

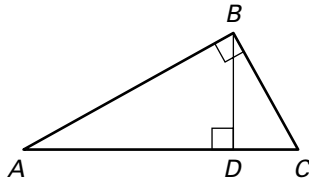
LESSON
7.3

Practice A

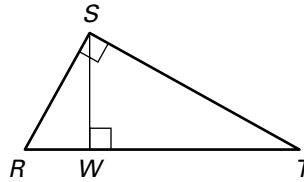
For use with pages 466–474

Identify the three similar right triangles in the given diagram.

1.



2.

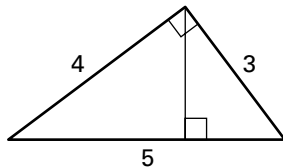


Use the above diagrams.

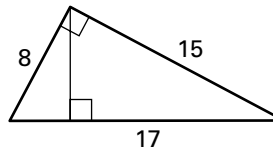
- Draw and label the vertices of the three similar right triangles from Exercise 1 so that the corresponding sides and angles have the same orientation.
- Draw and label the vertices of the three similar right triangles from Exercise 2 so that the corresponding sides and angles have the same orientation.

Find the length of the altitude to the hypotenuse. Round decimal answers to the nearest tenth.

5.



6.

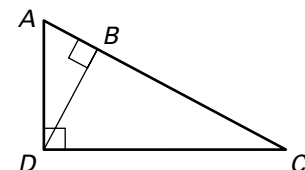


- Multiple Choice** Use the diagram at the right. Which proportion is true?

A. $\frac{AB}{AD} = \frac{AD}{DC}$

B. $\frac{AC}{AB} = \frac{AB}{DB}$

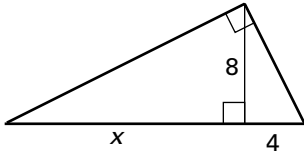
C. $\frac{AB}{DB} = \frac{DB}{BC}$



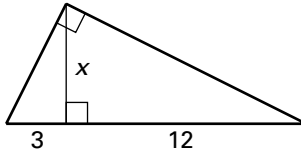
LESSON 7.3 **Practice A** *continued*
For use with pages 466–474

Complete and solve the proportion.

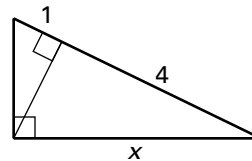
8. $\frac{x}{8} = \frac{?}{4}$



9. $\frac{12}{x} = \frac{x}{?}$

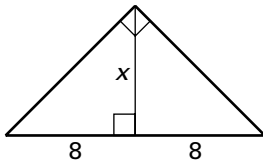


10. $\frac{5}{x} = \frac{x}{?}$

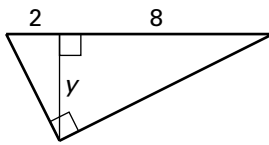


Find the value of the variable.

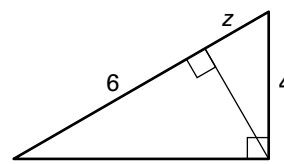
11.



12.

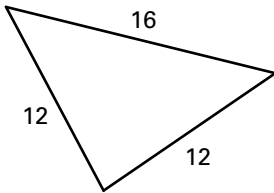


13.

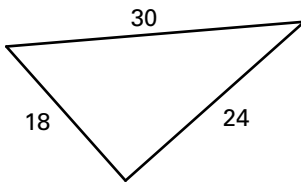


Tell whether the triangle is a right triangle. If so, find the length of the altitude to the hypotenuse. Round decimal answers to the nearest tenth.

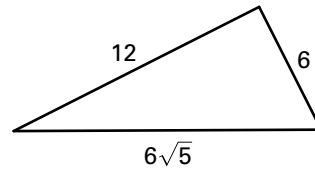
14.



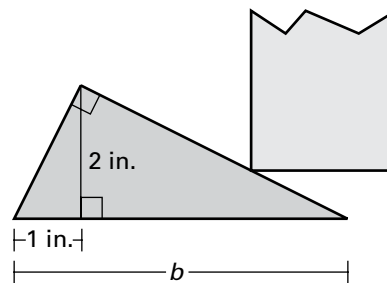
15.



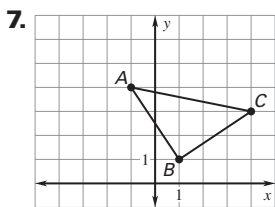
16.



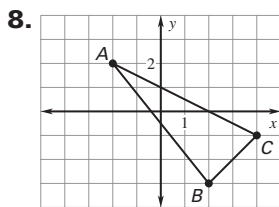
17. **Door Stop** You are designing a door stop that you want to be 2 inches tall. Other information is given in the diagram. How long is the base length b in inches?



