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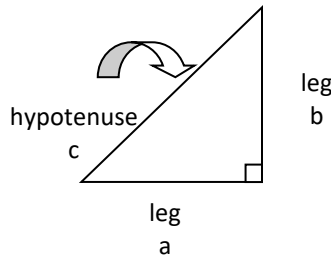
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Period:

ALL PROBLEMS START WITH WRITING THE FORMULA!!!

$$\text{Formula: } a^2 + b^2 = c^2$$

The hypotenuse is the longest side, always opposite the right angle, and always represented by c.



The legs are the sides that make up the right angle and are represented by a & b

Sometimes a Pythagorean Theorem problem will be disguised. ALWAYS draw out the picture as described and be sure to place the given information **properly** in the picture. The following example doesn't say anything about a right triangle. Once the picture is drawn and the information given is filled in, it is clearly a Pythagorean Theorem problem.

Example: Express in simplest form the length of a side of a square whose diagonal is 10.

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

$$(x)^2 + (x)^2 = 10^2$$

$$2x^2 = 100$$

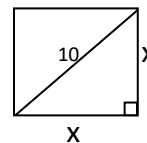
$$2 = 2$$

$$x^2 = 50$$

$$\sqrt{x^2} = \sqrt{50}$$

$$x = \sqrt{25}\sqrt{2}$$

$$x = 5\sqrt{2}$$



Take the sq. root of both sides

Take the sq. root of both sides

Solve the following problems on a separate sheet of paper. Round your answers to the nearest tenth, when necessary.

- Mindy and Christine started from the same point. Christine traveled west at a rate of 30 miles per hour. Mindy traveled south at a rate of 40 miles per hour. How far apart were they at the end of one hour?
- A helicopter flies 9 miles due west, and then 6 miles due south. How far is it from its starting point?
- A utility pole is 8 m high. A cable is stretched from the top of the pole to a point on the ground that is 5 m from the bottom of the pole. How long is the cable?

****Pythagorean Triplets:** There are certain combinations to know called triplets. **Be careful to make sure c is the longest side.**

3, 4, 5 (or any multiples)

8, 15, 17 (or any multiples)

9, 40, 41 (or any multiples)

5, 12, 13 (or any multiples)

7, 24, 25 (or any multiples)

Find the missing side if:

1. $a = 8, b = 15, c = ?$

3. $c = 25, b = 20, a = ?$

5. $a = 5\sqrt{3}, c = 10, b = ?$

2. $c = 10, a = 6, b = ?$

4. $a = \sqrt{2}, b = \sqrt{2}, c = ?$

The lengths of the three sides of a triangle are listed. Use the Pythagorean Theorem to determine if it is a right triangle.

1. 12, 13, 14

3. 9, 16, 18

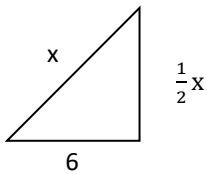
5. 24, 25, 35

2. 9, 12, 15

4. 12, 16, 20

1. The hypotenuse of an isosceles right triangle is 8. Find the length of one leg in simplest radical form.

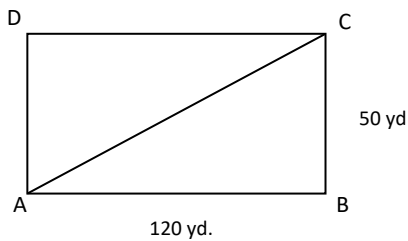
2. Find x in simplest radical form.



3. One day, Ronnie walked from his home at A to his school at C by walking along AB & BC, the sides of a rectangular open field that was muddy. When he returned home, the field was dry and Ronnie decided to take a shortcut by walking diagonally across the field along CA. How much shorter was the trip home than the trip to school?

Trip to school:

Trip home from school:



4. Find the area of the triangle pictured if CD is the altitude and $AC = 26, BC = 26$ and $AB = 20$.

