Pythagorean's Theorem

In this lesson, you will learn to use the most popular and well known of mathematical concepts. The Pythagorean Theorem. This theorem can only be used when you are solving problems involving right triangles. You will need to use your knowledge of equation solving and square roots. You can use Pythagorean's Theorem to solve problems involving sailing and travel.

Sailing

Travel

Understand Pythagorean Theorem

Remember that the side opposite the right angle of a right triangle is called the hypotenuse of the right triangle. This side is always the longest side of the right triangle. The other two (shorter) sides are called the legs of the right triangle. The power of Pythagorean's Theorem can be seen when you use it to find the missing lengths of the sides of a right triangle.

The Pythagorean Theorem

If a and b are the measures of the legs of a right triangle and c is the measure of the hypotenuse, then $c^2 = a^2 + b^2$.

Using Pythagorean's Theorem

Square Roots ?

You can use the Pythagorean Theorem to find the length of the hypotenuse of a right triangle when the lengths of the legs of the right triangle are known. An important point to remember is that when you use Pythagorean's Theorem, you must always find the square root at the end of the problem.

Example

Find the hypotenuse of a right triangle if its legs have a length of 12 and 16.

Using Pythagorean's Theorem

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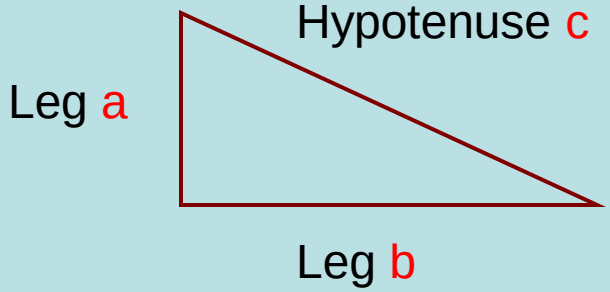
Example

Find the hypotenuse of a right triangle if its legs have a length of 12 and 16.

First, you must evaluate Pythagorean's Theorem by substituting the length of the legs into the formula (a = 12 and b = 16).



Using Pythagorean's Theorem

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Example

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First, you must evaluate Pythagorean's Theorem by substituting the length of the legs into the formula (a = 12 and b = 16).

No	Square	Square Root		No	Square	Square Root
1	1	1		19	361	4.36
2	4	1.41		20	400	4.47
3	9	1.73		21	441	4.58
4	16	2		22	484	4.69
5	25	2.24		23	529	4.80
6	36	2.45		24	576	4.90
7	49	2.65		25	625	5
8	64	2.83		26	676	5.10
9	81	3		27	729	5.20
10	100	3.16		28	784	5.29
11	121	3.32		29	841	5.39
12	144	3.46		30	900	5.48
13	169	3.61		31	961	5.57
14	196	3.74		32	1024	5.66
15	225	3.87		33	1089	5.74
16	256	4		34	1156	5.83
17	289	4.12		35	1225	5.92
18	324	4.24		36	1296	6

You may use a calculator to find the square or the square root of a number.

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