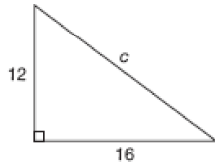


$$a^2 + b^2 = c^2$$

Pythagorean Theorem & The Converse of the Pythagorean Theorem

1.

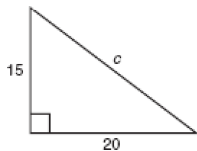


Write an equation: _____

Solve for c .

$c =$ _____

2.

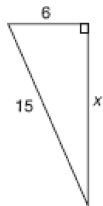


Write an equation: _____

Solve for c .

$c =$ _____

3.

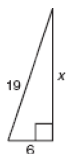


Write an equation: _____

Solve for x .

$x =$ _____

4.



Write an equation: _____

Solve for x .

$x =$ _____

5. A 12-foot ladder is set up 5 feet from the base of a building.

Draw a Picture:

How far up the building does the ladder reach?
Round your answer to the nearest tenth of a foot.

6. A 15-foot ladder is set up 5 feet from the base of a building.

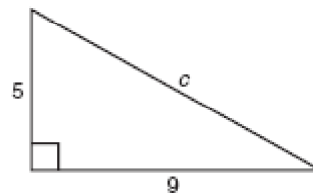
Draw a Picture:

How far up the building does the ladder reach?
Round your answer to the nearest tenth of a foot.

7. A 14-foot ladder is set up 4 feet from the base of a building. How far up the building does the ladder reach? Round your answer to the nearest tenth of a foot.

- a. 13.4 feet
- b. 14.6 feet
- c. 16.5 feet
- d. 18.0 feet

8. What is the length of the hypotenuse to the nearest tenth?



- a. 7.5
- b. 15.0
- c. 10.3
- d. 20.6

Name: _____

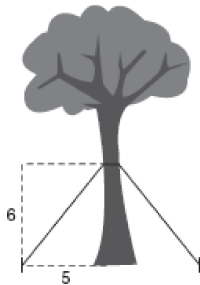
$$a^2 + b^2 = c^2$$

ID: A

9. Jimmy is installing a gravel path along the diagonal of a rectangular garden. The garden measures 24 feet wide by 32 feet long. If the path is 2 feet wide, and gravel costs \$3.50 a square foot, how much will it cost to install the gravel path?

- a. \$80
- b. \$140
- c. \$280
- d. \$392

10. Brianna is planting a sapling. The garden center recommended she stabilize the sapling with guy wires for the first few months after planting. If Brianna places the guy wires 6 feet up the trunk of the sapling and 5 feet from the base, how much total wire, to the nearest tenth of a foot, will she need for the two guy wires?

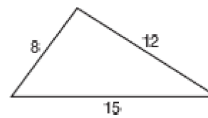


- a. 6.6 feet
 - b. 7.8 feet
 - c. 12.2 feet
 - d. 15.6 feet
11. The library is 10 kilometers south of Aaron's home. The school is 10 kilometers east of Aaron's home. How many kilometers, to the nearest tenth of a kilometer, is the library from the school?
- a. 10.2 kilometers
 - b. 12.0 kilometers
 - c. 14.1 kilometers
 - d. 20.0 kilometers

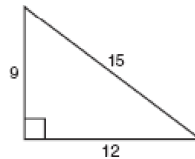
12. A painter props a ladder against a house. The base of the ladder is 12 feet from the house. The top of the ladder is 16 feet from the ground. How long is the ladder?

- a. 10 feet
- b. 14 feet
- c. 20 feet
- d. 28 feet

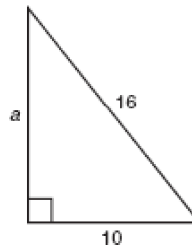
13. Use the converse of the Pythagorean Theorem to determine if the triangle is a right triangle. Explain your answer.



