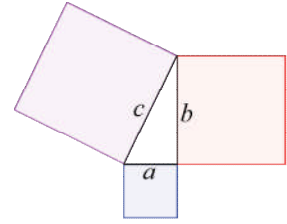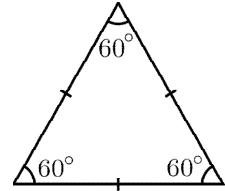# Special Triangles

Pythagorean Theorem

Where *a* and *b* are the two short sides meeting at a right angle and *c* is the hypotenuse,

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

Equilateral Triangle

An equilateral triangle is a regular polygon (all sides are the same length and all angles are equal). The three interior angles are 60°.

30-60-90: Half an Equilateral

This is a right triangle whose three angles are in the ratio 1:2:3, measuring 30°, 60° and 90° respectively.
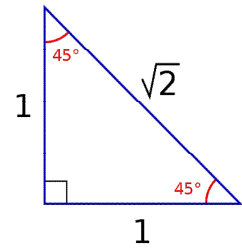
Abstractly, if the length of the short side is represented by *n*, the longer side is $n\sqrt{3}$ and the hypotenuse is *2n*.
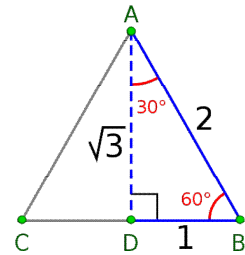
45-45-90: Isosceles Right Triangle

This is a right triangle whose three angles are in the ratio 1:1:2, measuring 45°, 45° and 90° respectively.

Abstractly, if the length of the short sides are both represented by *n*, the hypotenuse is $n\sqrt{2}$

3-4-5 Triangle

These triangles have well-known integer sides fulfilling the Pythagorean Theorem, the 3-4-5 being the most well known. For example, if n is some integer and the two short sides are represented by 3n and 4n, respectively, the hypotenuse is represented by 5n, Hence the "3n + 4n = 5n."
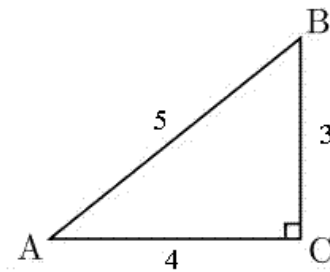
Other well-known integer-length triangles:

5-12-13
8-15-17
7-24-25
9-40-41