

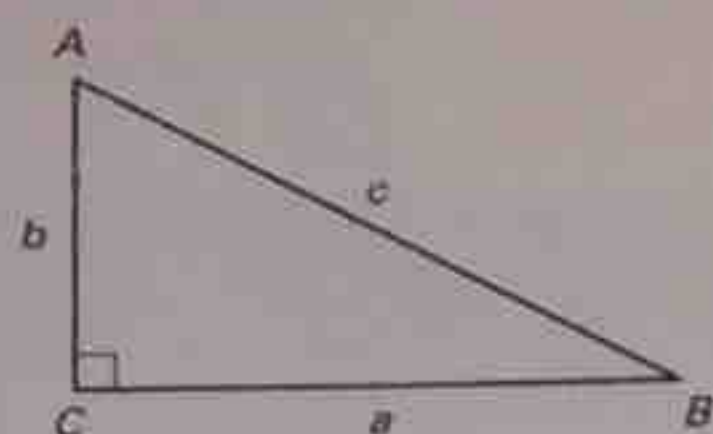
7 Lesson Practice Level B

LESSON 7.1 Practice B

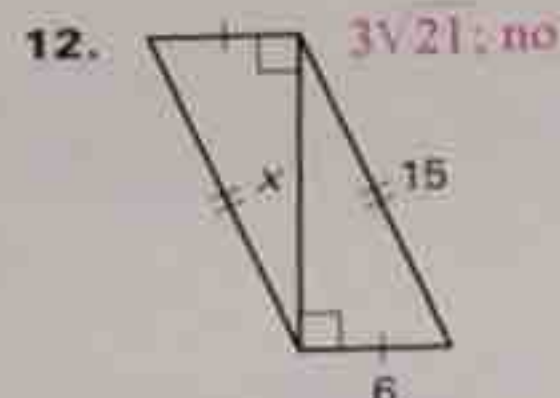
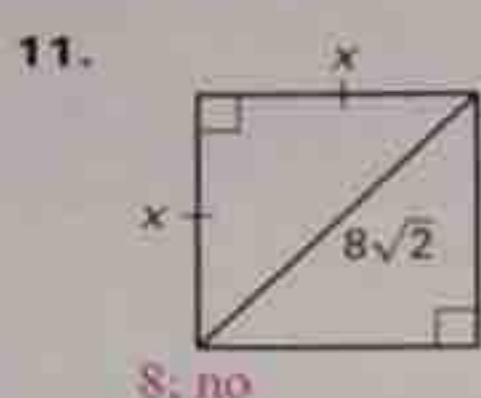
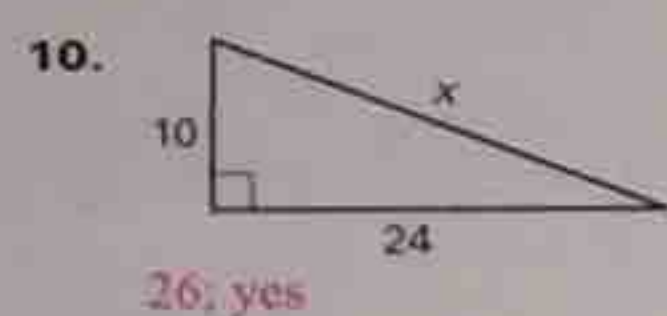
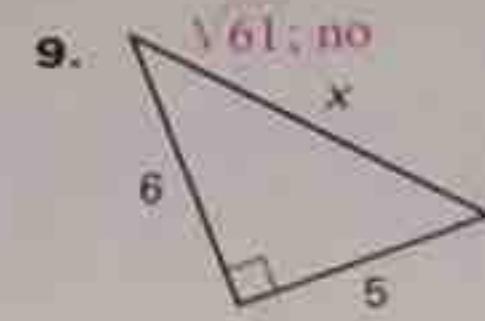
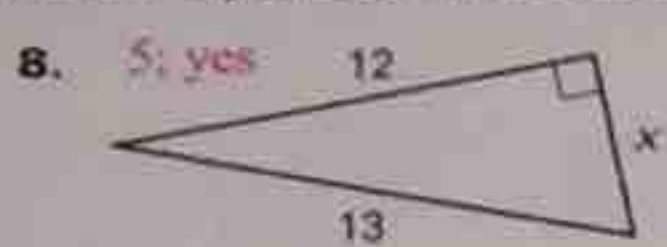
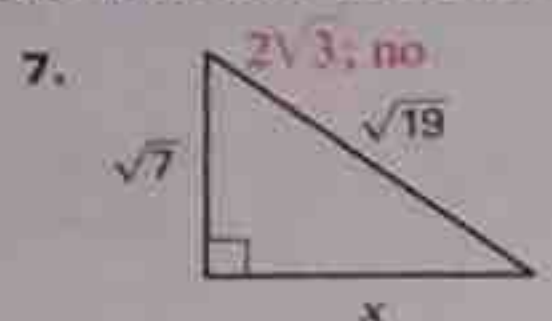
For use with pages 432–439

Use $\triangle ABC$ to determine if the equation is true or false.

- $b^2 + a^2 = c^2$ true
- $c^2 - a^2 = b^2$ true
- $b^2 - c^2 = a^2$ false
- $c^2 = a^2 - b^2$ false
- $c^2 = b^2 + a^2$ true
- $a^2 = c^2 - b^2$ true



Find the unknown side length. Simplify answers that are radicals. Tell whether the side lengths form a Pythagorean triple.



The given lengths are two sides of a right triangle. All three side lengths of the triangle are integers and together form a Pythagorean triple. Find the length of the third side and tell whether it is a leg or the hypotenuse.

- | | | | | | |
|---------------|----------------|---------------|----------------|---------------|----------------|
| 13. 40 and 41 | 9; leg | 14. 12 and 35 | 37; hypotenuse | 15. 63 and 65 | 16; leg |
| 16. 28 and 45 | 53; hypotenuse | 17. 56 and 65 | 33; leg | 18. 20 and 29 | 21; leg |
| 19. 80 and 89 | 39; leg | 20. 48 and 55 | 73; hypotenuse | 21. 65 and 72 | 97; hypotenuse |

