Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

SOL 8.10: Pythagorean Theorem

I. Triangles

* This is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ triangle.
* It is called a right triangle because it has a

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* The measure of a right angle is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

II. The Pythagorean Theorem

* The Greek mathematician Pythagoras discovered a special relationship between the sides of a right triangle.
* Pythagoras realized that if you have a right triangle and you \_\_\_\_\_\_\_\_\_\_\_ the lengths of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that make up the right angle, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ them together, you get the same number you would get by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the other side.
* This is true for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ right angle.
* The two sides that are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (next to) the right angle are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The lengths of the legs are labeled \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_.
* The side \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the right angle is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The hypotenuse is labeled \_\_\_\_\_.
* The relationship that Pythagoras discovered

is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* The Pythagorean Theorem says, given the right triangle with legs *a* and *b* and hypotenuse *c,* then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

III. Use the Pythagorean Theorem

* Suppose you drive west for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and then turn and drive south for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. How far are you from where you started? Use the Pythagorean Theorem to solve the problem.
* Find the length of the diagonal of the rectangle.
* Practice using The Pythagorean Theorem to solve these right triangles

1)

2)

3)

IV. Determine if the triangle is a right triangle

* Example 1
  + The sides of a triangle are 48 ft., 60 ft., and 78 ft.
  + Determine if the triangle is a right triangle.
  + If the triangle is a right triangle, then using the Pythagorean Theorem will result in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + The hypotenuse is always the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ side, so

a = \_\_\_\_\_\_\_\_\_\_\_\_\_, b = \_\_\_\_\_\_\_\_\_\_\_ and c = \_\_\_\_\_\_\_\_\_\_\_\_.

* + a2 + b2 = c2
  + This resulted in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ statement, so it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a right angle.
    - Example 2
  + The sides of a triangle are 24cm., 70cm., 74cm.
  + Determine if the triangle is a right triangle.
  + a = \_\_\_\_\_\_\_\_\_\_\_\_\_, b = \_\_\_\_\_\_\_\_\_\_\_ and c = \_\_\_\_\_\_\_\_\_\_\_\_.
  + a2 + b2 = c2
  + This resulted in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ statement, so it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a right angle.