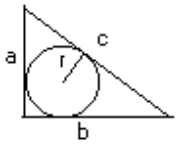
Inscribed Circles Of A Right Triangle:

A. Most of the time on a number sense test the question will give you the sides of a right triangle and ask you to find the value of the radius of an inscribed circle. Here is a picture of what is happening:



B. Finding the radius is simple. Use the following formula:

$$r = \frac{a + b - c}{2}$$

C. Examples:

Ex [1] Find the radius of an inscribed circle of a 6, 8, 10 triangle.

a. The answer is $^{6+8-10}/_{2} = {}^{4}/_{2} = 2$.

Ex [2] Find the radius of an inscribed circle of a right triangle that has a leg of 14.

a. In this example, we will have to *derive a Pythagorean triple*.

b. We know that the triangle has sides of 14, 48, and 50.

c. The answer is $^{14+48-50}/_{2} = {}^{12}/_{2} = 6$.