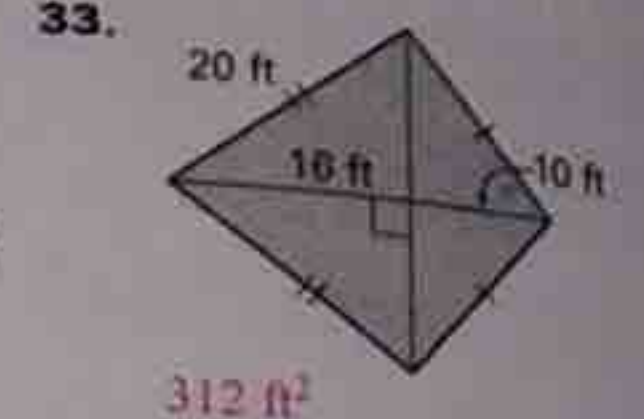
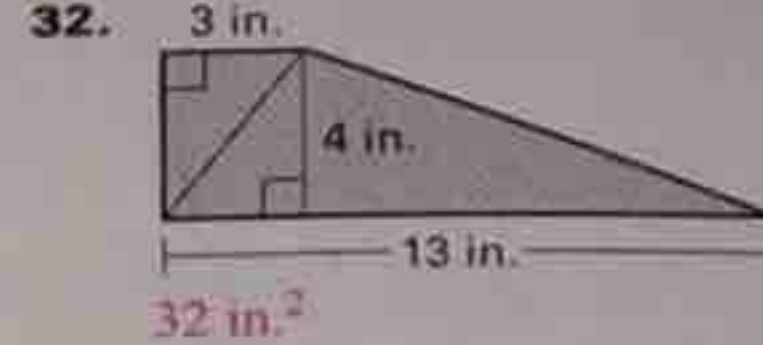
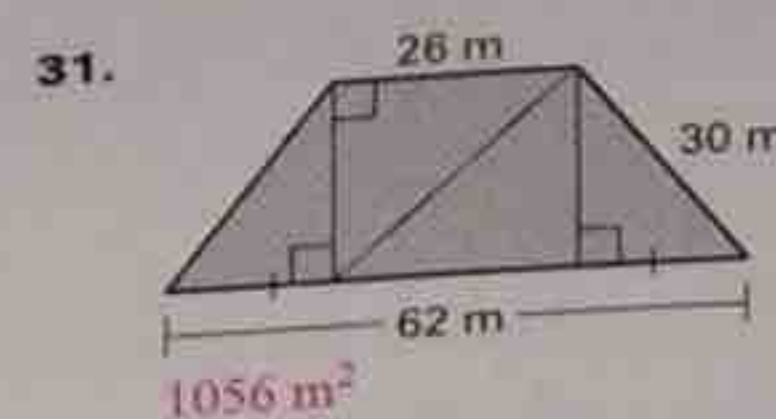
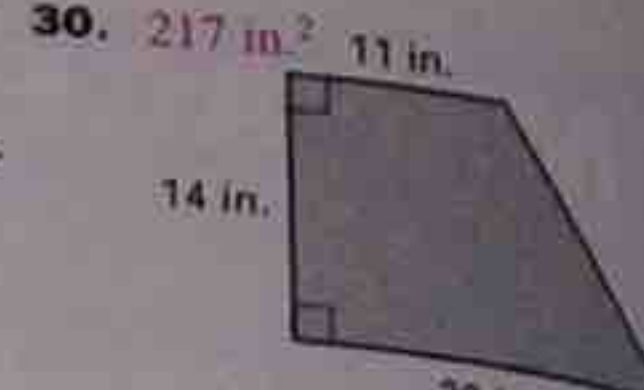
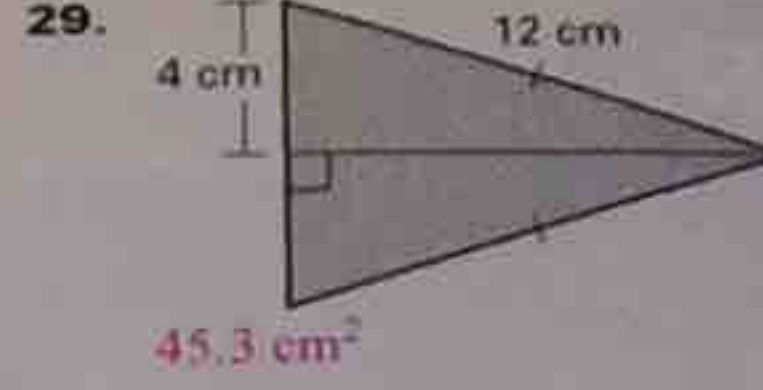
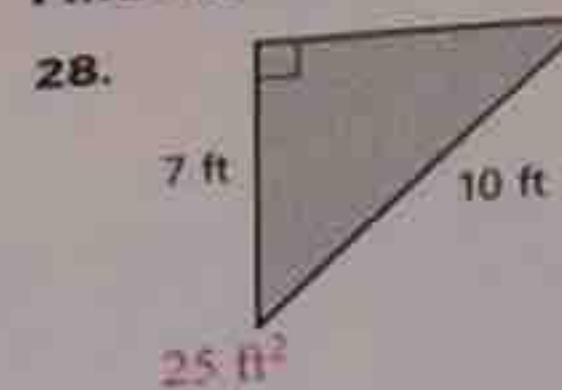
Find the area of a right triangle with given leg l and hypotenuse h . Round decimal answers to the nearest tenth.

- | | | | | | |
|-----------------------------|----------------------|--------------------------------|----------------------|------------------------------|----------------------|
| 22. $l = 8$ m, $h = 16$ m | 55.4 m ² | 23. $l = 9$ yd, $h = 12$ yd | 35.7 yd ² | 24. $l = 3.5$ ft, $h = 9$ ft | 14.5 ft ² |
| 25. $l = 9$ mi, $h = 10$ mi | 19.6 mi ² | 26. $l = 21$ in., $h = 29$ in. | 210 in. ² | 27. $l = 13$ cm, $h = 17$ cm | 71.2 cm ² |

LESSON 7.1 Practice B continued

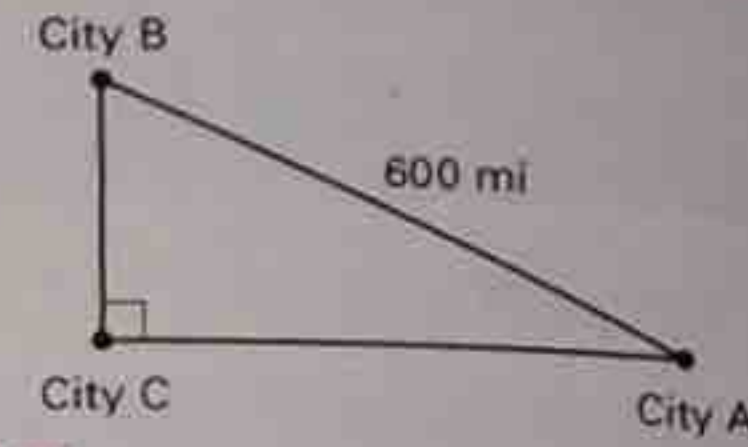
For use with pages 432–439

Find the area of the figure. Round decimal answers to the nearest tenth.



34. **Softball** In slow-pitch softball, the distance of the paths between each pair of consecutive bases is 65 feet and the paths form right angles. Find the distance the catcher must throw a baseball from 3 feet behind home plate to second base. **about 95 ft**

35. **Flight Distance** A small commuter airline flies to three cities whose locations form the vertices of a right triangle. The total flight distance (from city A to city B to city C and back to city A) is 1400 miles. It is 600 miles between the two cities that are furthest apart. Find the other two distances between cities.



$400 + 100\sqrt{2} = 541.4$ mi, $400 - 100\sqrt{2} = 258.6$ mi

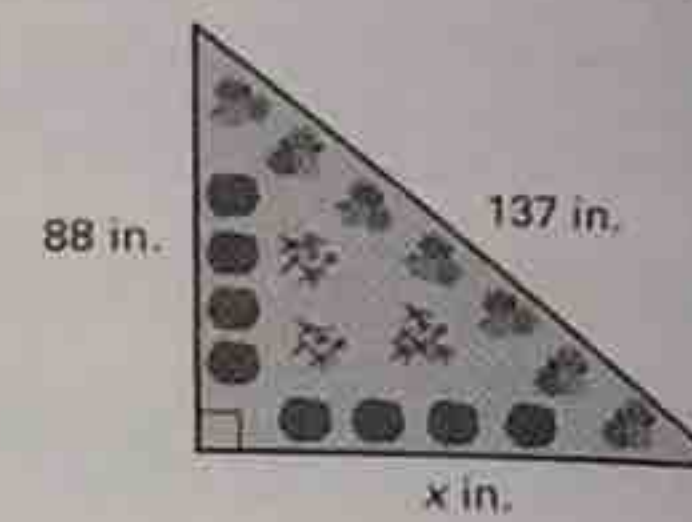
In Exercises 36–38, use the following information.

Garden You have a garden that is in the shape of a right triangle with the dimensions shown.

36. Find the perimeter of the garden. **330 in.**

37. You are going to plant a post every 15 inches around the garden's perimeter. How many posts do you need? **22 posts**

38. You plan to attach fencing to the posts to enclose the garden. If each post costs \$1.25 and each foot of fencing costs \$.70, how much will it cost to enclose the garden?
Explain. \$46.75: There are 22 posts, so buying 22 posts costs $\$1.25(22) = \27.50 . The perimeter of the garden is 330 inches, or 27.5 feet, so the fencing costs $\$.70(27.5) = \19.25 . The combined cost is $\$27.50 + \$19.25 = \$46.75$.



