

## Section 2x Geometric Applications

### The Square Root Property

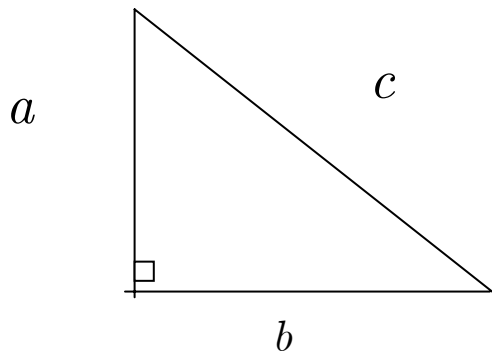
Simple quadratic equations of the form  $x^2 = k$  can be solved using the square root property.

**Theorem: The Square Root Property.** If  $x^2 = k$  and  $k$  is any real number, then  $x = \pm\sqrt{k}$ .

Notice that, if  $k < 0$ , the solution is not a real number.

**Theorem: The Pythagorean Theorem.** In a right triangle, the sum of the squares of the legs equals the square of the hypotenuse:

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



### Example 1 Applications involving quadratic equations

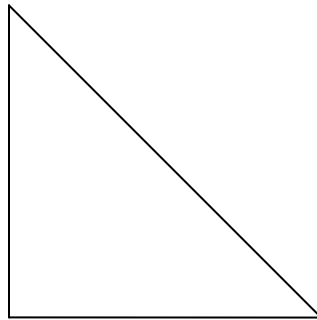
Solve the following applications.

- a. A square television set has a diagonal that is 32". How long is each side of the set?

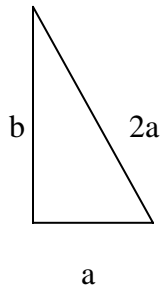
b. How long is a guy wire if it reaches from the top of a 15-ft pole to a point on the ground 10 ft from the pole?

### Special Triangles

Isosceles triangle:



30-60-90:



**Example 2 Application involving a triangle**

The entrance to a pup tent is the shape of an equilateral triangle. If the base of the tent is 4 ft, how tall is the tent?