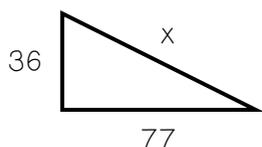Name _____

Date _____ Pd _____

PYTHAGOREAN THEOREM STUDY GUIDE

Solve each of the problems below, and round all solutions to the nearest tenth when necessary. Be sure to ask questions if you need more help with a topic.
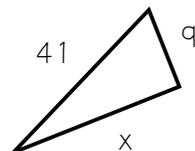
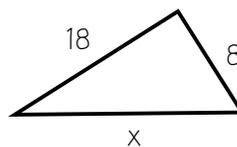## I CAN USE THE PYTHAGOREAN THEOREM TO FIND UNKNOWN SIDE LENGTHS IN RIGHT TRIANGLES.   8.G.7

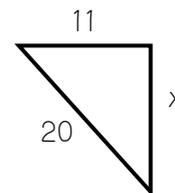|			
1. Find x, the missing side length in the right triangle.	2. Find x, the missing side length in the right triangle.	3. Find x, the missing side length in the right triangle.	4. Find x, the missing side length in the right triangle.

1.

36
x
77

2.

41
9
x

3.

18
8
x

4.

11
20
x

_____   _____   _____   _____

5. The legs of an isosceles right triangle both measure 10 inches. Find the length of the hypotenuse.
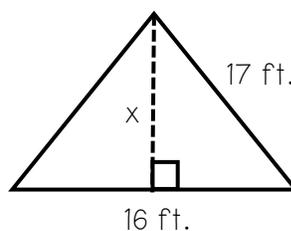
6. The longest side in a right triangle is 24 cm, and the second longest side is 20 cm. Find the length of the shortest side.

_____   _____

## I CAN APPLY THE PYTHAGOREAN THEOREM TO SOLVE REAL-WORLD PROBLEMS.   8.G.7

7. Peter is trying to get his cat out of a tree in his backyard. The cat is 12 feet above the ground, and Peter has to put the base of his ladder 9 feet away from the tree because of mud. How long does the ladder need to be in order to reach the cat?

8. The front view of a tent is shown below. If a zipper is going to be put in along the length of x, how long should the zipper be?


17 ft.
x
16 ft.

_____   _____

9. Kevin is creating a target for a game that will be played at the school's carnival. In order to do this, Kevin needs to put red tape in the shape of an "x" as shown below. If the area of the square board is 25 square feet, how many feet of tape will he need?

_____
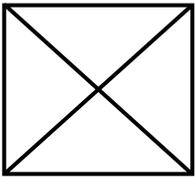
10. Gigi's family left their house and drove 14 miles south to a gas station and then 48 miles east to a water park. How much shorter would their trip to the water park have been if they hadn't stopped at the gas station and had driven along the diagonal path instead?

House

Gas   Water park

_____
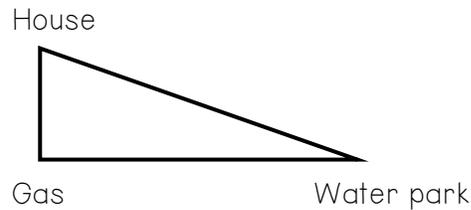
11. Is the triangle a right triangle? Explain.

6   12

8
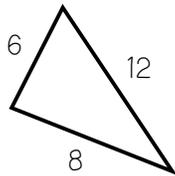
12. Is the triangle a right triangle? Explain.

22.5   12

25.5
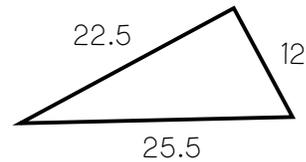
13. Could the side lengths below form a right triangle? Explain.

61, 60, 11

14. Could the side lengths below form a right triangle? Explain.
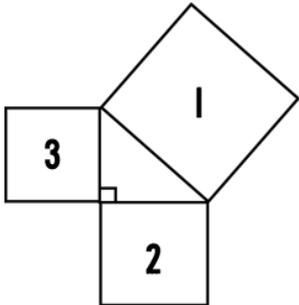
5, 7.5, 2.5

15. The triangular sail on Esther's sailboat measures 10.5 feet, 14 feet and 17.5 feet on its three sides. Is the sail a right triangle? Explain.
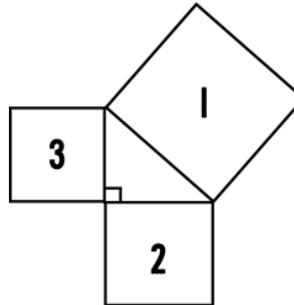
I CAN EXPLAIN A PROOF OF THE PYTHAGOREAN THEOREM.   8.G.6