LESSON 7.2 Practice B

For use with pages 440–447

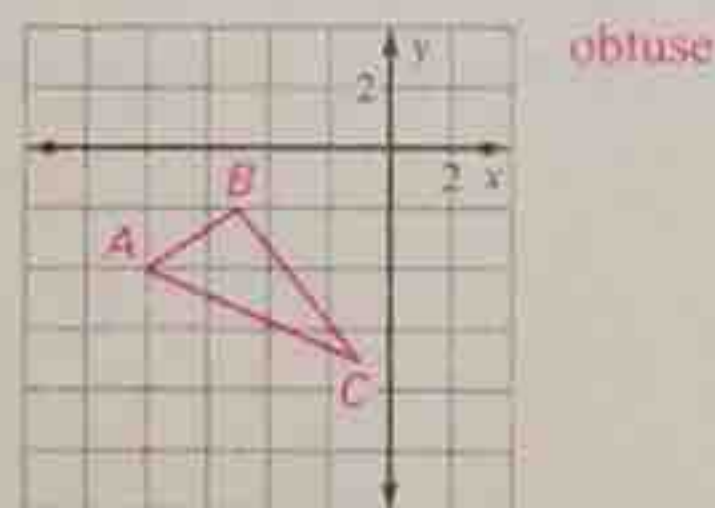
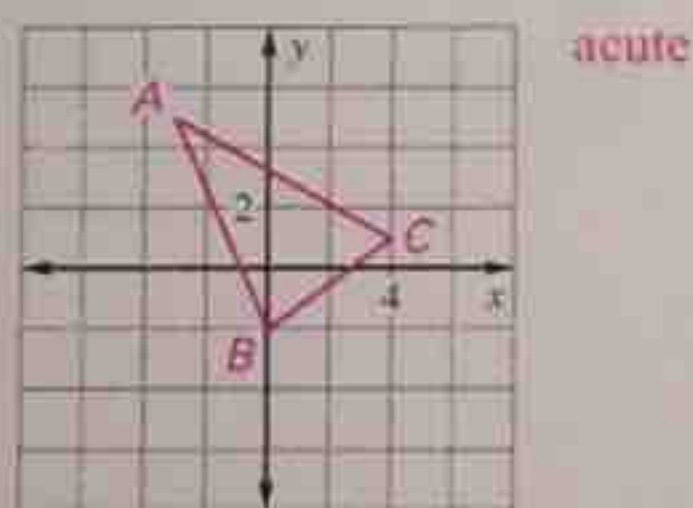
Decide whether the numbers can represent the side lengths of a triangle. If they can, classify the triangle as right, acute, or obtuse.

- | | | | | | |
|---------------|------------|-------------------------|-------------|---------------|------------|
| 1. 5, 12, 13 | yes; right | 2. $\sqrt{8}$, 4, 6 | yes; obtuse | 3. 20, 21, 28 | yes; acute |
| 4. 15, 36, 39 | yes; right | 5. $\sqrt{13}$, 10, 12 | yes; obtuse | 6. 14, 48, 50 | yes; right |

Graph points A, B, and C. Connect the points to form $\triangle ABC$. Decide whether $\triangle ABC$ is right, acute, or obtuse.

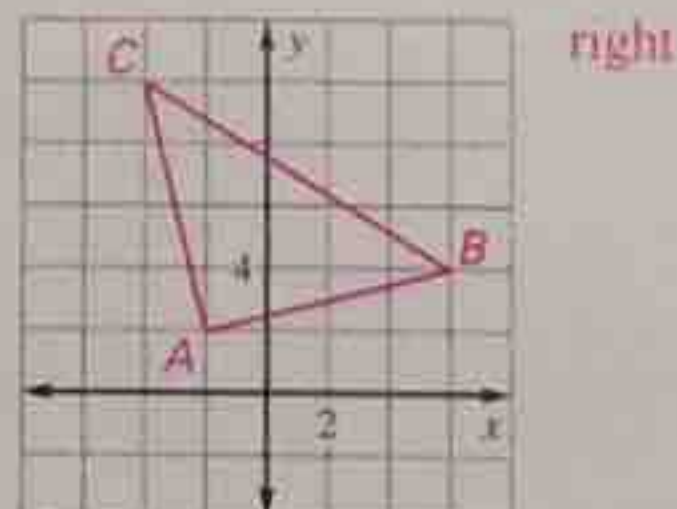
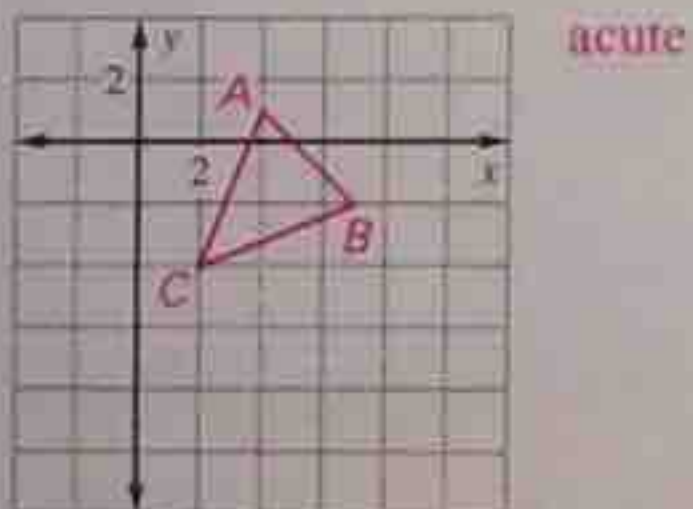
7. $A(-3, 5)$, $B(0, -2)$, $C(4, 1)$

8. $A(-8, -4)$, $B(-5, -2)$, $C(-1, -7)$



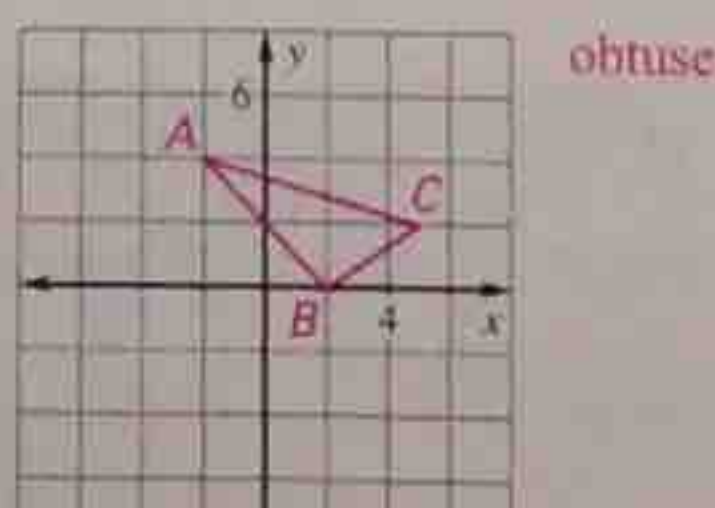
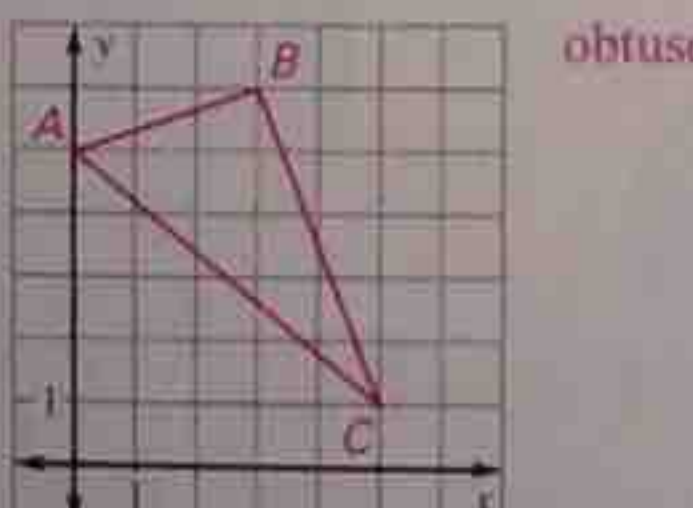
9. $A(4, 1)$, $B(7, -2)$, $C(2, -4)$

10. $A(-2, 2)$, $B(6, 4)$, $C(-4, 10)$



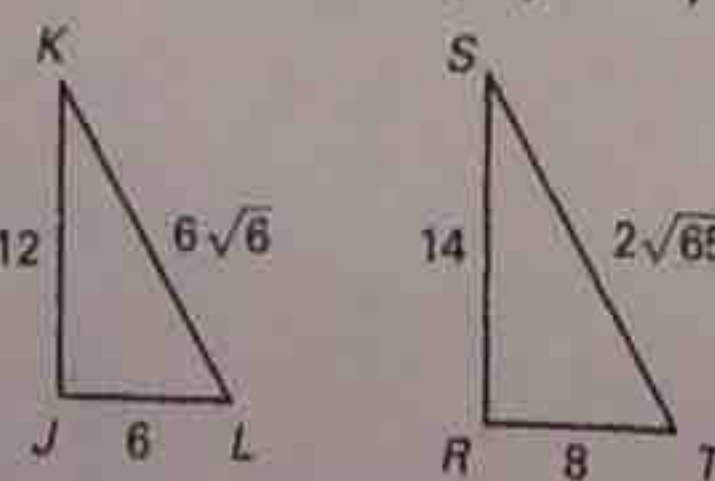
11. $A(0, 5)$, $B(3, 6)$, $C(5, 1)$

12. $A(-2, 4)$, $B(2, 0)$, $C(5, 2)$



In Exercises 13 and 14, copy and complete the statement with $<$, $>$, or $=$, if possible. If it is not possible, explain why.

