Name Key
Date _____

What Is The Converse Of The Pythagorean Theorem?

The Pythagorean Theorem

If a triangle is a right triangle, then the sum of the squares of the lengths of the legs is equal to the square of the length of the hypotenuse.

If a triangle is a right triangle, then $a^2 + b^2 = c^2$.

The Converse Of The Pythagorean Theorem

If the sum of the squares of the lengths of the legs of a triangle is equal to the square of the length of the hypotenuse, then the triangle is a right triangle.

If $a^2 + b^2 = c^2$, then the triangle is a right triangle.

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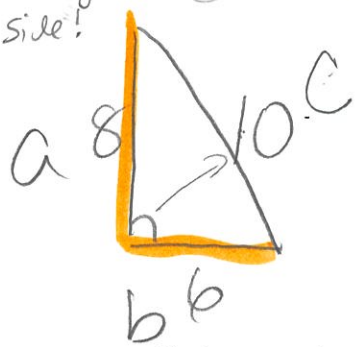
*The converse of the Pythagorean Theorem can be used to prove if a triangle is a **right triangle.***

The hypotenuse must be the largest side!

1) Using the Pythagorean Theorem, show that a triangle with sides of length 10, 8, and 6 units is a right triangle.



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

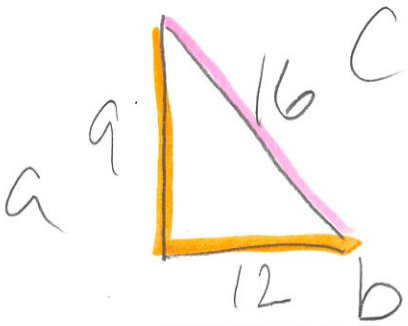
$8^2+6^2=10^2$

$64+36=100$

$100=100$ ✓

yes! It is a right Δ B/c the lengths of the sides of the triangle satisfy the pythagorean theorem

2) Determine whether the triangle with sides of lengths 9cm, 12cm, and 16cm is a right triangle.



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

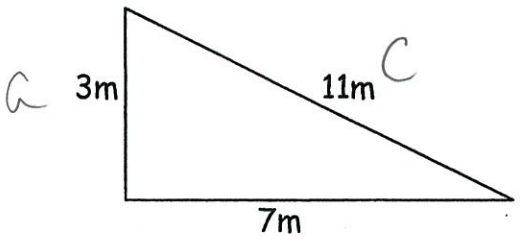
$9^2+12^2=16^2$

$81+144=256$

$225 \neq 256$

NO! It is NOT a right Δ B/c the lengths of the sides of the triangle do NOT satisfy the pythagorean theorem

3) Is the following triangle a right triangle? Explain.



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

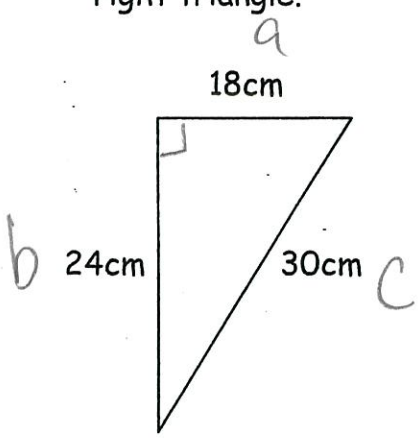
$3^2+7^2=11^2$

$9+49=121$

$58 \neq 121$

NO! It is not a right Δ B/c the lengths of the sides of the triangle do not satisfy the pythagorean theorem

4) Using the Pythagorean Theorem, determine if the following triangle is a right triangle.



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

$24^2+18^2=30^2$

$576+324=900$

$900=900$ ✓

yes! It is a right Δ B/c the lengths of the sides of the triangle satisfy the pythagorean theorem