

Decide if the triangle made up of sides a, b, and c below is right, acute, or obtuse. Write your answer on the blank provided.

	Side a	Side b	Side c
33 _____	5	12	13
41 _____	7	20	23
67 _____	9	40	41
19 _____	4	5	6
5 _____	1.5	4	5.2
34 _____	11	$11\sqrt{3}$	22
12 _____	19	20	28
56 _____	8	15	17
6 _____	5	8	9
4 _____	6	8	10
37 _____	5	$5\sqrt{3}$	8
8 _____	$7\sqrt{2}$	$7\sqrt{2}$	14
9 _____	10	16	20
15 _____	3.6	4.6	5.6
25 _____	10	10.5	14.5

Place the digits to the LEFT of each RIGHT triangle in order on the blanks below (one digit on each blank).

_____, _____, and _____ are the sides of a right triangle found by the Babylonians more than 2000 years ago. Can you test these sides to see if the Babylonians were right?

Many mathematicians over the centuries have developed formulas for generating right triangles.

Pythagoras: $n, \frac{n^2 - 1}{2}, \frac{n^2 + 1}{2}$

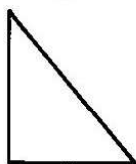
Plato: $\frac{a^2}{4} - 1, a, \frac{a^2}{4} + 1$

Euclid: $\frac{x - y}{2}, \sqrt{xy}, \frac{x + y}{2}$

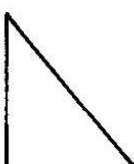
Masères: $2pq, p^2 - q^2, p^2 + q^2$

Label the sides of each triangle according to the rules given above. Be sure the hypotenuse is labeled correctly — remember, it's the longest side.

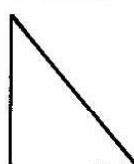
Pythagoras



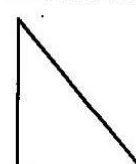
Plato



Euclid



Masères



1. Find the sides of a Pythagoras triangle if $n = 3$. _____
2. Find the sides of a Plato triangle if $a = 4$. _____
3. Find the sides of a Euclid triangle if $x = 3, y = 1$. _____
4. Find the sides of a Masères triangle if $p = 4, q = 1$. _____
5. Find the sides of a Pythagoras triangle if $n = 2$. _____
6. Why might you want to restrict n to odd positive integers in Pythagoras's formula?

7. Find the sides of a Plato triangle if $a = 7$. _____
8. Why might you want to restrict values of a to even positive integers greater than 2?

9. Find the sides of a Euclid triangle if $x = 10, y = 4$. _____
10. Find the sides of a Euclid triangle if $x = 5, y = 2$. _____
11. Why might you want to restrict x and y to either even or odd numbers?

12. Find the sides of a Masères triangle with $p = 2.6, q = 1.5$. _____
13. What restriction would you impose on values for p and q ? _____

Extra: Prove the right triangle identity $a^2 + b^2 = c^2$ using the formulas given by Pythagoras, Plato, Euclid, and Masères.