13. $m\angle J$ $>$ $m\angle R$
14. $m\angle K + m\angle L$ $<$ $m\angle S + m\angle T$



LESSON 7.2 Practice B continued

For use with pages 440–447

The sides and classification of a triangle are given below. The length of the longest side is the integer given. What value(s) of x make the triangle?

- | | | | |
|----------------------------|-----------------|--------------------------------|---------------------|
| 15. $x, x, 8$; right | $x = 4\sqrt{2}$ | 16. $x, x, 12$; obtuse | $0 < x < 6\sqrt{2}$ |
| 17. $x, x, 6$; acute | $x > 3\sqrt{2}$ | 18. $x, x + 3, 15$; obtuse | $0 < x < 9$ |
| 19. $x, x - 8, 40$; right | $x = 32$ | 20. $x + 2, x + 3, 29$; acute | $x > 18$ |

In Exercises 21 and 22, use the diagram and the following information.

Roof The roof shown in the diagram at the right is shown from the front of the house. The slope of the roof is $\frac{5}{12}$. The height of the roof is 15 feet.

21. What is the length from gutter to peak of the roof? **39 ft**

22. A row of shingles is 5 inches high. How many rows of shingles are needed for one side of the roof? **about 94 rows**

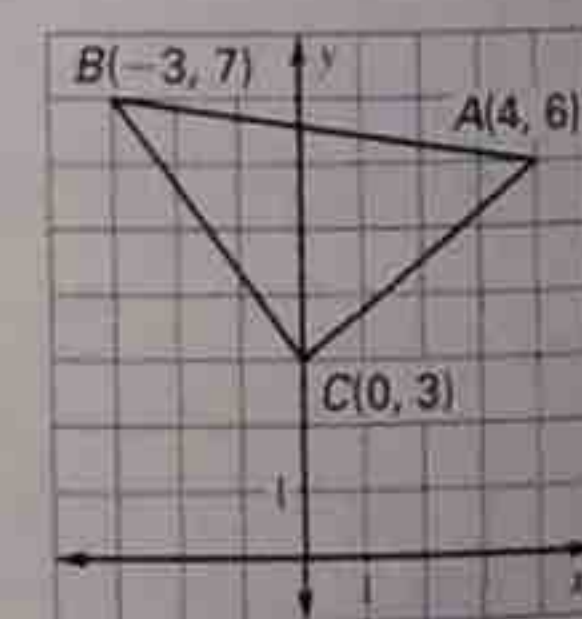


In Exercises 23–25, you will use two different methods for determining whether $\triangle ABC$ is a right triangle. See below.

23. **Method 1** Find the slope of \overline{AC} and the slope of \overline{BC} . What do the slopes tell you about $\angle ACB$? Is $\triangle ABC$ a right triangle? How do you know?

24. **Method 2** Use the Distance Formula and the Converse of the Pythagorean Theorem to determine whether $\triangle ABC$ is a right triangle.

25. **Compare** Which method would you use to determine whether a given triangle is right, acute, or obtuse? Explain.



23. $\frac{3}{4}$, $-\frac{4}{3}$. Because $\left(\frac{3}{4}\right)\left(-\frac{4}{3}\right) = -1$, $\overline{AC} \perp \overline{BC}$. So $\angle ACB$ is a right angle. Therefore $\triangle ABC$ is a right triangle by the definition of a right triangle.

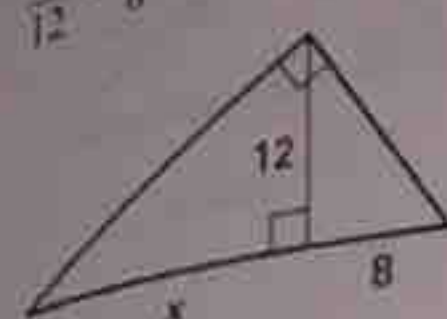
24. $(AC)^2 + (BC)^2 = 25 + 25 = 50 = (AB)^2$, so by the Converse of the Pythagorean Theorem, $\triangle ABC$ is a right triangle.

25. Start by finding the slopes to see if the triangle is a right triangle. If no two slopes lead to perpendicular line segments, then find the distances to determine whether the triangle is acute or obtuse.

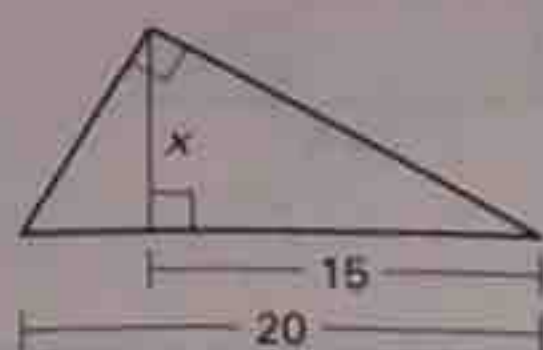
Practice B For use with pages 448-458

Complete and solve the proportion.

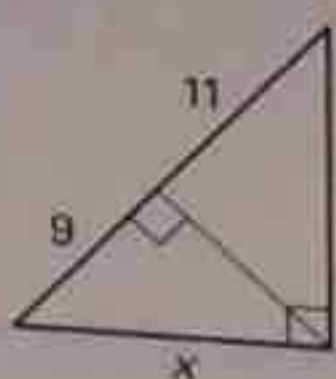
1. $\frac{x}{12} = \frac{7}{8}$ 12, 18



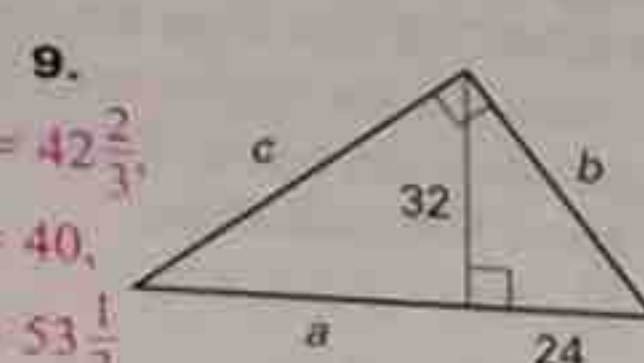
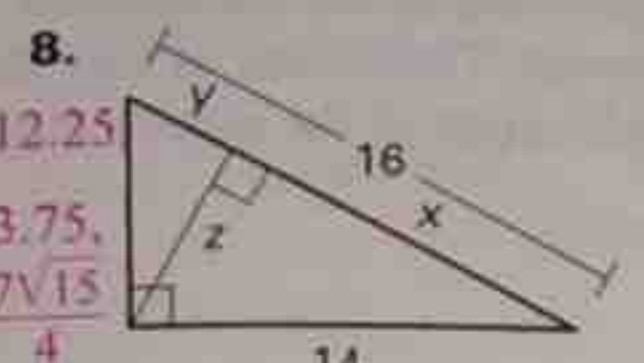
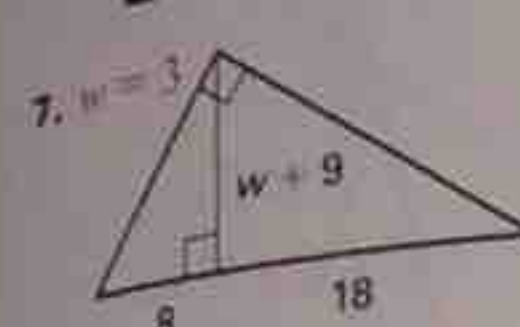
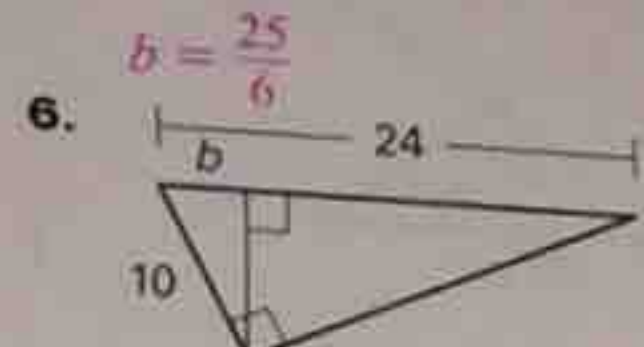
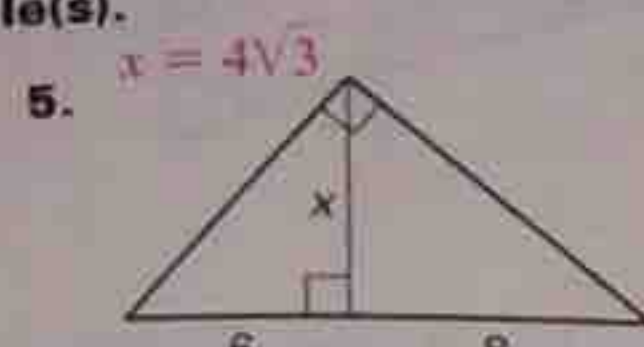
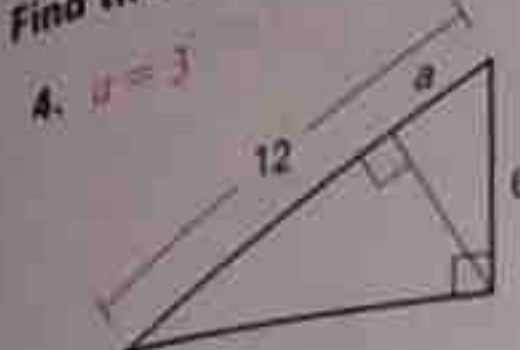
2. $\frac{15}{x} = \frac{x}{7}$ 5, $5\sqrt{3}$



