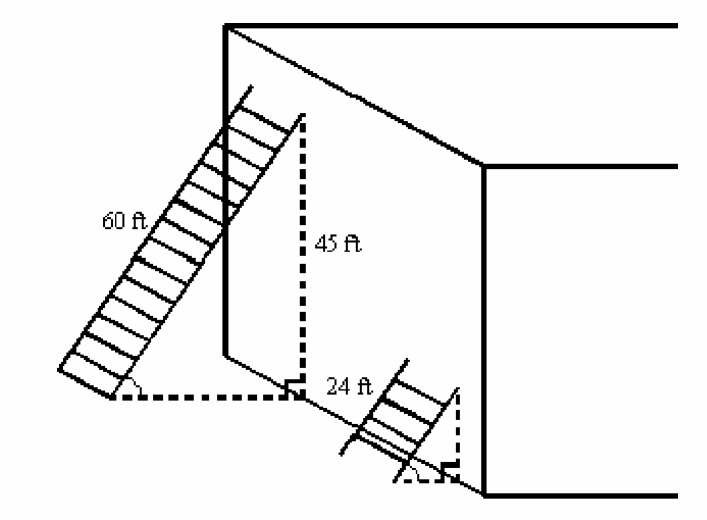
9. Liola drives 16 km up a hill that is at a grade of 10°. What horizontal distance, to the nearest tenth of kilometer, has she covered?

10. Solve for *x* to the nearest degree.



11. Two sides of a triangle have sides 13 and 26. The length of the third side must be greater than _____ and less than ____.

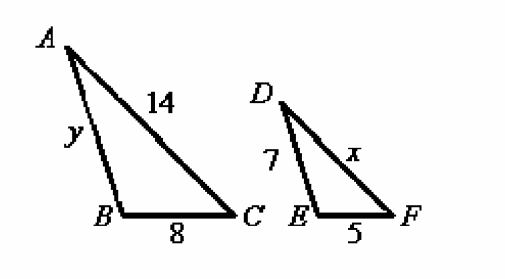
12. Two ladders are leaning against a wall at the same angle as shown.



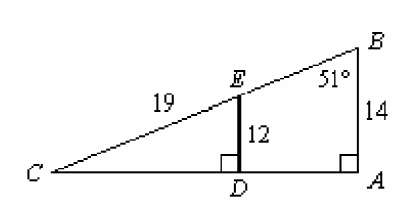
How far up the wall does the shorter ladder reach?

13. The perimeter of ΔPQR is 80, $PQ = 30$, $\Delta PQR \sim \Delta STU$, and $ST = 18$. What is the perimeter of ΔSTU?

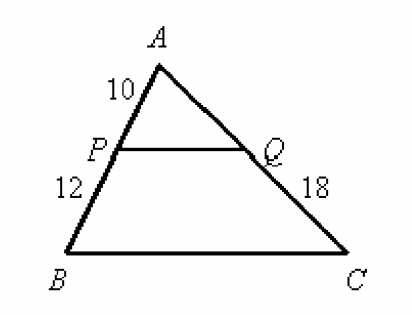
14. Given that $\Delta ABC \sim \Delta DEF$, solve for x and y.



15. Use the figure to find $m\angle CED$. The figure is not drawn to scale.



16. Given: $\overline{PQ} \parallel \overline{BC}$. Find the length of $\overline{AQ}$.

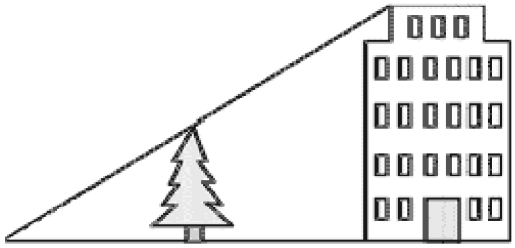


17. Write the equation of the line passing through the point $(6, 4)$ and parallel to the line $y = 5x - 5$.

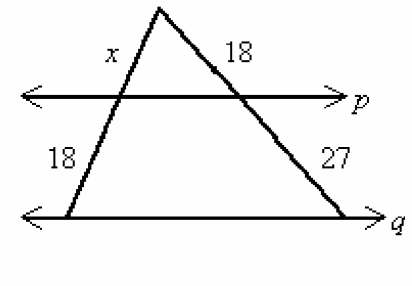
18. In ΔJKL, $JK = 10$, $KL = 13$, and $LJ = 8$. In ΔSTR, $TR = 30$, $RS = 39$, and $ST = 24$. State whether the triangles are similar, and if so, write a similarity statement.

