

Pythagorean Theorem Word Problems- Independent Practice Worksheet

1. Find the hypotenuse of a triangle with a base of 11 cm and height of 9 cm.

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

$$11^2 + 9^2 = c^2$$

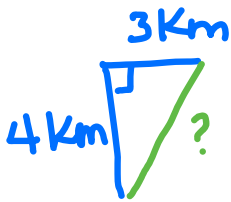
$$121 + 81 = c^2$$

$$\sqrt{202} = \sqrt{c^2}$$

$$14.2 = c$$

14.2 cm

2. Maria walked 3 km west and 4 km south. Calculate how far she is from her starting point.



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

$$3^2 + 4^2 = c^2$$

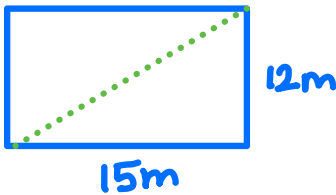
$$9 + 16 = c^2$$

$$25 = c^2$$

$$5 = c$$

5 km

3. Lena's guest house is 15 m long and 12 m wide. How long is the diagonal of the house?



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

$$12^2 + 15^2 = c^2$$

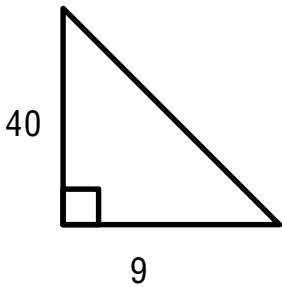
$$144 + 225 = c^2$$

$$369 = c^2$$

$$19.2 = c$$

19.2 m

4\*. Find the perimeter of the triangle below.



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

$$40^2 + 9^2 = c^2$$

$$1600 + 81 = c^2$$

$$1681 = c^2$$

$$\sqrt{1681} = \sqrt{c^2}$$

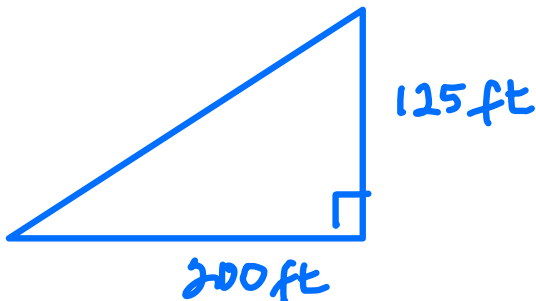
$$41 = c$$

$$\text{Perimeter} = 40 + 9 + 41$$

$$= 90 \text{ units}$$

90 units

5\*. David must install fencing around a lot that is shaped like a right triangle. The side of the lot that runs east-west is 200 ft long. The side of the lot that runs north-south is 125 ft long. Calculate how many feet of fencing he will need to surround the entire lot.



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

$$200^2 + 125^2 = c^2$$

$$55625 = c^2$$

$$\sqrt{55625} = \sqrt{c^2}$$

$$235.8 = c$$

P = 560.8 ft.

$$P = 200 + 125 + 235.8$$

$$= 560.8$$

- 6\*. Stephanie wants to check if the top of a side table she saw for sale is perfectly rectangular. She measured the dimensions of the table and found the following:

Length of table: 15 inches

Width of table: 7.5 inches

Diagonal length of table: 17 inches

Is the table perfectly rectangular?

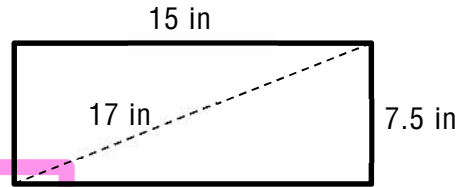
$$a^2 + b^2 = c^2$$

$$7.5^2 + 15^2 \stackrel{?}{=} 17^2$$

$$56.25 + 225 \stackrel{?}{=} 289$$

$$281.25 \neq 289$$

The table is NOT perfectly rectangular.



7. A builder needs to add diagonal braces to a wall. The wall is 16 feet wide by 12 feet high. What is the length of each brace?

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

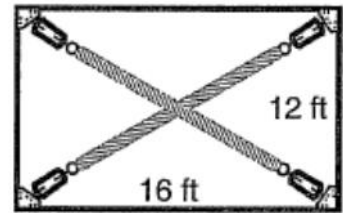
$$16^2 + 12^2 = c^2$$

$$256 + 144 = c^2$$

$$\sqrt{400} = \sqrt{c^2}$$

$$20 = c$$

Each brace is 20 feet long.



8. The diagram at the right shows how a post was broken. What was the original height of the post?

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

$$18^2 + 24^2 = c^2$$

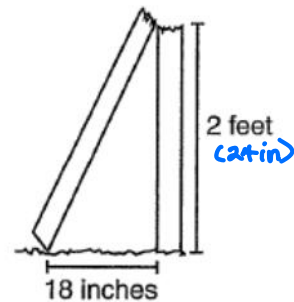
$$324 + 576 = c^2$$

$$\sqrt{900} = \sqrt{c^2}$$

$$30 = c$$

$$24 + 30 = 54$$

The post was 54 in tall



9. Pythagorean Triplets are sets of three whole integers (i.e., no decimal or fractional numbers included) that fit the Pythagorean Rule  $c^2 = a^2 + b^2$ . Determine whether the following sets of numbers are Pythagorean Triples. Write **yes** or **no** for each set of numbers. (*Hint*: The "c" side is always the longest side.)

a) 8, 15, 17

YES

b) 15, 20, 25

YES

c) 20, 48, 52

YES

d) 2, 9, 11

NO

e) 39, 80, 89

YES