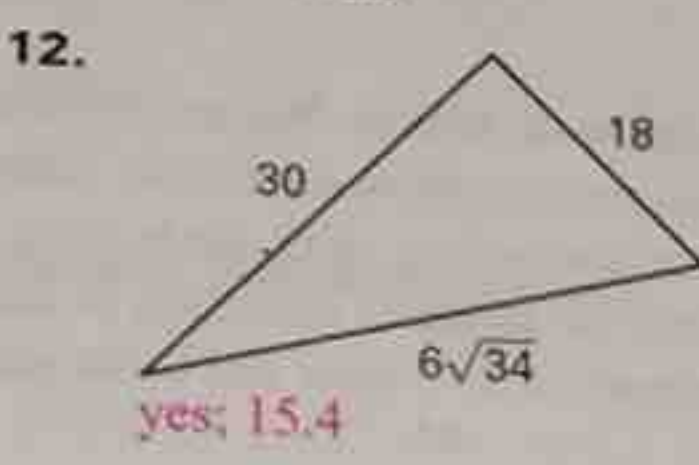
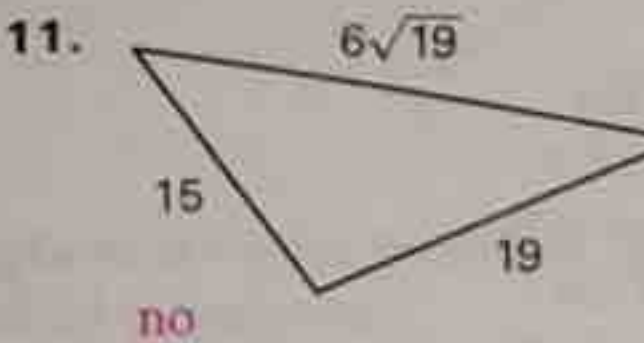
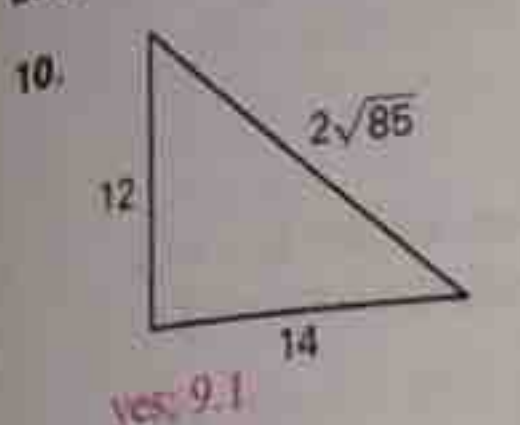
3. $\frac{9}{x} = \frac{x}{7}$ 20, $6\sqrt{5}$



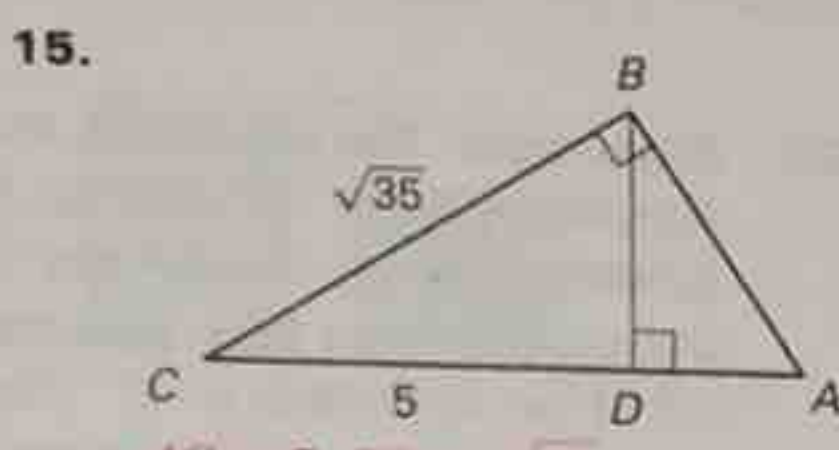
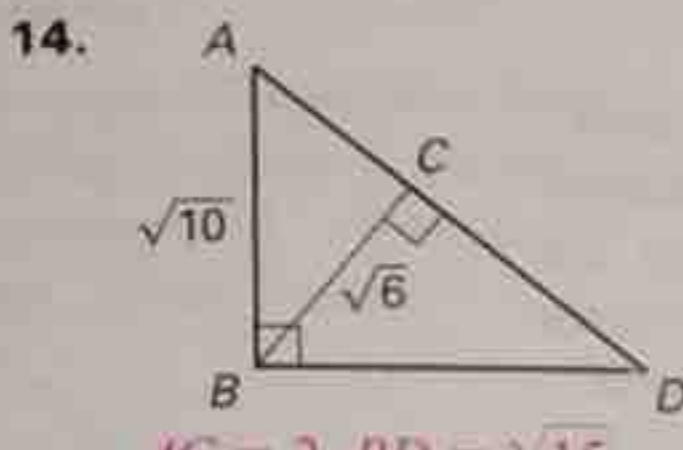
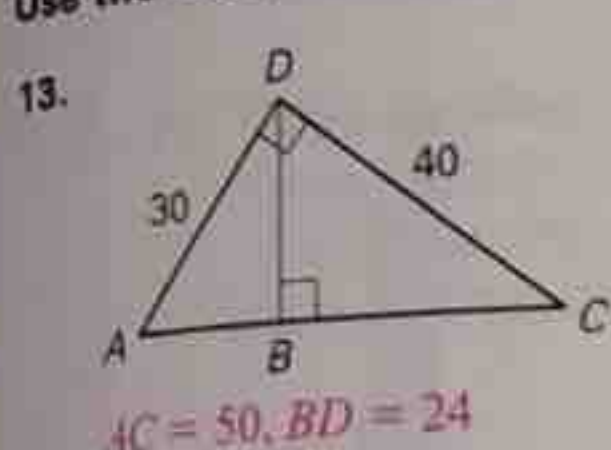
Find the value(s) of the variable(s).



Tell whether the triangle is a right triangle. If so, find the length of the altitude to the hypotenuse. Round decimal answers to the nearest tenth.



Use the Geometric Mean Theorems to find AC and BD.



