Learn the Pythagorean Theorem

Given that $a$ and $b$ are the legs of a right triangle and $c$ is the hypotenuse, then:

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

Example 1

a. The legs of a right triangle are given by $a = 9 \text{ cm}$ and $b = 12 \text{ cm}$. Determine the length of the hypotenuse.

b. The hypotenuse of a right triangle measures 40 feet and one leg measures 32 feet. What is the length of the other leg?
c. One leg of a right triangle is 4 meters more than twice the other. The hypotenuse is 26 meters. Find the lengths of the legs of the triangle.

d. A signal tower is supported by wires. One wire goes from the top of the tower to a point on the ground. The height of the tower is 10 feet less than twice the distance between the base of the tower and the wire anchored on the ground. The length of the wire is 10 feet more than twice the distance between the base of the tower and the wire anchored on the ground. Find the height of the tower.