

Answers for 7.2

For use with pages 444–447

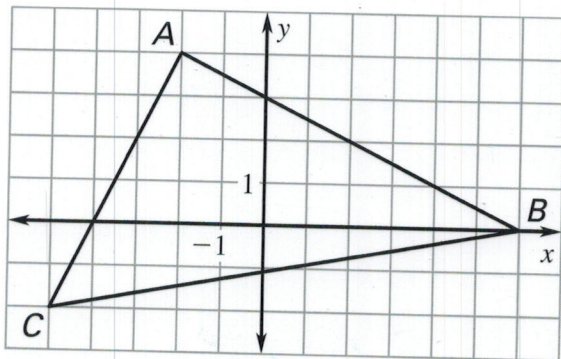
7.2 Skill Practice

1. hypotenuse
2. The relationship of the longest side squared to the sum of the squares of the other two sides determines the angle classification. If the longest side squared is greater than the sum of the other two sides, then the triangle is obtuse; if they are equal, the triangle is a right triangle; if the longest side squared is less than the sum of the square of the other two sides, then the triangle is acute.
3. right triangle
4. not a right triangle
5. not a right triangle
6. not a right triangle
7. right triangle
8. right triangle
9. right triangle
10. not a right triangle
11. right triangle
12. right triangle
13. right triangle
14. not a right triangle
15. triangle; acute
16. triangle; right
17. triangle; obtuse
18. triangle; acute
19. triangle; right
20. triangle; acute
21. not a triangle
22. triangle; right
23. triangle; obtuse
24. B
25. C
26. *Sample answer:* If a triangle with sides a , b , and c is a right triangle with $a^2 + b^2 = c^2$, then a triangle with double side lengths would be $2a$, $2b$, and $2c$, and $(2a)^2 + (2b)^2 = (2c)^2$, $4a^2 + 4b^2 = 4c^2$, simplify to $a^2 + b^2 = c^2$, so if the sides of a right triangle are doubled, the new triangle is also a right triangle.

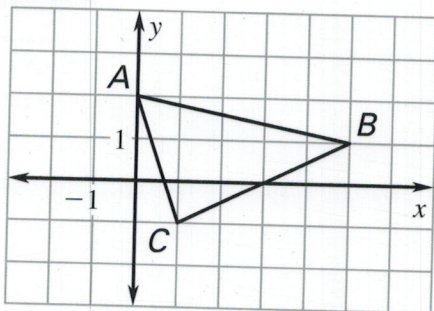
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27. right



28. acute



29. right

30. >

31. <

32. $2\sqrt{7}$ and 10; $2\sqrt{7} < x < 10$;
 $2 < x < 2\sqrt{7}$ or $10 < x < 14$

33. ~~$8 < x < 12$~~ $12 < x < 16$

34. $x > 4.5$

7.2 Problem Solving

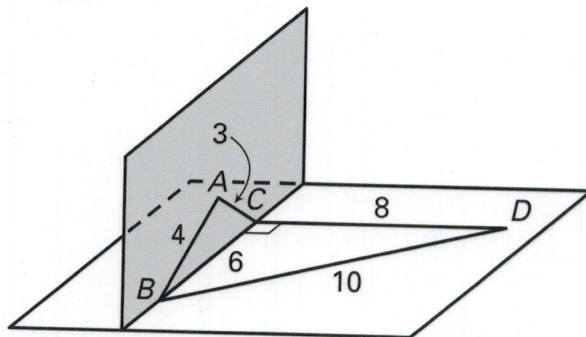
35. Measure diagonally across the painting and it should be about 12.8 inches.

36. no; $749^2 + 305^2 \neq 800^2$

37. a. 5

b. $3^2 + 4^2 = 5^2$ therefore $\triangle ABC$ is a right triangle.

c.



38. No; $7^2 + 4^2 \neq \left(\frac{25}{3}\right)^2$.

Sample answer: Use about 8.1 feet of rope instead of $8\frac{1}{3}$ feet.

39. a. yes; $12^2 + 16^2 = 20^2$

b. no; $9^2 + 12^2 \neq 18^2$

c. No; if the car was not in an accident, the angles should form a right triangle.