LESSON 7.3

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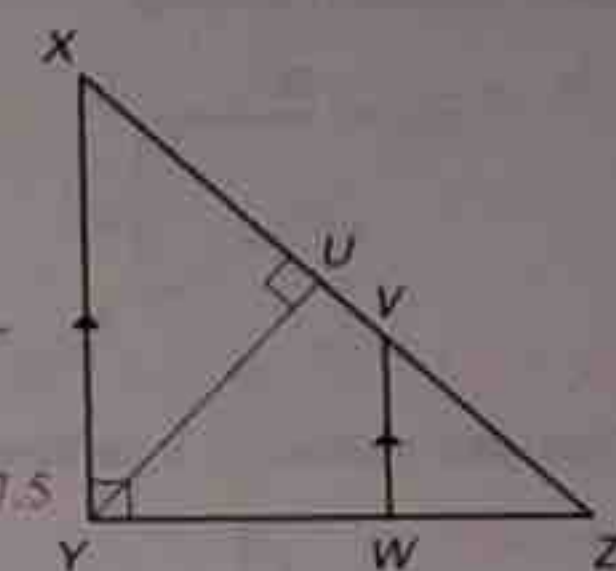
Practice B For use with pages 448-458

16. Complete the proof.

GIVEN: $\triangle XYZ$ is a right triangle with $m\angle XYZ = 90^\circ$;
 $\overline{VW} \parallel \overline{XY}$, \overline{YU} is an altitude of $\triangle XYZ$.

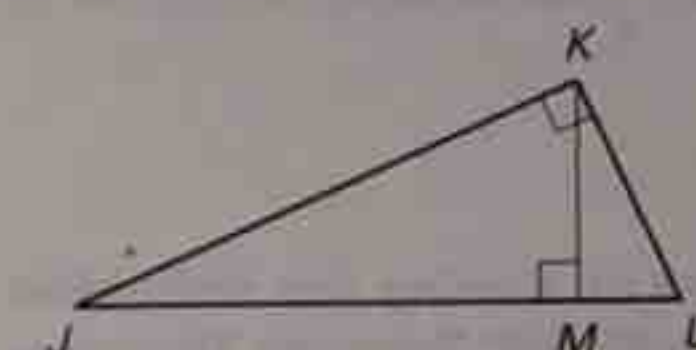
PROVE: $\triangle YUZ \sim \triangle VWZ$

Statements	Reasons
1. $\triangle XYZ$ is a right \triangle with altitude \overline{YU} .	1. ? Given
2. $\triangle XYZ \sim \triangle YUZ$	2. ? Theorem 7.5
3. $\overline{VW} \parallel \overline{XY}$	3. ? Given
4. $\angle VWZ \cong \angle XYZ$	4. ? Corresponding Angles Postulate
5. $\angle Z \cong \angle Z$	5. ? Reflexive Property of Congruence
6. ? $\triangle XYZ \sim \triangle VWZ$	6. AA Similarity Postulate
7. $\triangle YUZ \sim \triangle VWZ$	7. ? Transitive Property



In Exercises 17-19, use the diagram.

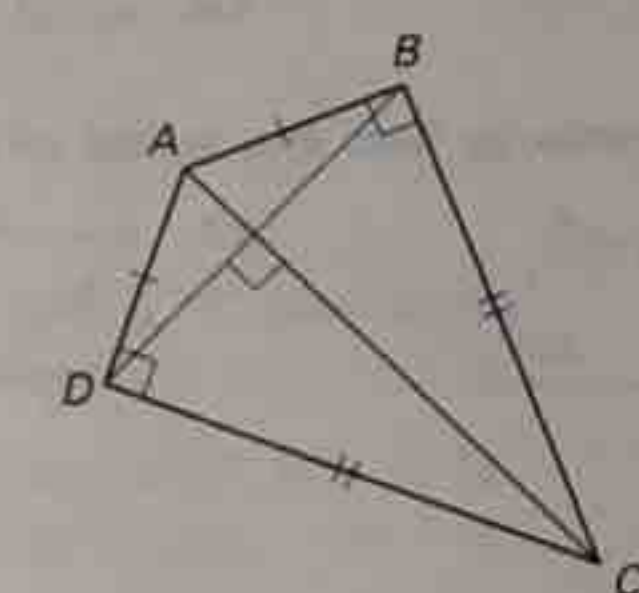
17. Sketch the three similar triangles in the diagram. Label the vertices.



18. Write similarity statements for the three triangles. $\triangle KJL \sim \triangle KJM, \triangle KJL \sim \triangle LMK, \triangle KJM \sim \triangle LMK$

19. Which segment's length is the geometric mean of LM and JM? KM

20. **Kite Design** You are designing a diamond-shaped kite. You know that $AB = 38.4$ centimeters, $BC = 72$ centimeters, and $AC = 81.6$ centimeters. You want to use a straight crossbar \overline{BD} . About how long should it be? **about 67.8 cm**



LESSON 7.3

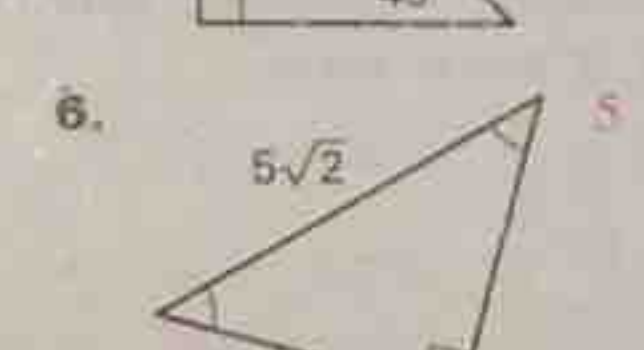
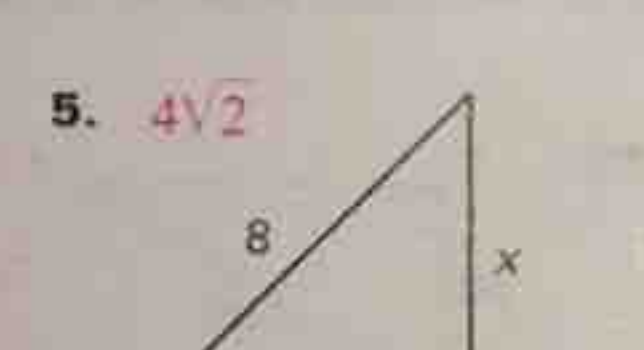
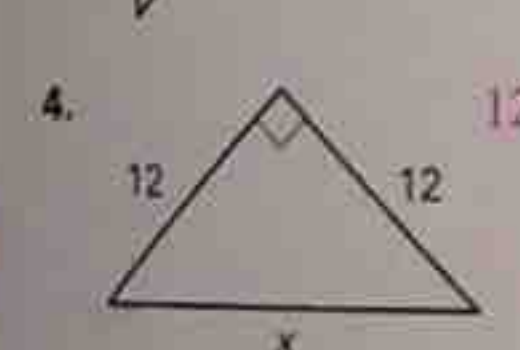
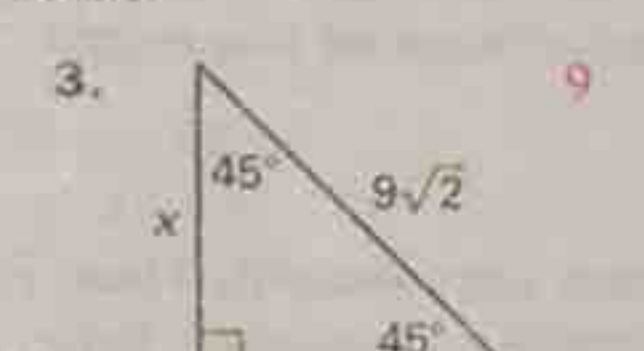
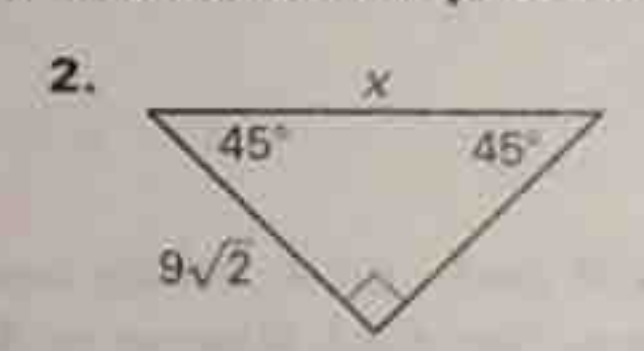
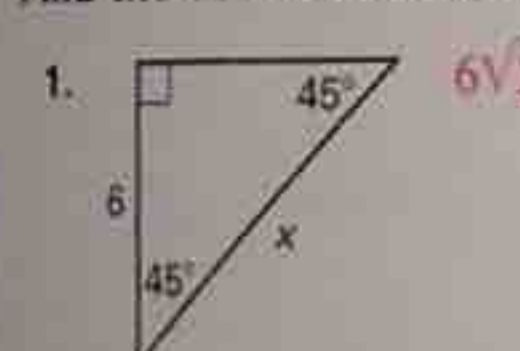
Geometry

