

**Pre-Algebra, Unit 10 Practice Test: Pythagorean Theorem**

Name:

Date:

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1. Define the following terms and make a sketch:
- a. *hypotenuse*

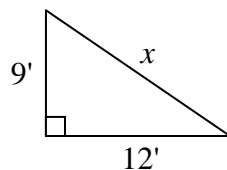
b. *leg*

2. State the Pythagorean Theorem:
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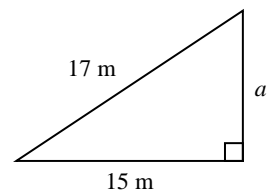
3. Which choice states the converse of the Pythagorean Theorem?

- A. The sum of the squares of the lengths of the legs of a right triangle is equal to the square of the length of the hypotenuse.
- B. If the sum of the squares of the lengths of the legs of a triangle is equal to the square of the length of the hypotenuse, then the triangle is a right triangle.
- C. If the sum of the squares of the two shortest sides of a triangle is greater than the square of the length of the third side, then the triangle is an acute triangle.
- D. If the sum of the squares of the two shortest sides of a triangle is less than the square of the length of the third side, then the triangle is an obtuse triangle.

4. (SE) Find the unknown length. Write your answer in simplest form. Show your work. (Figure is not drawn to scale.)



5. (SE) Find the length of the unknown side.



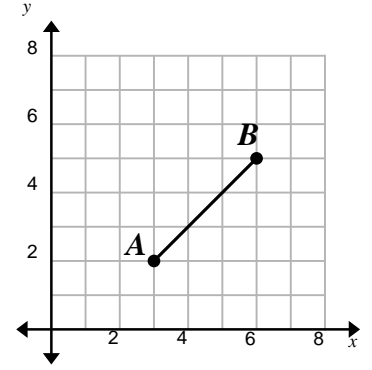
- A. 2 m
- B. 8 m
- C. 16 m
- D. 32 m

6. (SE) The bottom of a ladder is placed 4 feet from the side of a building. The top of the ladder must be 13 feet off the ground. What is the shortest ladder that will do the job? The base of the building and the ground form a right angle. Show your work.

- A) 16 ft
- B) 14 ft
- C) 12 ft
- D) 10 ft

7. (SE) Find the length of  $\overline{AB}$ .

- A) 3 units
- B)  $\sqrt{6}$  units
- C) 18 units
- D)  $3\sqrt{2}$  units

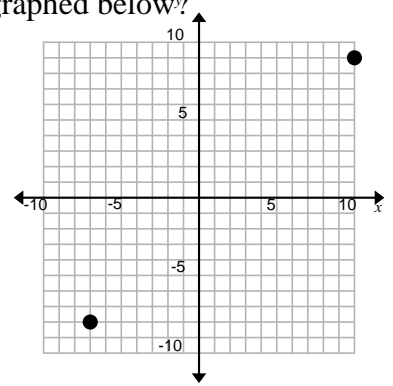


8. (SE) Why is it not possible to make a right triangle using lengths of 20 inches, 30 inches, and 40 inches?

- A.  $40 - 30$  does not equal 20
- B.  $40 - 20$  equals 30
- C.  $(40 - 30)^2$  does not equal  $20^2$
- D.  $40^2 - 30^2$  does not equal  $20^2$

9. Which expression represents the distance between the points graphed below?

- A.  $\sqrt{17^2 + 17^2}$
- B.  $(17^2 + 17^2)^2$
- C.  $(3^2 + 1^2)^2$
- D.  $\sqrt{3^2 + 1^2}$

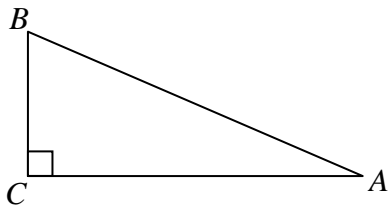


10. (SE/SBAC) What is the distance between the points  $(-7, 7)$  and  $(-3, 2)$  on the  $xy$ -coordinate plane?

- A. 3
- B.  $\sqrt{41}$
- C.  $5\sqrt{5}$
- D.  $\sqrt{181}$

11. (SBAC) In right triangle  $ABC$ , side  $AC$  is longer than side  $BC$ . The boxed numbers represent the possible side lengths of triangle  $ABC$ .

7	15	18	24
8	17	20	25



(not drawn to scale)

Identify three boxed numbers that could be the side lengths of triangle  $ABC$ . Enter the number you choose to represent the length of each side.

$BC = \square$      $AC = \square$      $AB = \square$



14. (SBAC) Two sides of a right triangle have lengths of  $\sqrt{8}$  units and  $\sqrt{17}$  units . There are two possible lengths for the third side. Find both possible lengths.



**Long term memory review:**

15. (SBAC) Simplify  $\sqrt[3]{343}$  .

- A. 7
- B. 18.5
- C. 114.3
- D. 1029

16. (SE) Would you expect a positive association, a negative association, or no association between the data set listed below?

The number of ice cream cones sold and the outside temperature.