



**Residual
Plots
Foldable**

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Frame by Mercedes Hutchens

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Instructions

Print or copy page 3 and 4 double sided.

Place the paper so the examples are face down.

Fold the paper in half on the solid line.

Cut along the dotted lines to create flaps.

Glue the foldable into notes or on a piece of construction paper.

Go through the foldable with your students.

Preview

**What
is
a
Residual?**

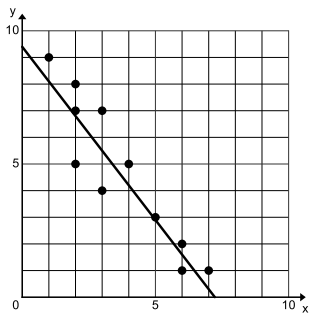
**What
is
a
Residual
Plot?**

**Find
Residuals
and
Make a
Residual
Plot**

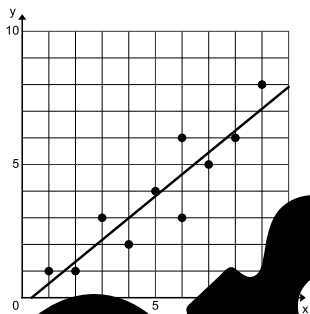
What is a Residual?

A residual is the vertical distance from the point and the line of best fit.

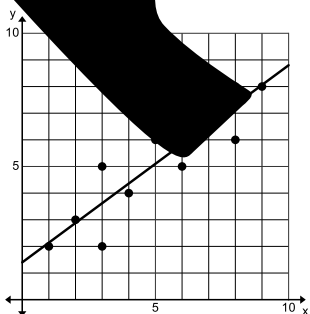
- 1) What is the approximate residual of the point (3, 7)?



- 2) What is the approximate residual of the point (4, 2)?



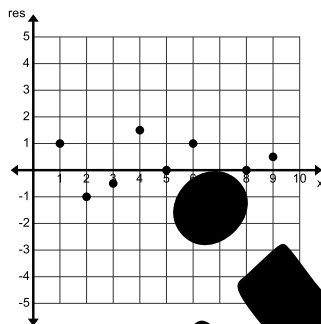
- 3) What is the approximate residual of the point (9, 8)?



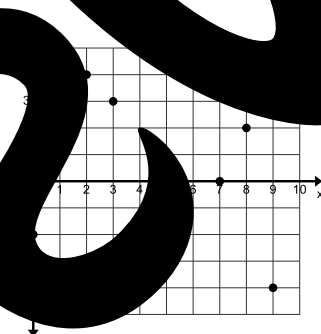
What is a Residual Plot?

A residual plot is a graph that shows the residuals on the vertical axis and the independent variable on the horizontal axis.

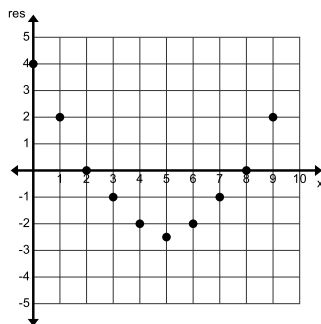
Strong Linear Fit - the distribution of residuals around the x-axis is random and tight.



Weak Linear Fit - the distribution of residuals around the x-axis is random but loose.

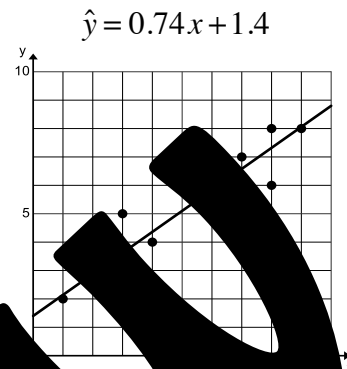


Non-Linear Fit - the distribution of residuals around the x-axis is not random.



Example

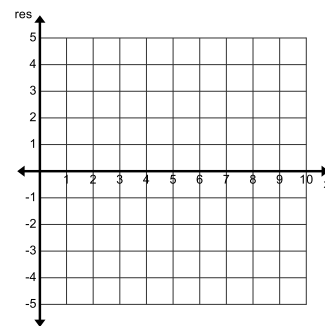
The line of best fit for the scatterplot is below.



