

# 6.4 Fit a Line to Data and Predict with Linear Models

## NOTES

Write your questions here!

Scatterplot:

Positive  
Correlation

Negative  
Correlation

No  
Correlation

Best-Fitting Line:

Linear Regression::

x	-2	-1	0	1	2	3
y	4	2	1	-2	-1	-2

### STEP 1: Entering in the data into two lists (L<sub>1</sub> and L<sub>2</sub>)

- Hit **STAT**
- Choose **1:Edit** by either hitting **2** or **ENTER**.  
*If necessary, clear out any old data in the lists:*  
Use **▲** to get cursor to cover L1 at top of list; press **CLEAR/ENTER**. Repeat process for L2.
- Type the data values for the independent (x) variable in column L1. Hit **ENTER** after each entry.
- When you finished entering data in L1, hit **▼** and then enter the data values for the dependent (y) variable in column L2.

### STEP 2 Getting the regression equation (and storing it into the equation editor)

- Hit **STAT** then **►** to CALC
- Choose **4:LinReg(ax+b)** (Either scroll down to 4 and then hit **ENTER**, or simply hit **4**)
- Hit **ENTER**

The coefficients of your linear regression equation ( $a$  and  $b$ ) will be displayed on your homescreen. The linear regression equation will be stored in the equation editor in Y1.

<b>x</b>	-1	0	1	2	4
<b>y</b>	3	3	1	0	-3

Find the equation of the best-fitting line.

Approximate the value of y for x = 3 and x = 10.

Approximate the value of x when y = -18

Zero of a Function:

Find the zero:

Try This!

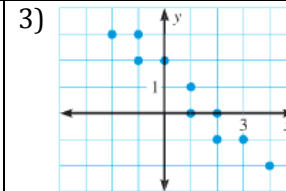
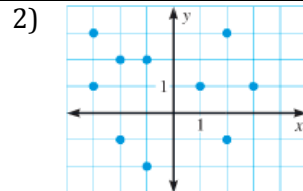
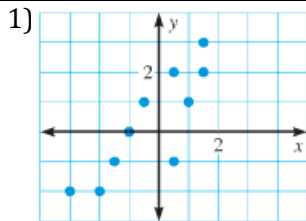
### SUMMARY:

Now,  
summarize  
your notes  
here!

## 6.4 Fit a Line to Data and Predict with Linear Models

## PRACTICE

Directions: Tell whether x and y show a positive, negative or no correlation.



Directions: Find the equation of the best-fitting line. Approximate the value of y for x = 5.

4)

X	0	2	4	6	7
Y	2	7	14	17	20

Find the equation of the best-fitting line. Approximate the value of  $y$  for  $x = 10$ .

5)

X	0	1	2	3	4
Y	20	32	39	53	63

Find the zeroes of the function.

6)  $f(x) = 7.5x - 20$

7)  $f(x) = \frac{1}{8}x + 2$

8)  $f(x) = -0.5x + .75$

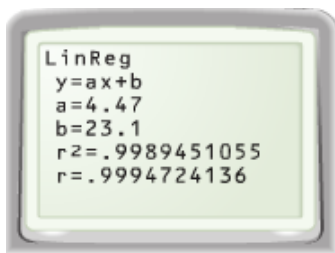
Describe and correct the error made in finding the zero of the function  $y = 2.3x - 2$

9)  $y = 2.3(0) - 2$   
 $y = -2$

Describe and correct the error in finding an equation of the best-fitting line using a graphing calculator.

10)

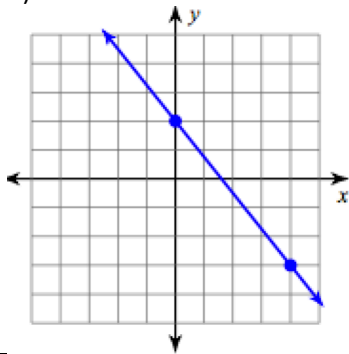
Equation of the best-fitting line is  
 $y = 23.1x + 4.47$ .



### SKILLZ REVIEW

Find the slope of the line.

1)



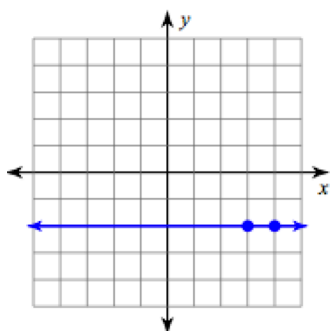
Simplify.

2)  $6 + 2(5 - 3k)$

Solve.

3)  $0 = -3 + \frac{m}{3}$

4)



5)  $9(3m - 4) - 2m$

6)  $6x - 6 = -90$

1) Use the above data to complete the following.

X	-2	-1	0	1	2
Y	-4	-2	-1	-1	1

- a. Find the equation of the best-fitting line.
  
  
  
  
  
  
  
  
  
  
- b. Approximate the value of  $x = 5$ .
  
  
  
  
  
  
  
  
  
  
- c. Find the zero of the equation.

2) Mr. Kelly starts up his own company selling T-Shirts of his favorite artist, Justin Bieber. He collected the data below.

3)

Number of months (x)	2	5	7	8	10	11	13	15
Amount of money Kelly has (y)	\$42	\$67	\$72	\$80	\$93	\$98	\$109	\$122

- a) Find the equation that models the amount of money Mr. Kelly has as a function of the number of months he's been in business (use values to the nearest tenth).
  
  
  
  
  
  
  
  
  
  
- b) Approximate how much money Mr. Kelly would have after 9 months of being in business?
  
  
  
  
  
  
  
  
  
  
- c) Mr. Kelly wants to estimate how much money he'll have if he stays in business for 3 years. How much would he have?
  
  
  
  
  
  
  
  
  
  
- d) Find the zero of the function. What does it mean?