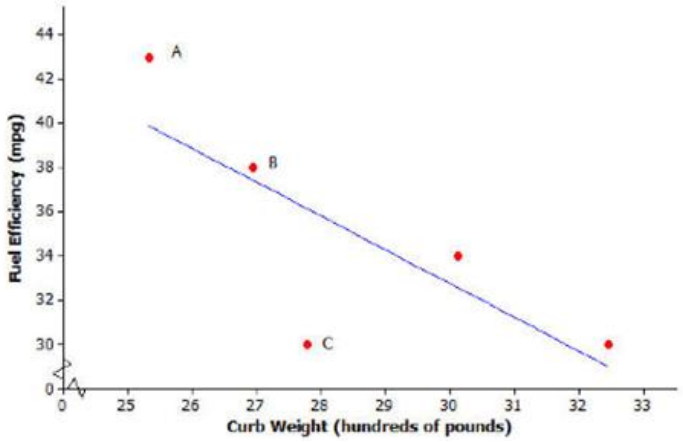
Name: _____ Date: _____

**UNIT 4** **LESSON 10**

**Do Now:** Here is the scatterplot with the line of best fit drawn in.

a) Given point B, state whether the residual will be either positive or negative & far or close. Explain your answer.

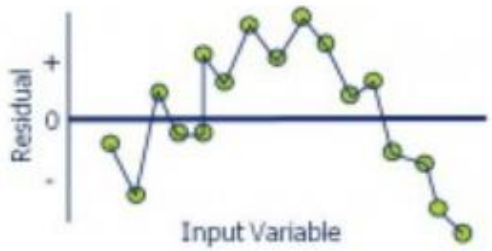
b) Given point C, state whether the residual will be either positive or negative & far or close. Explain your answer.



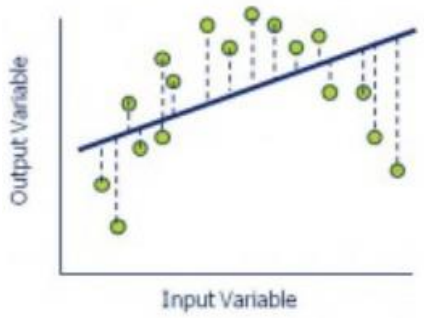

## AIM: Graphing Residuals

A _____ in the residual plot indicates a _____ relationship in the original data set.

**Residual**



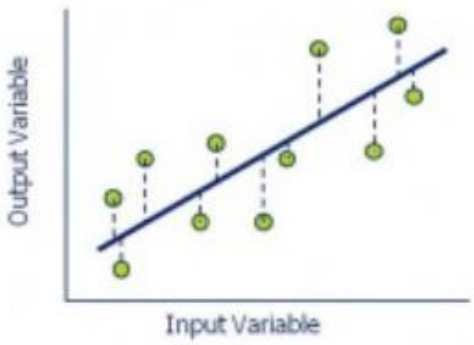

**Scatter Plot**




A _____ scatter of points in the residual plot indicates a _____ relationship in the original data set.

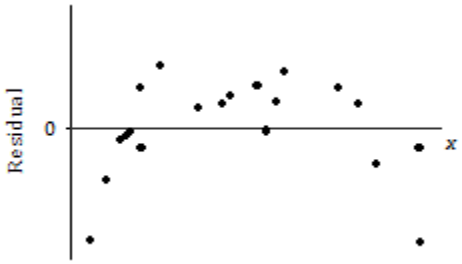
**Residual**


**Scatter Plot**



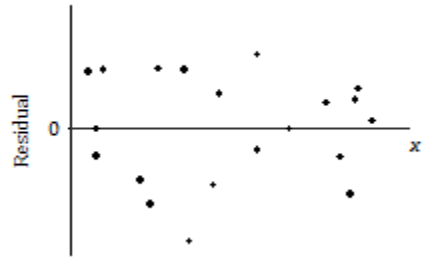
1) For each of the following **residual plots**, what conclusion would you reach about the relationship between the variables in the original data set? Indicate whether the values would be better represented by a linear or non-linear relationship. Explain your answer.

**A.**



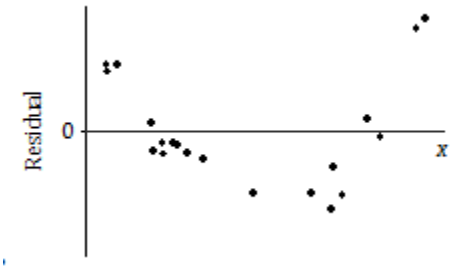

_____

**B.**




_____

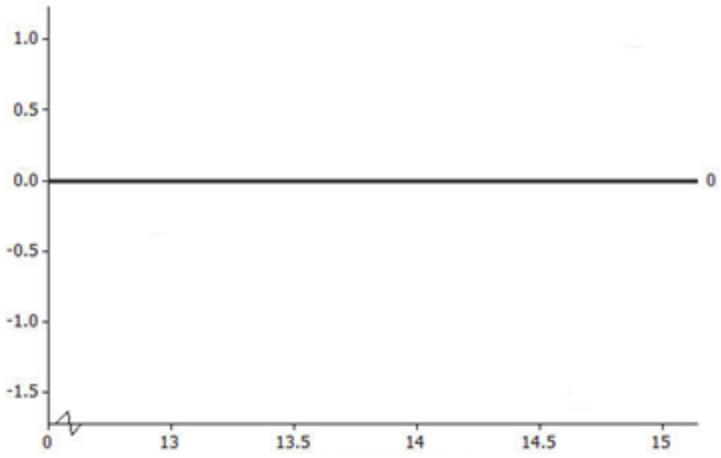
**C.**




_____

2) The curb weight of a car is the weight of the car without luggage or passengers. The table below shows the curb weights (in hundreds of pounds) and fuel efficiencies (in miles per gallon) of five compact cars.