Calculate the residuals.

Actual y	Predicted $\hat{y} = 0.74x + 1.4$	Residual
1		
2		
3		
4		
5		
6		
6		
7		
8		
8		
9		

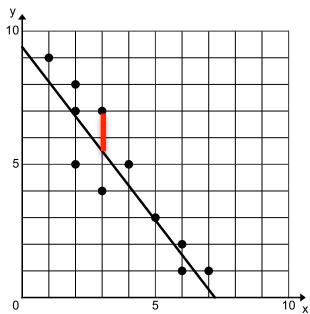
Make a residual plot:



What is a Residual?

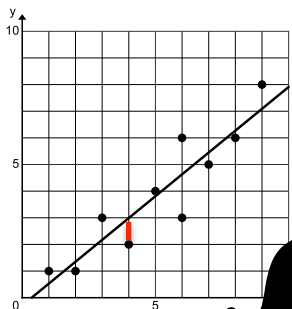
A residual is the vertical distance from the point and the line of best fit.

- 1) What is the approximate residual of the point (3, 7)?



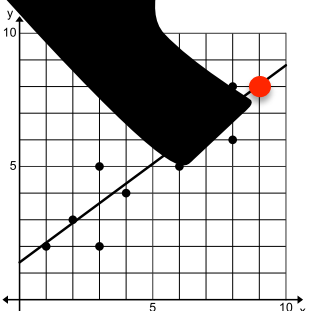
residual = 1.5

- 2) What is the approximate residual of the point (4, 2)?



residual = -1.5

- 3) What is the approximate residual of the point (9, 8)?

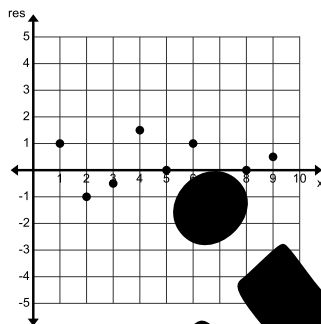


residual = 0

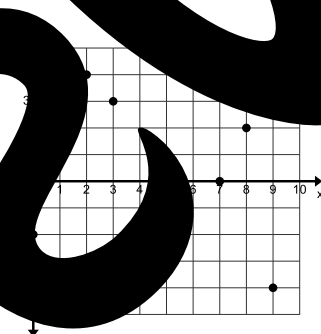
What is a Residual Plot?

A residual plot is a graph that shows the residuals on the vertical axis and the independent variable on the horizontal axis.

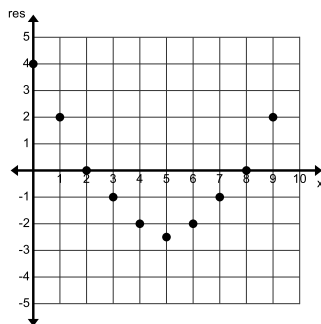
Strong Linear Fit - the distribution of residuals around the x-axis is random and tight.



Weak Linear Fit - the distribution of residuals around the x-axis is random but loose.

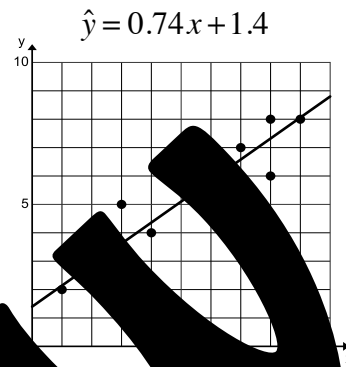


Non-Linear Fit - the distribution of residuals around the x-axis is not random.



Example

The line of best fit for the scatterplot is below.



Calculate the residuals.

	Actual y	Predicted $\hat{y} = 0.74x + 1.4$	Residual
1	2	2.14	-0.14
2	2	2.88	0.12
		3.62	-1.62
3	5	3.62	1.38
4	4	4.36	-0.36
5	6	5.1	0.9
6	5	5.84	-0.84
6	7	5.84	1.16
7	7	6.58	-0.42
8	6	7.32	-1.32
8	8	7.32	0.68
9	8	8.06	-0.06

Make a residual plot:

