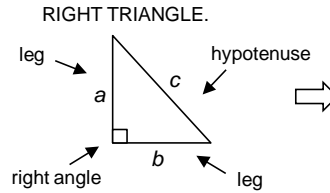


# PYTHAGOREAN THEOREM

# ANSWERS

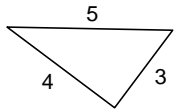
THE **PYTHAGOREAN THEOREM** CAN BE WRITTEN AS AN EQUATION WHERE **a** AND **b** ARE THE LEGS AND **c** IS THE HYPOTENUSE. THE EQUATION TELLS US THAT IF WE SQUARE THE LEGS AND THEN ADD THEM TOGETHER THEY WILL EQUAL THE SQUARE OF THE HYPOTENUSE.



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

THIS ONLY WORKS FOR A RIGHT TRIANGLE.

### Example #1



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

$$3^2 + 4^2 = 5^2$$

$$(3 \times 3) + (4 \times 4) = (5 \times 5)$$

$$9 + 16 = 25$$

$$25 = 25$$

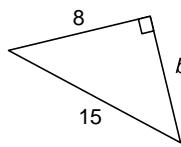
YOU CAN SHOW WHETHER OR NOT A TRIANGLE IS A RIGHT TRIANGLE.

25 EQUALS 25. THIS TELLS US THE TRIANGLE IS A RIGHT TRIANGLE.

**PYTHAGOREAN THEOREM**

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

### Example #2



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

$$8^2 + b^2 = 15^2$$

$$(8 \times 8) + b^2 = (15 \times 15)$$

$$64 + b^2 = 225$$

$$64 + b^2 = 225 - 64$$

$$b^2 = 161$$

*b* is about 13

$$12 \times 12 = 144$$

and

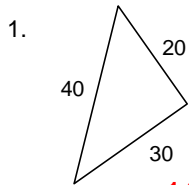
$$13 \times 13 = 169$$

161 IS CLOSER TO 169

YOU CAN FIND THE LENGTH OF A MISSING SIDE OF A RIGHT TRIANGLE.

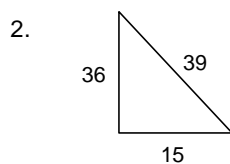
ESTIMATE THE ANSWER TO THE NEAREST WHOLE NUMBER.

Now your turn. Use the Pythagorean Theorem to show if the triangle is a right triangle.



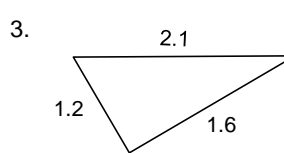
$$1,300 \neq 1,600$$

**NO**



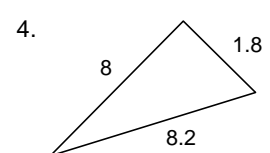
$$1,521 = 1,521$$

**RIGHT TRIANGLE**



$$4 \neq 4.41$$

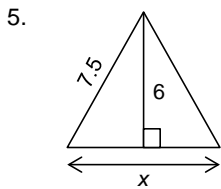
**NO**



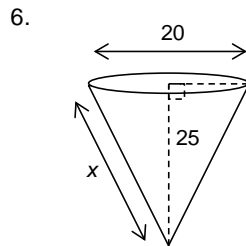
$$67.24 = 67.24$$

**RIGHT TRIANGLE**

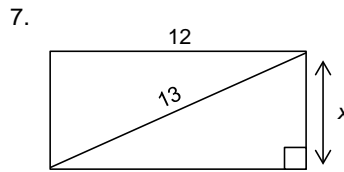
Find *x*. Estimate the answer to the nearest whole number.



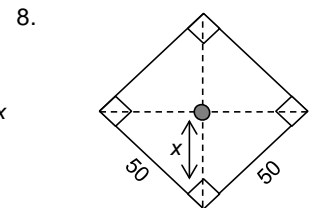
$$x = 9$$



$$x \text{ about } 27$$



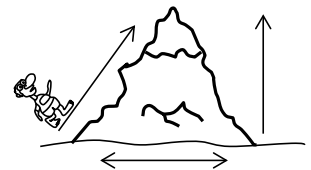
$$x = 5$$



$$x \text{ about } 35$$

Solve the word problem.

9. Mount Berry is shaped like a cone. It's 1,500 meters tall and 1,600 meters wide. If Zack walked from the bottom (0 meters) to the top of the mountain, about how far did he walk? **about 1,700 meters**



10. Jeffy needs to replace the roof of his house and needs to buy a ladder to reach the roof. The lowest point of the roof is 30 feet high. There is a fence around the house, so the closest he can place the ladder to the wall of the house is 10 feet. What is the minimum length the ladder can be to reach the roof? **at least 32 feet**