14. Use the converse of the Pythagorean Theorem to determine if the triangle is a right triangle. Explain your answer.



15. What is the length of the unknown leg to the nearest tenth?



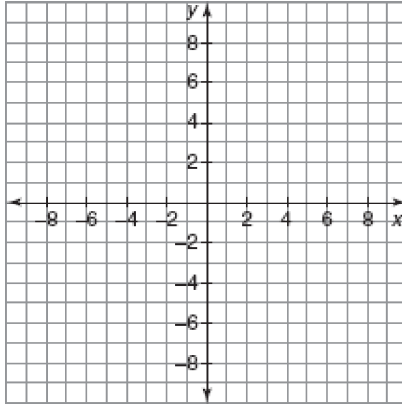
- a. 2.4
- b. 5.1
- c. 12.5
- d. 18.9

Name: _____

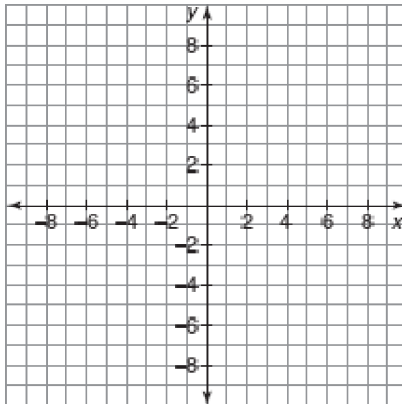
$$a^2 + b^2 = c^2$$

ID: A

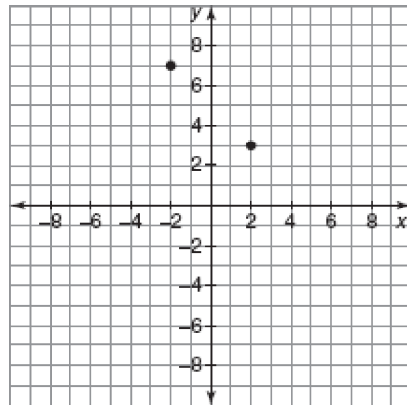
16. Determine the distance between $(-3, 1)$ and $(5, -6)$ by graphing and connecting the points, creating a right triangle, and applying the Pythagorean Theorem.



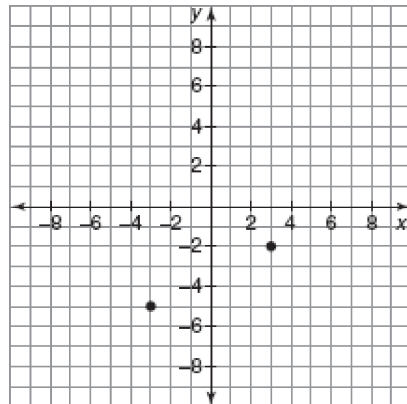
17. Determine the distance between $(-5, -2)$ and $(-2, 5)$ by graphing and connecting the points, creating a right triangle, and applying the Pythagorean Theorem.



18. What is the distance between $(2, 3)$ and $(-2, 7)$? Round to the nearest tenth, if necessary.



- a. 4 units
b. 8 units
c. 5.7 units
d. 11.4 units
19. What is the distance between $(3, -2)$ and $(-3, -5)$? Round to the nearest tenth, if necessary.



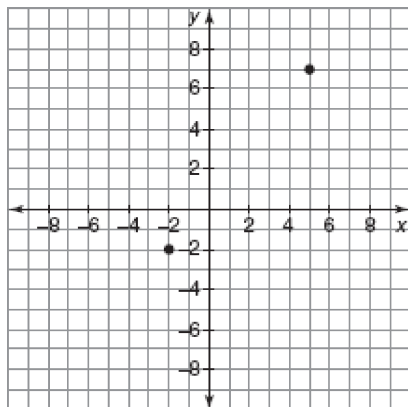
- a. 3 units
b. 3.2 units
c. 5.2 units
d. 6.7 units

