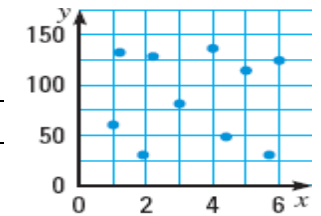
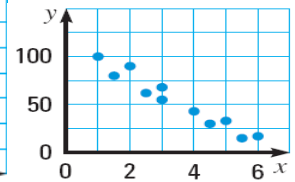
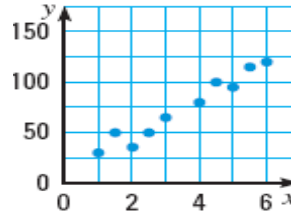


# Algebra 2

## 0-08 Draw Scatter Plots and Best-Fitting Lines

### Scatter Plot

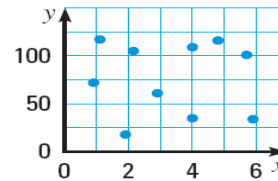
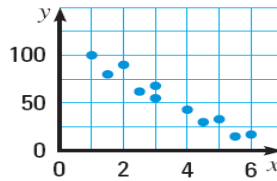
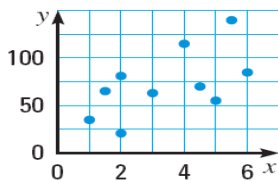
- Graph of many \_\_\_\_\_
- Positive Correlation
  - The \_\_\_\_\_ of the scatter plot tends to be \_\_\_\_\_
- Negative Correlation
  - The \_\_\_\_\_ of the scatter plot tends to be \_\_\_\_\_
- No Correlation
  - There is \_\_\_\_\_ obvious \_\_\_\_\_ from the scatter plot



### Correlation Coefficient ( $r$ )

- Number between \_\_\_\_\_ and \_\_\_\_\_ that measures how well the data fits a \_\_\_\_\_.
- Positive for \_\_\_\_\_ correlation, negative for \_\_\_\_\_
- $r = 0$  means there is \_\_\_\_\_ correlation

For each scatter plot, (a) tell whether the data have a positive correlation, a negative correlation, or approximately no correlation, and (b) tell whether the correlation coefficient is closest to  $-1$ ,  $-0.5$ ,  $0$ ,  $0.5$ , or  $1$ .



### Best-fitting line

- Line that most closely \_\_\_\_\_ the \_\_\_\_\_

### Find the best-fitting line

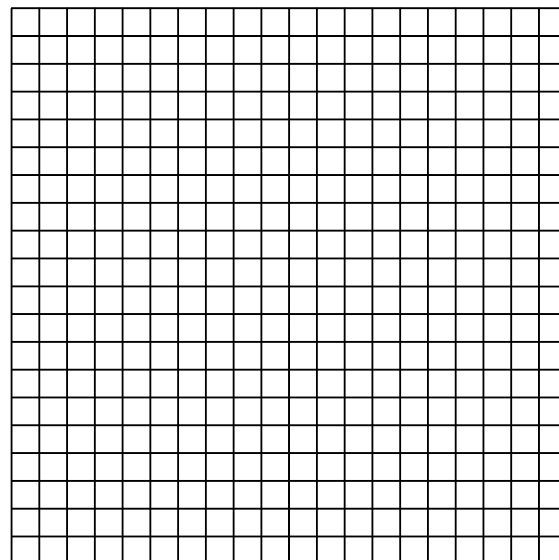
1. Draw a \_\_\_\_\_ of the data
2. Sketch the \_\_\_\_\_ that appears to follow the data the closest
  - There should be about as many points below the line as above
3. Choose \_\_\_\_\_ points on the line and find the equation of the line
  - These do \_\_\_\_\_ have to be original data points

Monarch Butterflies: The table shows the area in Mexico used by Monarch Butterflies to spend winter,  $y$ , in acres  $x$  years after 2006.

$x$	0	1	2	3	4	5	6	7
$y$	16.5	11.4	12.5	4.7	9.9	7.1	2.9	1.7

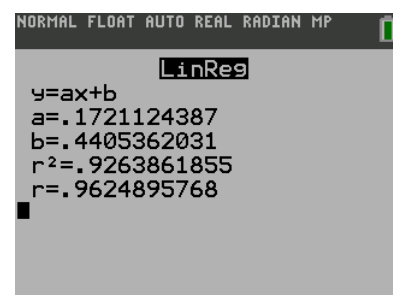
Approximate the best-fitting line for the data.

Use your equation from part (a) to predict the area used by the butterflies in 2016.



### Finding Linear Regression on a TI-84

1. Push STAT and select Edit....
2. Enter the  $x$ -values in List 1 (L1) and the  $y$ -values in List 2 (L2).
3. To see the graph of the points
  - a. Push Y= and clear any equations.
  - b. While still in Y=, go up and highlight Plot1 and press ENTER.
  - c. Press ZOOM and select ZoomStat.
4. Push STAT and move over to the CALC menu.
5. Select LinReg(ax+b) (Linear Regression).
6. Make sure the Xlist: is L1, the Ylist: is L1, the FreqList: is blank, and the Store RegEQ: is Y1.
  - a. Get Y1 by pressing VARS and select Y-VARS menu.
  - b. Select Function....
  - c. Select Y1.
7. Press Calculate
8. The calculator will display the equation. To see the graph of the points and line, press GRAPH.



### Finding Linear Regression on a NumWorks graphing calculator

1. On the home screen select Regression.
2. In the Data tab, enter the points.
3. Move to the Graph tab.
4. The default is a linear regression and is displayed at the bottom of the screen. To change the regression type
  - a. Press OK.
  - b. Select Regression.
  - c. Select the desired regression type