16. If the area of square 3 is 80 cm^2 and the area of square 2 is 100 cm^2, what is the area of square 1?

_____

17. If the perimeter of square 1 is 104 ft and the area of square 2 is 576 ft^2, what is the side length of square 3?

_____

18. Marvin is painting three squares shaped like the ones below. If it takes him exactly four cans of paint to paint square 3 and five cans of paint to paint square 2, how many cans of paint should he need to paint square 1?
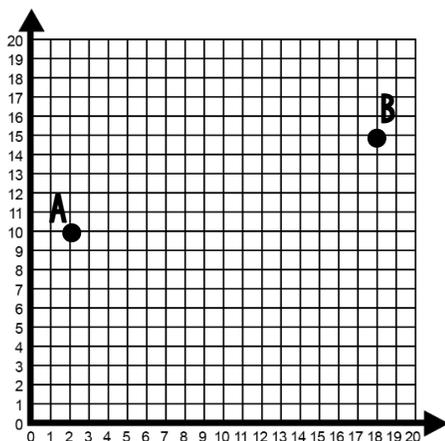

_____
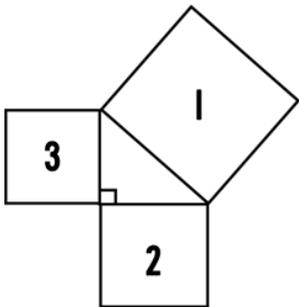
19. Would the three squares below join together to make a right triangle? Why or why not?

5 in.

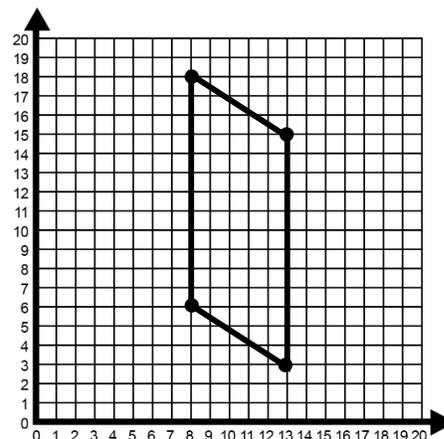Area: 9 in.^{2} Perimeter: 16 in.

_____
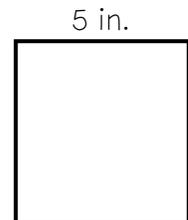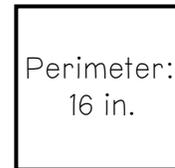
I CAN APPLY THE PYTHAGOREAN THEOREM TO FIND DISTANCE ON A COORDINATE PLANE.   8.G.8

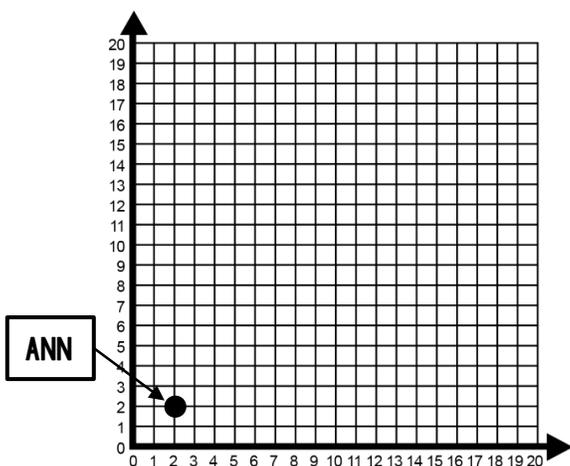20. Find the distance between points A and B.

_____

21. Find the perimeter of the parallelogram.

_____

I CAN APPLY THE PYTHAGOREAN THEOREM TO FIND DISTANCE ON A COORDINATE PLANE.　　8.G.8

The point on the graph represents Ann's location. She is using a metal detector on the beach to see what she can find. Each unit on the graph represents 2 feet.

ANN

22. A piece of jewelry is located at (6, 14). How many feet away from the jewelry is Ann?

23. A pile of bottle caps is located at (15, 13). How many feet away from the bottle caps is Ann?

24. A metal coin is located at (18, 10). How much closer or farther from Ann is the coin than the jewelry?

I CAN APPLY THE PYTHAGOREAN THEOREM TO FIND UNKNOWN LENGTHS IN THREE DIMENSIONS.　　8.G.7

25. The cone below has a base with a diameter of 12 inches and a height of 8 inches. What is the slant height of the cone?

_____
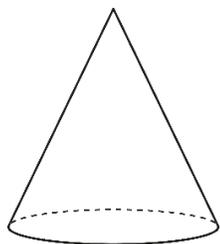
26. The square pyramid has a base with an area of 64 cm² and a slant height of 9 cm. What is the height of the pyramid?

_____
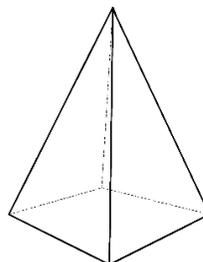
27. Stuart wants to play a trick on his friend by hiding his pencil in the box of tissues shown below. If his friend's pencil is 9 inches in length, will it fit diagonally in the box of tissues? Explain.

4 in.

4 in.

8 in.