Name: _____

$$a^2 + b^2 = c^2$$

ID: A

20. What is the distance between (5, 7) and (-2, -2)?
Round to the nearest tenth, if necessary.



- a. 5.7 units
- b. 5.8 units
- c. 8.6 units
- d. 11.4 units

**PYTHAGOREAN THEOREM /CONVERSE
ANSWER KEY**

1. ANS:

$$12^2 + 16^2 = c^2$$

$$c = \sqrt{400} = 20$$

REF: 6.1

2. ANS:

$$15^2 + 20^2 = c^2$$

$$c = \sqrt{625} = 25$$

REF: 6.1

3. ANS:

$$6^2 + x^2 = 15^2$$

$$x = \sqrt{189} = 3\sqrt{21} \approx 13.75$$

REF: 6.1

4. ANS:

$$6^2 + x^2 = 19^2$$

$$x = \sqrt{325} = 5\sqrt{13} \approx 18.03$$

REF: 6.1

5. ANS:

$$5^2 + x^2 = 12^2$$

$$x^2 = 119$$

$$x = \sqrt{119} \approx 10.9$$

The ladder reaches 10.9 feet up the side of the building.

REF: 6.1

6. ANS:

$$5^2 + x^2 = 15^2$$

$$x^2 = 200$$

$$x = \sqrt{200} \approx 14.1$$

The ladder reaches 14.1 feet up the side of the building.

REF: 6.1

7. ANS: A

REF: 6.1

8. ANS: C

REF: 6.1

9. ANS: C REF: 6.1

10. ANS: D REF: 6.1

11. ANS: C REF: 6.1

12. ANS: C REF: 6.1

13. ANS:

No. This is not a right triangle.

$$8^2 + 12^2 = 64 + 144 = 208$$

$$15^2 = 225$$

$$208 \neq 225$$

The sum of the squares of the lengths of the two shorter sides is not equal to the square of the length of the longest side, so this is not a right triangle.

REF: 6.2

14. ANS:

Yes. This is a right triangle.

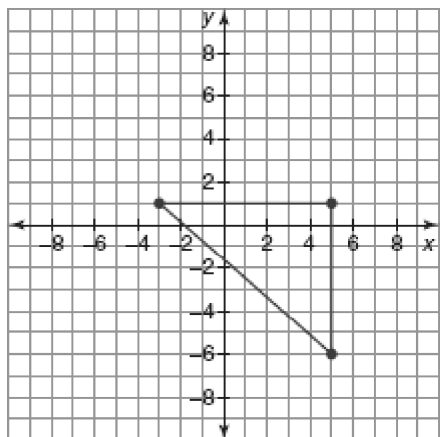
$$9^2 + 12^2 = 81 + 144 = 225 = 15^2$$

The sum of the squares of the lengths of the two legs is equal to the square of the length of the hypotenuse, so this is a right triangle.

REF: 6.2

15. ANS: C REF: 6.3

16. ANS:



$$a^2 + b^2 = c^2$$

$$8^2 + 7^2 = c^2$$

$$64 + 49 = c^2$$

$$c^2 = 113$$

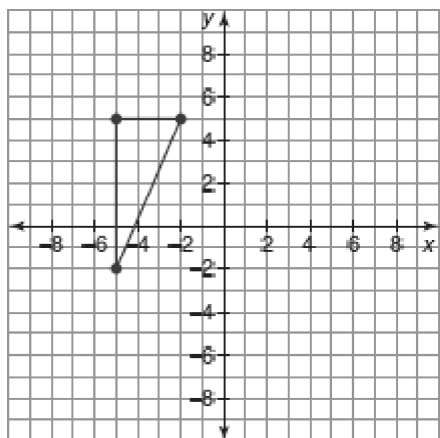
$$c = \sqrt{113}$$

$$c \approx 10.6$$

The distance between $(-3, 1)$ and $(5, -6)$ is approximately 10.6 units.

REF: 6.4

17. ANS:



$$a^2 + b^2 = c^2$$

$$7^2 + 3^2 = c^2$$

$$49 + 9 = c^2$$

$$c^2 = 58$$

$$c = \sqrt{58}$$

$$c \approx 7.6$$

The distance between $(-5, -2)$ and $(-2, 5)$ is approximately 7.6 units.

REF: 6.4

18. ANS: C

REF: 6.4

19. ANS: D

REF: 6.4

20. ANS: D

REF: 6.4