

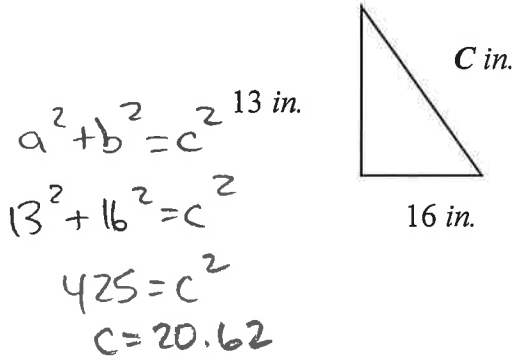
Name: KEY Period: \_\_\_\_\_ Date: \_\_\_\_\_

**7<sup>th</sup> Grade Pre-AP Test Review: Pythagorean Theorem, Real Numbers & Scientific Notation**

Directions: Round all of your answers to the nearest hundredths if necessary.

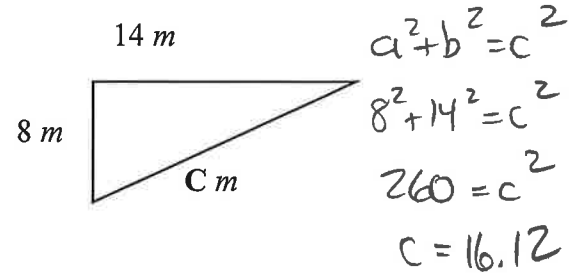
For the right triangles in #1 - #5 calculate the missing lengths.

1)



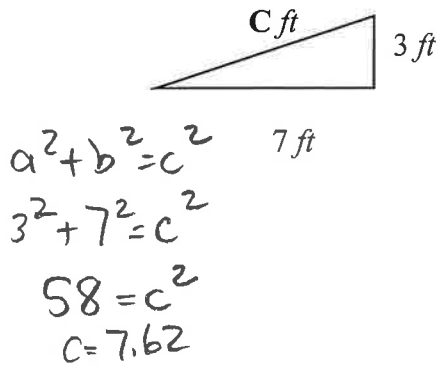
ANSWER: 20.62

4)



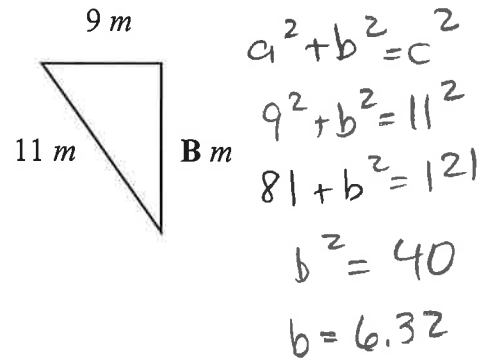
ANSWER: 16.12

2)



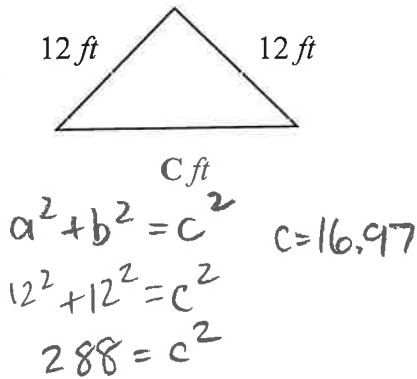
ANSWER: 7.62

5)



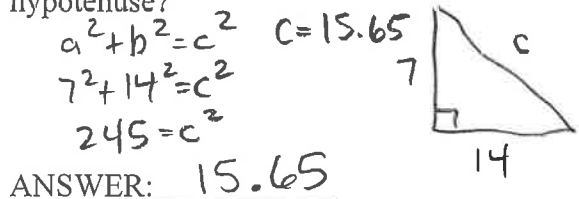
ANSWER: 6.32

3)



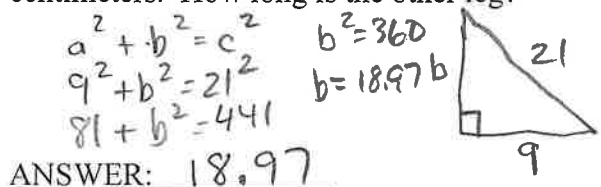
ANSWER: 16.97

6) The length of one leg of a right triangle is 14 inches. The other leg is 7 inches. How long is the hypotenuse?



ANSWER: 15.65

7) The length of the hypotenuse of a right triangle is 21 centimeters. The length of one of the legs is 9 centimeters. How long is the other leg?



ANSWER: 18.97

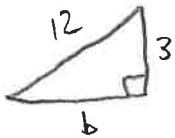
8) Given three lines with the following lengths, can they form a right triangle? Provide a proof of your answer.  $a = 12$ ,  $b = 9$ ,  $c = 15$

(Hint: the equation  $a^2 + b^2 = c^2$  is only true for right triangles)

PROOF:  $a^2 + b^2 = c^2$   
 $12^2 + 9^2 = 15^2$   
 $225 = 225$

ANSWER: YES

9) Myesha uses a 12 foot board to create a ramp by resting one end on top of a 3 foot high wall. How far away from the wall does the ramp reach?

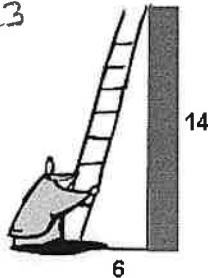


$a^2 + b^2 = c^2$   
 $3^2 + b^2 = 12^2$   
 $9 + b^2 = 144$   
 $b^2 = 135$   
 $b = 11.62$

ANSWER: 11.62

10) What is the length of the ladder? It's 6 ft. from the house at the bottom and touches the wall 14 ft. up at the top.

