Name _____ Date Answer Key

CAN YOU MAKE A RIGHT TRIANGLE?
CONVERSE OF THE PYTHAGOREAN THEOREM

The converse of the Pythagorean theorem states that if the square of the longest side of a triangle is equal to the sum of the squares of the two shorter sides, then the triangle is a right triangle. In other words, if $a^2 + b^2 = c^2$, then the triangle is a right triangle.

Let's try an example! Is a triangle with side lengths of 6 feet, 16 feet, and 20 feet a right triangle?

Plug in 6, 16, and 20 into $a^2 + b^2 = c^2$ to see if the equation is true. The longest side of the triangle must be c, so let $c = 20$. For the shorter sides, it doesn't matter which number you choose for a or b. Here, let $a = 6$ and $b = 16$.

$a^2 + b^2 \stackrel{?}{=} c^2$
$6^2 + 16^2 \stackrel{?}{=} 20^2$
$36 + 256 \stackrel{?}{=} 400$
$292 \neq 400$
So, this is **not** a right triangle.

Directions: Determine if each triangle described below is a right triangle. Circle *yes* or *no* to show your answer.

1. A triangle has sides with lengths of 9 meters, 12 meters, and 15 meters. Is it a right triangle?

(yes) no

2. A triangle has sides with lengths of 3 inches, 5 inches, and 6 inches. Is it a right triangle?

yes (no)

3. A triangle has sides with lengths of 4 feet, 7 feet, and 8 feet. Is it a right triangle?

yes (no)

4. A triangle has sides with lengths of 7 meters, 24 meters, and 25 meters. Is it a right triangle?

(yes) no

5. A triangle has sides with lengths of 11 feet, 9 feet, and 14 feet. Is it a right triangle?

yes (no)

6. A triangle has sides with lengths of 30 yards, 16 yards, and 34 yards. Is it a right triangle?

(yes) no

7. A triangle has sides with lengths of 9 inches, 41 inches, and 40 inches. Is it a right triangle?

(yes) no

8. A triangle has sides with lengths of 24 meters, 20 meters, and 16 meters. Is it a right triangle?

yes (no)