Finding Pythagorean Triples Activity

If three numbers satisfy the Pythagorean Theorem, they are called a **Pythagorean Triple**.

Here is an easy way to find other Pythagorean triples.

The numbers *a*, *b*, and *c* are a Pythagorean triple if,

- $a = m^2 - n^2$,
- $b = 2mn$
- $c = m^2 + n^2$, where *m* and *n* are relatively prime positive integers and *m* > *n*.

(Note: integers are relatively prime if their only common factor is 1)

Example **Choose $m = 5$ and $n = 2$.**

$a = m^2 - n^2$
$= 5^2 - 2^2$
$= 25 - 4$
$= 21$

$b = 2mn$
$= 2(5)(2)$
$= 20$

$c = m^2 + n^2$
$= 5^2 + 2^2$
$= 25 + 4$
$= 29$

Check $20^2 + 21^2 \stackrel{?}{=} 29^2$
$400 + 441 \stackrel{?}{=} 841$
$841 = 841$

Use the following values of m and n to find Pythagorean triples.

1. $m = 3$ and $n = 2$

2. $m = 4$ and $n = 1$

3. $m = 5$ and $n = 3$

4. $m = 6$ and $n = 5$

5. $m = 10$ and $n = 7$

6. $m = 8$ and $n = 5$