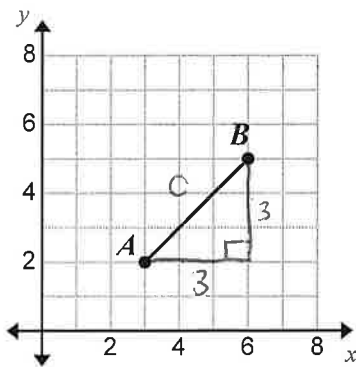
$a^2 + b^2 = c^2$   
 $6^2 + 14^2 = c^2$   
 $232 = c^2$   
 $c = 15.23$



ANSWER: 15.23

11) Find the length of line segment AB.

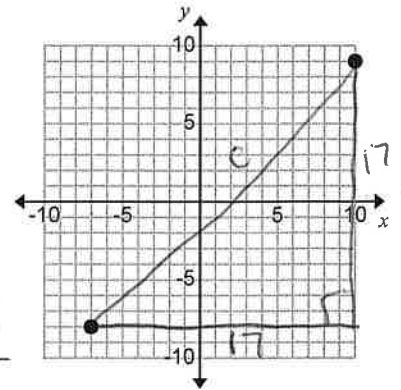
$a^2 + b^2 = c^2$   
 $3^2 + 3^2 = c^2$   
 $18 = c^2$   
 $c = 4.24$



ANSWER: 4.24

12) What is the distance between the two points graphed below?

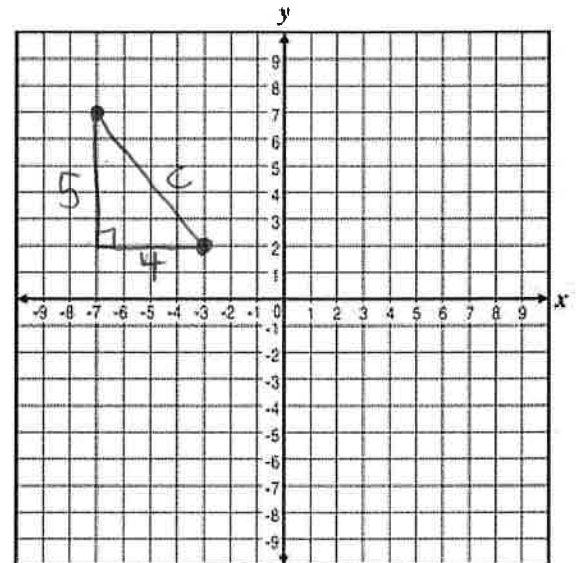
$a^2 + b^2 = c^2$   
 $17^2 + 17^2 = c^2$   
 $c = 24.04$



ANSWER: 24.04

13) What is the distance between the points  $(-7, 7)$  and  $(-3, 2)$  on the  $xy$ -coordinate plane?

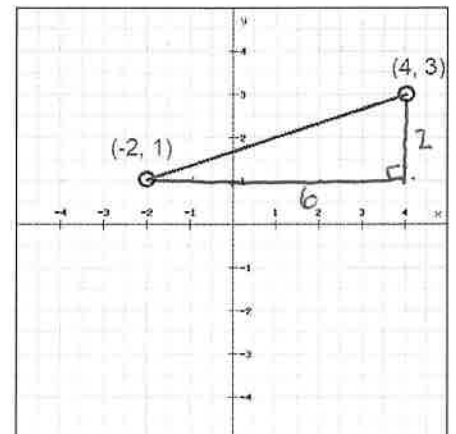
$a^2 + b^2 = c^2$   
 $4^2 + 5^2 = c^2$   
 $41 = c^2$   
 $c = 6.40$



ANSWER: 6.40

14) What is the distance between the two points graphed below?

$a^2 + b^2 = c^2$   
 $2^2 + 6^2 = c^2$   
 $40 = c^2$   
 $c = 6.32$



ANSWER: 6.32

## Scientific Notation

Convert to scientific notation

15.  $273,000 = 2.73 \times 10^5$

16.  $0.0000456 = 4.56 \times 10^{-5}$

Convert to standard notation

17.  $9.65 \times 10^7 = 96,500,000$

18.  $8.54 \times 10^{-9} = 0.00000000854$

## Sets of Real Numbers

For questions 19-25, answer true or false for each statement.

- T 19. Real numbers are either rational or irrational.  
 F 20. An irrational number can be a repeating decimal.  
 F 21. Whole numbers include negative numbers.  
 T 22. The number 12 is an integer.  
 F 23. The only integer not included in the natural numbers is 0.  
 T 24. Irrational numbers are not real numbers.  
 T 25. The fraction  $\frac{1}{2}$ , can be written as a terminating decimal.

For questions 26-28, circle all the classifications that apply to each real number: Natural, Whole, Integer, Rational, Terminating, Repeating, and Irrational.

26.  $\sqrt{11}$  Natural Whole Integer Rational Terminating Repeating Irrational  
 27.  $-10$  Natural Whole Integer Rational Terminating Repeating Irrational  
 28.  $\frac{1}{3}$  Natural Whole Integer Rational Terminating Repeating Irrational

## Ordering Real Numbers

29. Place the following numbers in order from least to greatest:  $2.2, \sqrt{5}, \frac{5}{2}, 3 = 2.2, \sqrt{5}, 2.5, 3$   
 30. Place the following numbers in order from greatest to least:  $1.9, -\sqrt{3}, \frac{9}{5}, -2 = 1.9, \frac{9}{5}, -\sqrt{3}, -2$   
 31. Mark and label the following numbers on the number line below:  $4.75, \sqrt{6}, \frac{12}{5}, \frac{18}{3}$   
 $2.45 \quad 2.4 \quad 6$