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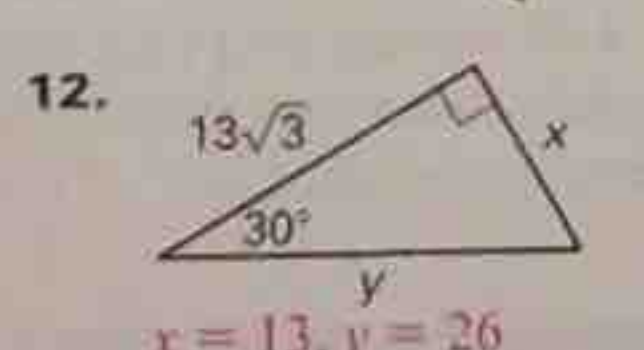
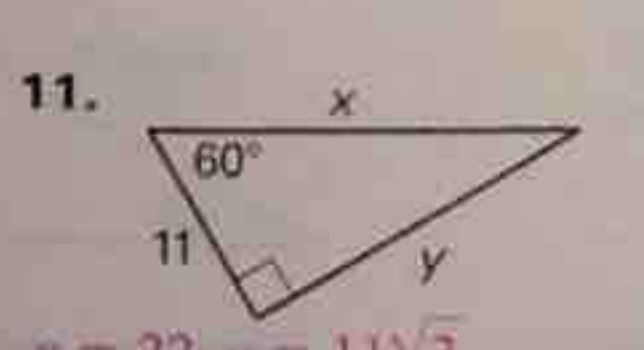
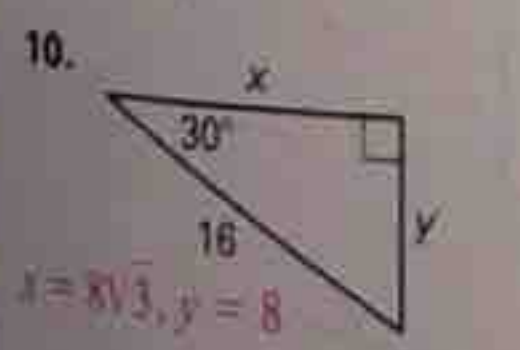
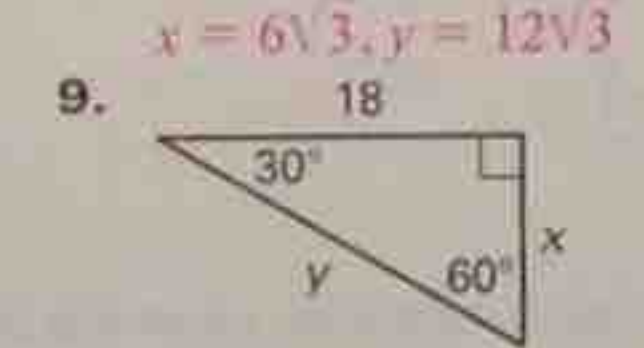
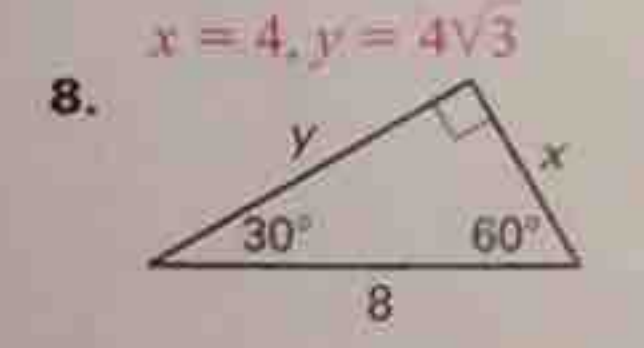
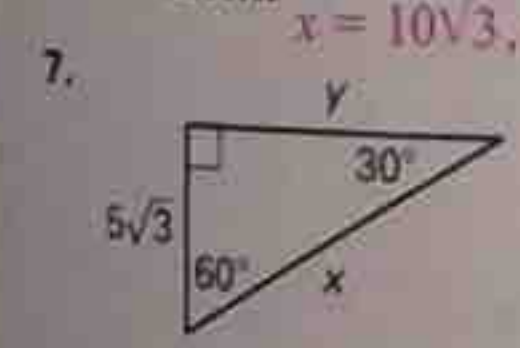
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Practice B For use with pages 457-464

Find the value of x. Write your answer in simplest radical form.

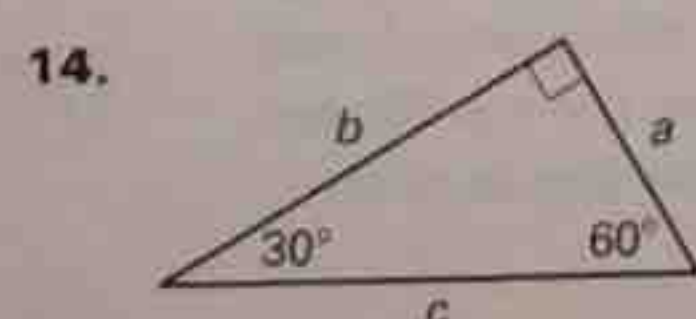


Find the value of each variable. Write your answers in simplest radical form.



Complete the table.

13.	45°	45°	45°	45°	45°
x	5	4	$\sqrt{2}$	9	$12\sqrt{2}$
y	$5\sqrt{2}$	$4\sqrt{2}$	2	$9\sqrt{2}$	24



a	9	$3\sqrt{3}$	5	11	8
b	$9\sqrt{3}$	9	$5\sqrt{3}$	$11\sqrt{3}$	$8\sqrt{3}$
c	18	$6\sqrt{3}$	10	22	16

