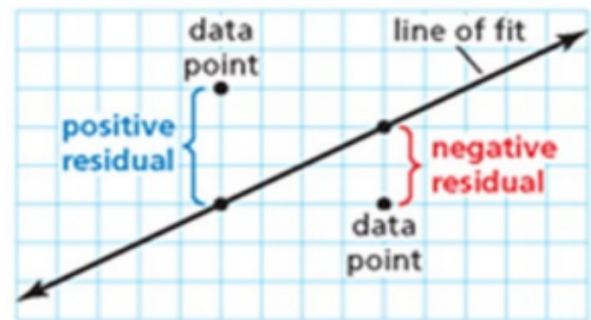# RESIDUALS
for Line of Best Fit Equations

Residuals

A residual is the *difference*
between the *actual* value
and the *predicted* value of
a data set.

Residual value =Actual - Predicted

Residuals on the Calculator

Make sure you have:
1. Inputed the X & Y values
2. Calculated the Line of Best Fit equation

3. | STAT | | ENTER |

4. Highlight L_3 | ENTER |

5. | 2nd | | STAT | | 7 | | ENTER |

1.

x	y	Predicted Value	Residual Value
5	3		
10	4		
15	9		
20	7		−2.71
25	13		
30	15		

Which value of x has the largest residual? What does that mean?

20 → −2.71 The largest difference btwn the actual and predicted y-value
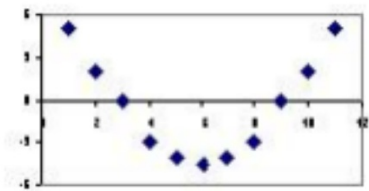
What percent of the data has a positive residual?

4/6   66%

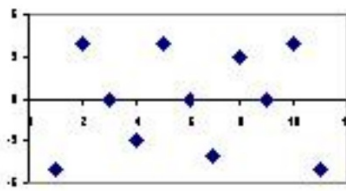Which value of x has the smallest residual? What does that mean?

30 → 0.43 The smallest difference btwn the actual and predicted y-value
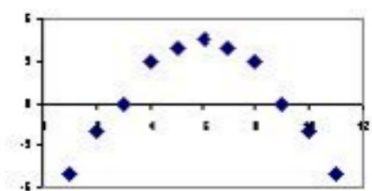
Residual Plots

To determine if the equation fits the data, look for uniform scatter on the residual plot

NOT A GOOD
FIT
(Non-linear)

Good fit for the data (Linear)

NOT A GOOD
FIT
(Non-linear)

Number of Police Cars on a Given Highway	3	1	4	5	7	2	8	6	9
Average Speed of Motorists	64	71	61	58	56	66	52	53	60
Residuals	.22	3.56	-.94	-2.11	-.44	.39	-2.61	-5.28	7.22

1. Line of Best Fit ___y= -1.83x + 69.28___

2. Correlation Coefficient ___-0.81___

3. Add the residual values to the table above.

4. Look at the residual plot, is this equation a good fit for the data? Why or why not? No, there appears to be a pattern in the residuals

5. What percentage of your residuals are negative?

55%

Number of Police Cars on a Given Highway	3	1	4	5	7	2	8	6	9
Average Speed of Motorists	64	71	61	58	56	66	52	53	60
Residuals									

6. According to the line of best fit, the predicted average speed of motorists when there are 2 police cars on the highway is _____ the actual speed.

What type of residual is this? _____

7. The residual when there is 4 police cars is _____ which means the actual average speed is _____ than the predicted average speed.