40. 1. Given

2. Pythagorean Theorem

3. Substitution Property

4. Definition of a right angle

5. Substitution Property

6. R

7. Substitution Property

8. Definition of acute angle

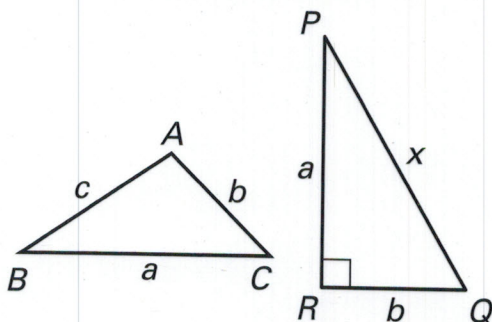
9. Definition of acute triangle

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- 41.** Given: In $\triangle ABC$, $c^2 > a^2 + b^2$
where c is the length of the
longest side.

Prove: $\triangle ABC$ is obtuse.



Statements (Reasons)

1. In $\triangle ABC$, $c^2 > a^2 + b^2$ where c is the length of the longest side. In $\triangle PQR$, $\angle R$ is a right angle. (Given)
2. $a^2 + b^2 = x^2$
(Pythagorean Theorem)
3. $c^2 > x^2$ (Substitution)
4. $c > x$
(A property of square roots)
5. $m\angle R = 90^\circ$
(Definition of a right angle)
6. $m\angle C > m\angle R$
(Converse of the Hinge Theorem)
7. $m\angle C > 90^\circ$
(Substitution Property of Equality)

8. $\angle C$ is an obtuse angle.
(Definition of an obtuse angle)

9. $\triangle ABC$ is an obtuse triangle.
(Definition of an obtuse triangle)

42. Statements (Reasons)

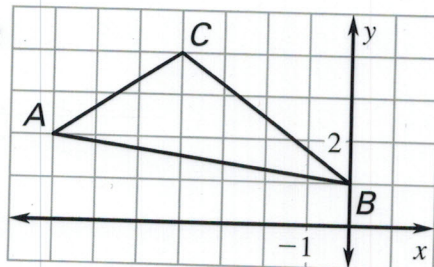
1. In $\triangle LMN$, \overline{LM} is the longest side, $c^2 = a^2 + b^2$. In $\triangle PQR$, $\angle R$ is a right angle. (Given)
2. $a^2 + b^2 = x^2$
(Pythagorean Theorem)
3. $c^2 = x^2$
(Substitution Property of Equality)
4. $c = x$
(A property of square roots)
5. $\triangle LMN \cong \triangle PQR$
(SSS Congruence Postulate)
6. $\angle N \cong \angle R$
(Corr. parts of $\cong \triangle$ are \cong .)
7. $m\angle N = 90^\circ$
(Definition of congruent angles)
8. $\triangle LMN$ is a right triangle.
(Definition of a right triangle)

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43. $\triangle ABC \sim \triangle DEC$, $\angle BAC$ is 90° ,
so $\angle EDC$ must also be 90° .

44. a.



- b. $\triangle ABC$ is not a right triangle;
 \overline{AB} is the longest side, so $\angle C$
would have to be the right
angle, but the slopes of
 \overline{AC} and \overline{BC} are not opposite
reciprocals, so the line
segments are not
perpendicular and therefore,
there is no right angle.

- c. $\triangle ABC$ is not a right triangle;
 \overline{AB} is the longest side, so when
you find the lengths of the sides
and substitute them into the
Pythagorean Theorem, you
 $(\sqrt{13})^2 + 5^2 \neq (5\sqrt{2})^2$ and
since this statement is false, the
triangle is not a right triangle.

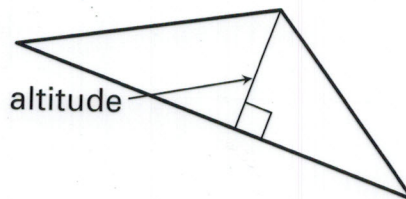
d. yes

45. $x = \sqrt{5}, y = \frac{12\sqrt{5}}{5}$

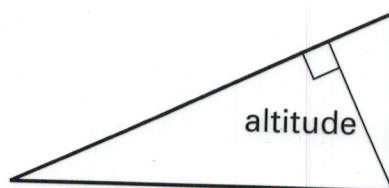
7.2 Mixed Review

46–48. Sample answers are given.

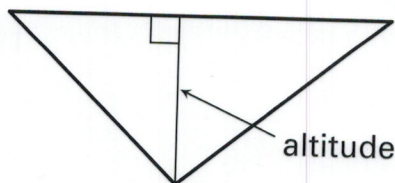
46.



47.



48.



49. $\frac{x}{y}$

50. $\frac{15}{2}$

51. $\frac{y+9}{9}$

52. 60 ft, 7.5 ft

Quiz:

1) $6\sqrt{2}$

2) $4\sqrt{14}$

3) $2\sqrt{53}$

4) acute

5) obtuse

6) obtuse

7) right

8) right

9) acute