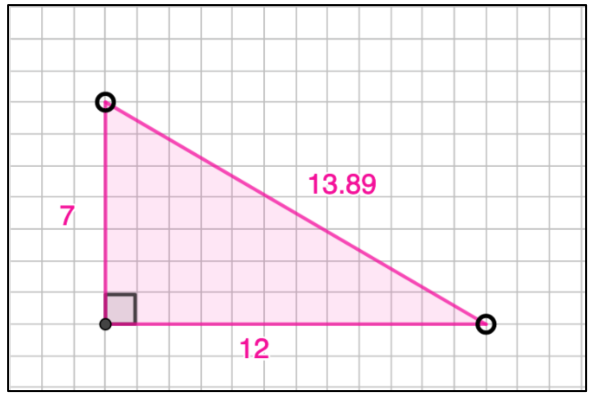
LAB–Pythagorean Triples
https://www.geogebra.org/m/n38kemvj

Name ____________________



1. In the Geogebra file “Pythagorean Triples”, the lengths of the sides of the legs of the right triangle have been constrained so they are always whole numbers.

2. Move the points to change the side lengths. Enter the data in the chart.

3. Can you find a set of lengths that have a whole number hypotenuse length? That is called a Pythagorean Triple: a set of three whole numbers that can be sides of a right triangle.

Leg 1 Measure	Leg 2 Measure	Hypotenuse Measure	GCF of sides?	Primitive Triple

4. If there is a Greatest Common Factor of the three sides, enter that in column 4. Divide the sides by the GCF to find the Primitive Triple.

   If the GCF is 1 then the original sides make a primitive triple. You can use any scale factor (multiplier) to create a new triple from a primitive triple.

   Determine if these are Pythagorean Triples:

   A. 30, 40, 50

   B. 5, 12, 12

   C. 21, 220, 221

5. Create a Pythagorean Triple with a primitive triple you found above, multiplied by a scale factor. Confirm with the Pythagorean Theorem.

6. You can generate a Pythagorean Triple using two numbers **m** and **n**, with m > n. Then a = $m^2 - n^2$, b = $2 \cdot m \cdot n$, and c = $m^2 + n^2$ [This is known as Euclid's Formula]

   Enter some values for **m** and **n**, and record the triples below. Test your triples on the triangle at the top of the GeoGebra page.

m	**n**	a	b	c	**Triple**

7. [Extension] There are some interesting patterns in the numbers that make up Pythagorean Triples.
   What do you notice about the numbers in the primitive triples you found?