19. Is it possible for a triangle to have sides with the given lengths?
3 cm, 10 cm, 7 cm

20. Moody wants to find the height of the tallest building in his city. He stands 422 feet away from the building. There is a tree 40 feet in front of him, which he knows is 22 feet tall. How tall is the building? (Round to the nearest foot.)

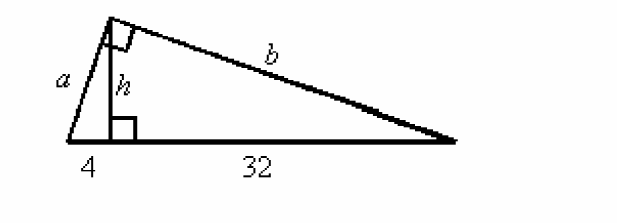


21. If $p \parallel q$, solve for x.

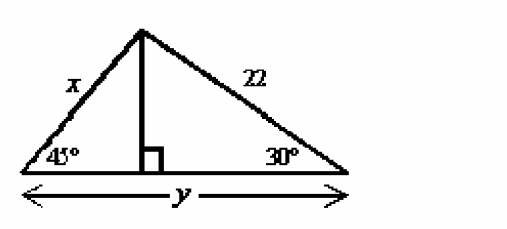


22. Classify a triangle with sides 16, 24, and 32 as acute, obtuse, or right.

23. Find a, b, and h.



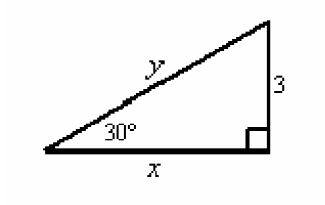
24. Find the value of x and y.



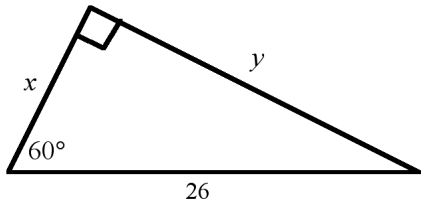
25. What is the length of the diagonal of a square with side lengths $7\sqrt{2}$?

26. The length of the diagonal of a square is 22. What is the length of each side?

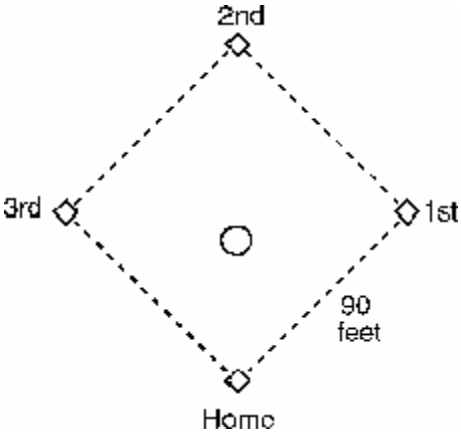
27. Find the value of x and y.



28. Find the value of x and y.

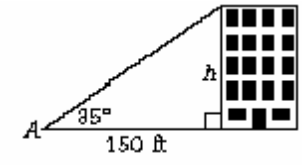


29. A baseball "diamond" is a square with a side length of 90 feet. How far is the throw from third base to first base? (Round your answer to one decimal place.)

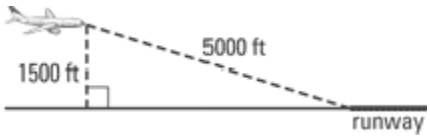


Writing:

30. Explain how a tangent ratio can be used to find the height of the building in the figure below. Find the height of the building when $\angle A = 35°$.



