

The distance an object falls from rest varies directly as the square of the time it has fallen. If the object fell 4 ft during the first half second, how far did it fall during the next two seconds?

**Step 1-** Set up the variation, using  $k$ . Remember to see if it is direct, inverse, or joint.

$$d = kt^2$$

**Step 2-** Find  $k$ .

$$4 = k(0.5)^2$$

$$4 = k(0.25)$$

$$16 = k$$

**Step 3-** Now we can write the variation with a number in for  $k$ !

$$d = 16t^2$$

**Step 4-** Now we can solve for whatever we want!

[2 seconds after 0.5 seconds will be 2.5 seconds]

$$d = 16(2.5)^2$$

$$d = 16(6.25)$$

$$d = 100$$

Distance after 2.5 seconds = 100 ft

Distance after 0.5 seconds = 4 ft

Distance it fell from 0.5 seconds to 2.5 seconds = **96 ft**