1. In a right triangle, the side opposite the right angle is called the _________________.

2. The hypotenuse is the _______________ side. We use the variable \( c \) to represent the hypotenuse when we don’t know it’s length.

3. The other two sides of the triangle are called the _______ (these two sides form the right angle). We use the variables \( a \) and \( b \) to represent the legs.

4. Label the hypotenuse and legs in this right triangle:

5. The ________________ _______________ describes the relationship of the lengths of the sides of a _____________ triangle.

6. The Pythagorean Thereom is named after ________________, a Greek philosoper and mathematician who taught around 530 BC.

7. Remember, we use \( a \) and \( b \) to represent the legs of a right triangle and \( c \) to represent the hypotenuse. The Pythagorean Theorem states that when we have a right triangle, the sum of the squares of the lengths of the _______ \( (a^2 + b^2) \) is equal to the square of the length of the ________________ \( (c^2) \).

8. The **Pythagorean Theorem** (using variables).

\[ \_ \_\_ + \_ \_\_ = \_ \_\_ \]
PYTHAGOREAN THEOREM

ALGEBRA – EXAMPLES

NAME:______________________

PERIOD: ____    #: _____

1. What is the length of the hypotenuse of the triangle?

Write the Pythagorean Theorem: ________________________________
Substitute 9 for \(a\) and 12 for \(b\): ________________________________
Simplify: ________________________________
To get \(c\) by itself, take the square Root of both sides: ________________________________
Write the answer: \(c = \) __________

2. Find the length of the missing side in the triangle below.

Write the Pythagorean Theorem: ________________________________
Substitute 16 for \(a\) and 30 for \(c\): ________________________________
Simplify: ________________________________
Subtract 256 from both sides: ________________________________
To get \(b\) by itself, take the square Root of both sides (calculator is ok): ________________________________
Write the answer: \(b = \) ______ ft.

Using the triangle at the right, find the length of the missing side.

3. \(a = 6, b = 8, c = ?\)

4. \(a = 3, b = ?, c = 5\)

5. \(a = ?, b = 10, c = 15\) (Round to nearest tenth)

6. A pigeon leaves its nest and flies 5 km due east. Then he flies 3 km due north. How far is the pigeon from his nest? (Draw a picture! Round to nearest tenth.)