31. An airplane is flying at an elevation of 1500 feet. What is the airplane's angle of elevation from the runway when it is 5000 feet from the runway? Explain.



Geometry Mastery Test #7 Review
Answer Section

NUMERIC RESPONSE

1. ANS: 20.0

   TOP: Lesson 7.1 Apply the Pythagorean Theorem

SHORT ANSWER

2. ANS:
   acute; isosceles

   TOP: Lesson 7.2 Use the Converse of the Pythagorean Theorem
3. ANS:
   Yes; No

   TOP: Lesson 7.2 Use the Converse of the Pythagorean Theorem
4. ANS:
   $\frac{\sqrt{95}}{7}$

   TOP: Lesson 7.5 Apply the Tangent Ratio
5. ANS:
   48.67 ft

   TOP: Lesson 7.5 Apply the Tangent Ratio
6. ANS:
   $\frac{7}{25}$

   TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
7. ANS:
   61 m

   TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
8. ANS:
   1.86 m

   TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
9. ANS:
   15.8 km

   TOP: Lesson 7.6 Apply the Sine and Cosine Ratios

10. ANS:
30

TOP: Lesson 7.7 Solve Right Triangles
11. ANS:
13, 39

TOP: Lesson 5.5 Use Inequalities in a Triangle
12. ANS:
18 ft

TOP: Lesson 6.3 Prove Triangles Similar by AA
13. ANS:
48

TOP: Lesson 6.1 Use Similar Polygons
14. ANS:
$x = 8.75, y = 11.2$

TOP: Lesson 6.1 Use Similar Polygons
15. ANS:
51°

TOP: Lesson 6.3 Prove Triangles Similar by AA
16. ANS:
15

TOP: Lesson 6.5 Use Proportionality Theorems
17. ANS:
$y = 5x - 26$

TOP: Lesson 3.5 Write and Graph Equations of Lines
18. ANS:
similar, $\triangle JKL \sim \triangle TRS$

TOP: Lesson 6.4 Prove Triangles Similar by SSS and SAS
19. ANS:
no

TOP: Lesson 5.5 Use Inequalities in a Triangle
20. ANS:
232 ft

TOP: Lesson 6.3 Prove Triangles Similar by AA

21. ANS:
12

TOP: Lesson 6.5 Use Proportionality Theorems

22. ANS:
obtuse

TOP: Lesson 7.2 Use the Converse of the Pythagorean Theorem

23. ANS:
$a = 12,\ b = 24\sqrt{2},\ h = 8\sqrt{2}$

TOP: Lesson 7.3 Use Similar Right Triangles

24. ANS:
$x = 11\sqrt{2},\ y = 11 + 11\sqrt{3}$ or $11(1 + \sqrt{3})$

TOP: Lesson 7.4 Special Right Triangles

25. ANS:
14

TOP: Lesson 7.4 Special Right Triangles

26. ANS:
$11\sqrt{2}$

TOP: Lesson 7.4 Special Right Triangles

27. ANS:
$x = 3\sqrt{3},\ y = 6$

TOP: Lesson 7.4 Special Right Triangles

28. ANS:
$x = 13,\ y = 13\sqrt{3}$

TOP: Lesson 7.4 Special Right Triangles

29. ANS:
127.3 ft

TOP: Lesson 7.4 Special Right Triangles

30. ANS:
Using the tangent ratio $\tan A = \dfrac{\text{leg opposite } \angle A}{\text{leg adjacent to } \angle A}$, $\tan 35^\circ = \dfrac{h}{150}$. So $h = 150\left(\tan 35^\circ\right) \approx 150(0.7)$, or about 105 ft.

TOP: Lesson 7.5 Apply the Tangent Ratio

31. ANS:

About 72.5°. $\cos x = \frac{1500}{5000}$ so $x = \cos^{-1}\left(\frac{1500}{5000}\right) \approx 72.5^{\circ}$

TOP: Lesson 7.7 Solve Right Triangles