| Curb weight (100 lb | Fuel Efficiency (miles per gallon) | Residual |
|---|---|---|
| 12.95 | 26.68 | -0.42 |
| 13.81 | 29.48 | 1.08 |
| 14.66 | 28.11 | -1.57 |
| 14.88 | 30.93 | 0.97 |



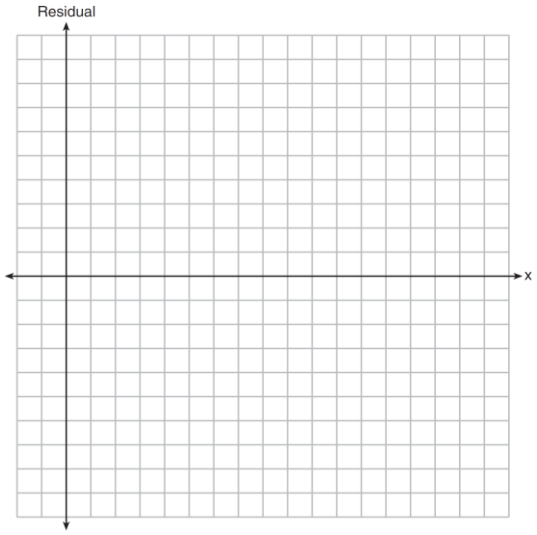

c. Does the residual plot suggest a linear relationship? Explain._____

_____

3) The table below represents the residuals for a line of best fit.

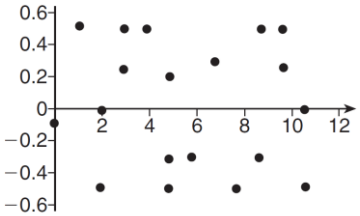
| $x$ | 2 | 3 | 3 | 4 | 6 | 7 | 8 | 9 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Residual** | 2 | 1 | –1 | –2 | –3 | –2 | –1 | 2 | 0 | 3 |

a) Plot these residuals on the set of axes below.

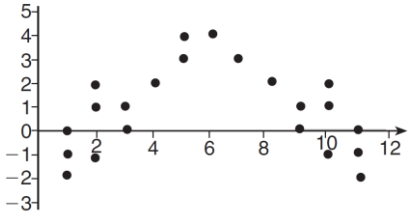



b) Using the plot, assess the fit of the line for these residuals and explain your answer.

4) The residual plots from two different sets of bivariate data are graphed below.




**Graph A**



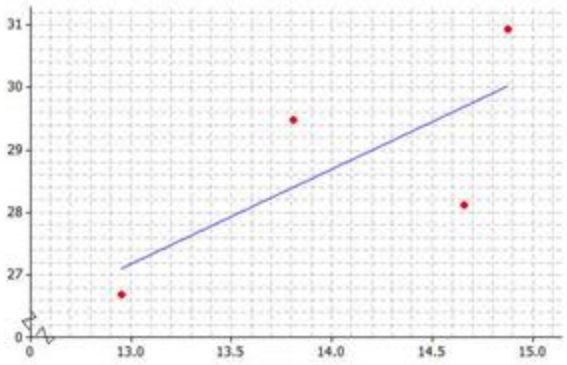

**Graph B**

Explain, using evidence from graph *A* and graph *B*, which graph indicates that the model for the data is a good

Name _____ Date _____

HW# _____

1) Four athletes on a track team are comparing their personal bests in the 100 meter and 200 meter events. A table of their best times is shown below. A scatter plot of these results (including the regression line) is shown below.



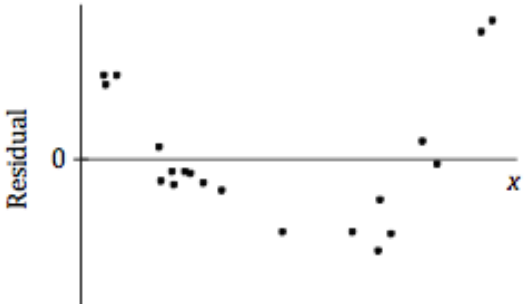

| Curb weight (100 lb | Fuel Efficiency (miles per gallon) | Residual |
|---|---|---|
| 12.95 | 26.68 | -0.42 |
| 13.81 | 29.48 | 1.08 |
| 14.66 | 28.11 | -1.57 |
| 14.88 | 30.93 | 0.97 |

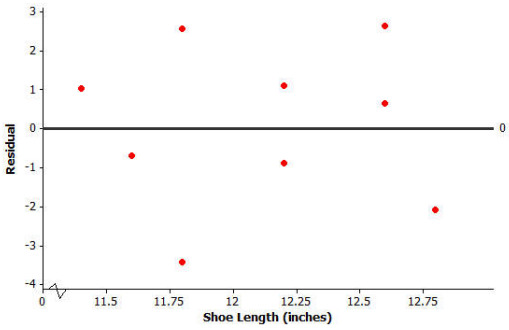
a. Use your calculator to find the linear regression equation to the nearest tenth.

b. Use your equation to find the predicted fuel efficiency if the curb weight is 20 lbs. What is the residual for this curb weight?

c. Use your equation to find the predicted curb weight if the fuel efficiency is 10mpg.

2) Directions: Given each the diagrams below. (a) indicate whether the values would be better represented by a linear or non-linear relationship. (b) Justify your answer.




a)_____ b)_____

_____ _____