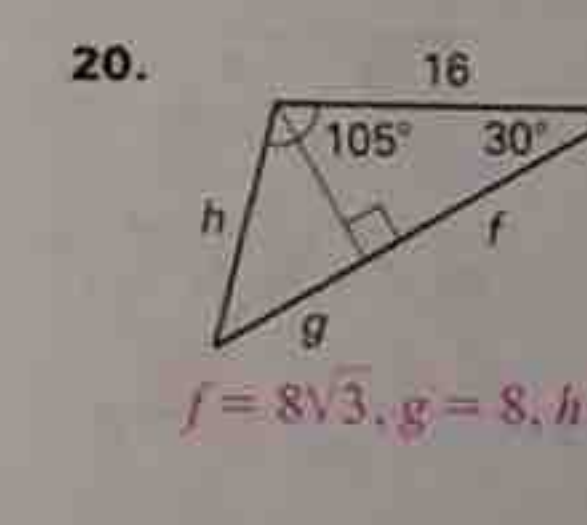
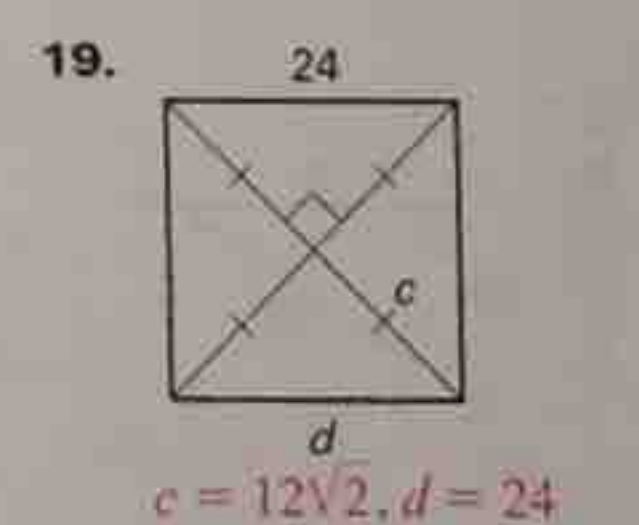
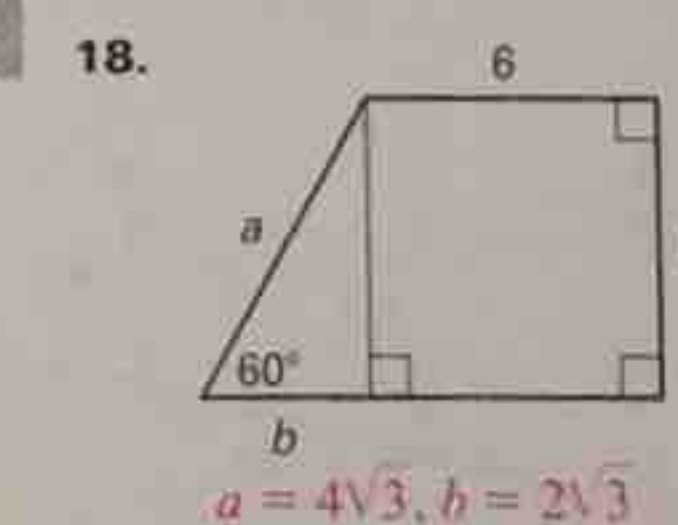
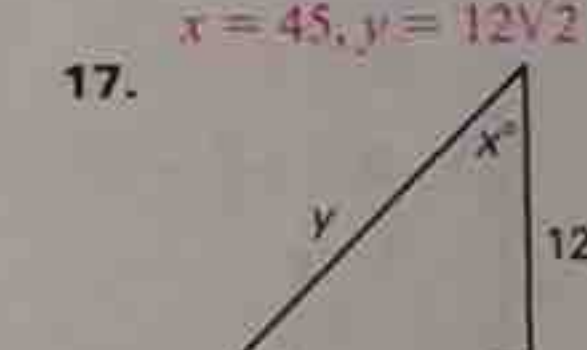
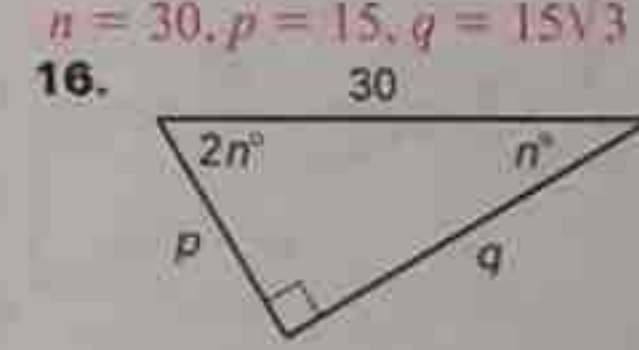
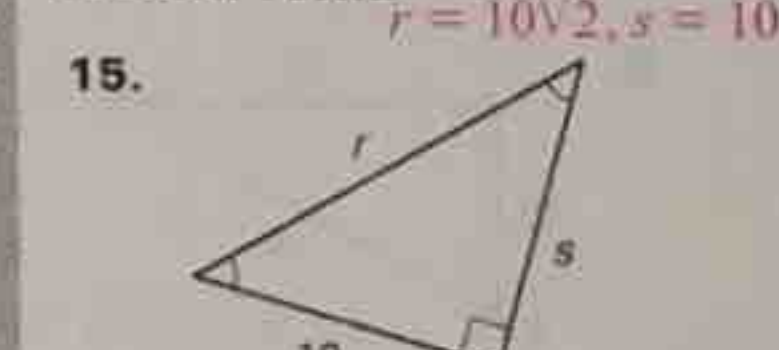
LESSON 7.4

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Practice B For use with pages 457-464

Find the value of each variable. Write your answers in simplest radical form.

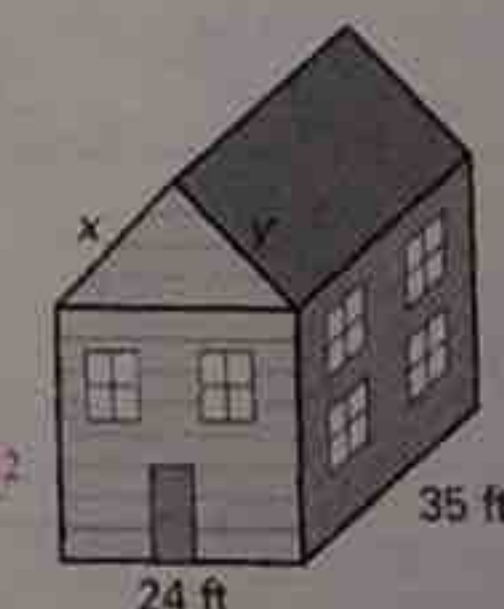


The side lengths of a triangle are given. Determine whether it is a 45° - 45° - 90° triangle, a 30° - 60° - 90° triangle, or neither.

21. 5, 10, $5\sqrt{3}$ 30° - 60° - 90° 22. 7, 7, $7\sqrt{3}$ neither 23. 6, 6, $6\sqrt{2}$ 45° - 45° - 90°

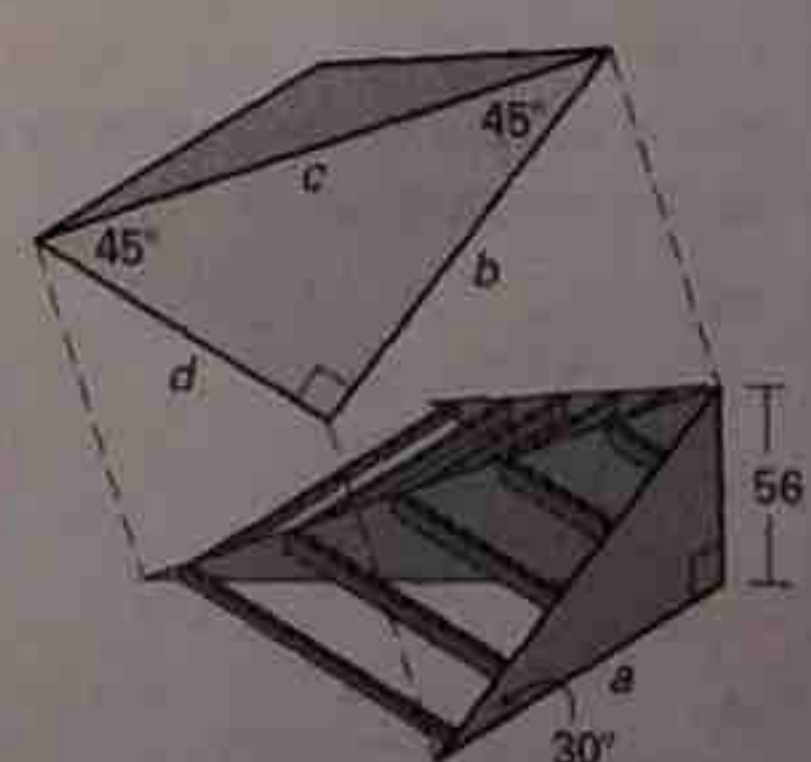
24. **Roofing** You are replacing the roof on the house shown, and you want to know the total area of the roof. The roof has a 1-1 pitch on both sides, which means that it slopes upward at a rate of 1 vertical unit for each 1 horizontal unit.

a. Find the values of x and y in the diagram. $x = y = 12\sqrt{2}$ ft
b. Find the total area of the roof to the nearest square foot. **1188 ft²**



25. **Skateboard Ramp** You are using wood to build a pyramid-shaped skateboard ramp. You want each ramp surface to incline at an angle of 30° and the maximum height to be 56 centimeters as shown.

a. Use the relationships shown in the diagram to determine the lengths a, b, c, and d to the nearest centimeter. $a \approx 97$ cm, $b \approx 112$ cm, $c \approx 158$ cm
b. Suppose you want to build a second pyramid ramp with a 45° angle of incline and a maximum height of 56 cm. You can use the diagram shown by simply changing the 30° angle to 45° . Determine the lengths a, b, c, and d to the nearest centimeter for this ramp. $a = 56$ cm, $b = d = 79$ cm, $c = 112$ cm



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