

## Activity 5

### What Is a Linear Regression

#### *Answers to Instructions: Part A*

9. Answers will vary:

$m = 2$	$k = 2$	$y = m * x + k: y = 2x + 2$	$ss = 74$
$m = 3$	$k = 3$	$y = m * x + k: y = 3x + 3$	$ss = 12$
$m = 2.5$	$k = 3$	$y = m * x + k: y = 2.5x + 3$	$ss = 13.5$
$m = 2.5$	$k = 3.5$	$y = m * x + k: y = 2.5x + 3.5$	$ss = 9.5$

10.  $a = m = 2.4$                        $b = k = 4.4$   
 $y = m * x + k: y = 2.4x + 4.4$                        $ss = 7.6$

## Teacher Information *(Continued)*

### Activity 5 What Is a Linear Regression

*(Continued)*

#### **Answers to Instructions: Part B**

2.  $a = 55$        $b = 30k - 396$   
Then  $-b/2a = -(30k - 396)/(2 * 55) = -3(5k - 66)/55$   
is the value of  $m$  to minimize ss.
3.  $a = 5$        $b = 30m - 116$   
Then  $-b/2a = -(30m - 116)/(2 * 5) = -(15m - 58)/5$  is  
the value of  $k$  to minimize ss.

4. equation 1 =  $m = \frac{-(15 \cdot k - 198)}{55}$

equation 2 =  $k = \frac{-(15 \cdot m - 58)}{5}$

So,  $m = 12/5$        $k = 22/5$

Yes,    (1)  $m = 2.4$   
          (2)  $k = 4.4$

#### **Answer to Extra Practice**

The regression equation for hours and scores is  
 $y = 7.49282 * x + 31.2919$

#### **Answer to Extensions**

The regression equation for months and garbage is  
 $y = 6.123724 * 1.922916^x$