

**Algebra 2**  
**Unit: Rational Functions**  
**Section: Direct and Inverse Variation**

**Tutorial: Finding the Constant of Variation**

**Slide 1**

In this tutorial we will work through some examples on how to find the constant of variation or “k”. At the end of the tutorial you will have an opportunity to complete practice problems.

**Slide 2**

Let’s look at two examples of how to find k for direct and inverse variation.

If y varies directly as x, and y is equal to eighteen as x is equal to nine, find k.

This is an example of direct variation therefore y is equal to k times x.

Substituting in y equal to eighteen and x equal to nine the equation becomes eighteen is equal to k times nine.

Solve for k by dividing both sides by nine to calculate a final answer of k is equal to two.

If y varies inversely as x, and y is equal to ten as x is equal to three, find k.

This is an example of inverse variation therefore the equation is y is equal to k divided by x.

Substituting in y equal to ten and x equal to three the equation becomes ten is equal to k divided by three.

Solve for k by multiplying both sides by 3 to calculate a final answer of k equal to 30.

**Slide 3**

Now you try. Solve each of the following problems for k. Click on Solution to check you work.

1. If y varies directly as x, and y equals 45 as x equals negative 5, find k.

k equals negative 9

2. If y varies inversely as x, and y equals 12 as x equals 3, find k.

k equals 36.

**Slide 4**

Here are the steps to solving direct and inverse variation equations for the constant of variation or k.

Step 1. Determine if the problem you are working on is a direct or inverse variation.

Step 2. Use the correct equation.

Step 3. Substitute known values.

Step 4. Solve for k.