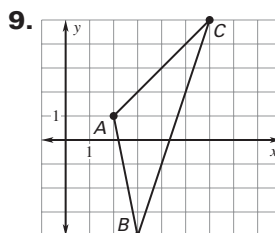
Lesson 7.2, continued



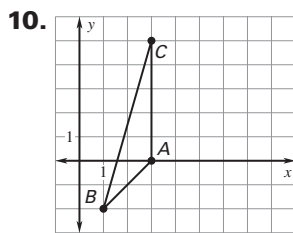
right



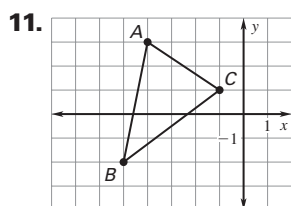
acute



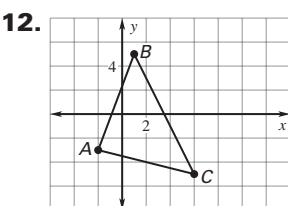
obtuse



obtuse



acute



acute

13. $m\angle J < m\angle R$

14. $m\angle K + m\angle L > m\angle S + m\angle T$ 15. D

16. $\sqrt{2}x$ 17. $8\sqrt{2}$ 18. $5 < x < 5\sqrt{2}$

19. $x > \frac{15\sqrt{2}}{2}$ 20. $\frac{5 \pm 7\sqrt{23}}{2}$

21. $18 < x < \frac{3 + 3\sqrt{241}}{2}$ 22. $x > \frac{-3 + \sqrt{3929}}{2}$

23. acute 24. 182 ft 25. no

26. Since $8^2 + 8^2 < 12^2$, $\triangle ABC$ is an obtuse triangle by Theorem 7.4. $\angle ACB$ is obtuse since it is opposite the longest side. Since vertical angles are congruent, $\angle ACB \cong \angle DCE$. So by substitution, $\angle DCE$ is obtuse.

Review for Mastery

1. right triangle
2. right triangle
3. not a right triangle
4. yes; right
5. yes; obtuse
6. yes; acute
7. yes; obtuse
8. yes; obtuse
9. yes; right

Challenge Practice

1. $x^2 + y^2 = 9; x \neq 0$
2. $x^2 + y^2 > 9; x \neq 0$
3. $x^2 + y^2 < 9; x \neq 0$
4. $y = 3$ or $y = -3; x \neq 0$
5. $-3 < y < 3; x \neq 0$
6. $y > 3$ and $y < -3; x \neq 0$

7. Given: $AX = BX = AY = BY = 7.5$ in.
 $DY = 19.5 - 7.5 = 12$ in.

Then, $DX = \sqrt{(19.5)^2 - (7.5)^2} = 18$ in. because $\triangle ABD$ is isosceles. Because the pot is tangent to the planter at $X, Y,$ and $Z, CX = CY = CZ = 5$ in., the radius of the pot.

$CD = DX - CX = 18 - 5 = 13$ in.

$(CD)^2 = (CY)^2 + (DY)^2$

$(CD)^2 = (CZ)^2 + (DZ)^2$

$13^2 = 5^2 + 12^2$

$169 = 25 + 144$

So, the screw locations hit the pot exactly where it touches the wall of the planter.

8. $0 < x < 3 + \sqrt{17}$ 9. $x > \frac{15 + 2\sqrt{30}}{5}$

10. $x > 0$ 11. $-2\sqrt{2} < x < 0$ or $0 < x < 2\sqrt{2}$

12. $x > \frac{5 + \sqrt{5}}{20}$ 13. $5 < x < \frac{40 + 10\sqrt{10}}{3}$

14. Quadrant II or III; *Sample answer:*

$XY = \sqrt{26}, XZ = \sqrt{106\frac{1}{4}}; YZ = \sqrt{83\frac{1}{4}}$

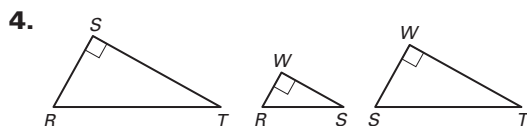
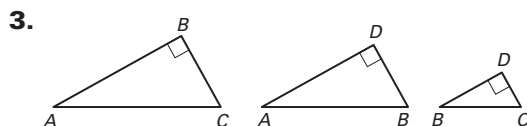
So, $\triangle XYZ$ is not a right triangle by the Converse of the Pythagorean Theorem. The point Q needs to be above or below \overline{PX} . By Theorem 7.3, $\triangle XPQ$ is acute. So, Q has to be in either Quadrant II or III.

Lesson 7.3

Practice Level A

1. $\triangle ABC \sim \triangle ADB \sim \triangle BDC$

2. $\triangle TSR \sim \triangle TWS \sim \triangle SWR$



5. 2.4 6. 7.1 7. C 8. $\frac{x}{8} = \frac{8}{4}; x = 16$

9. $\frac{12}{x} = \frac{x}{3}; x = 6$ 10. $\frac{5}{x} = \frac{x}{4}; x = 2\sqrt{5}$

11. $x = 8$ 12. $y = 4$ 13. $z = 2$ 14. no

15. yes; 14.4 16. yes; 5.4 17. 5 in.