

Welcome to math!

Get ready for today's notes!

yellkey.com/school

Announcements

Midterm on Friday, January 11th

MALM Implementation on Friday, January 11th

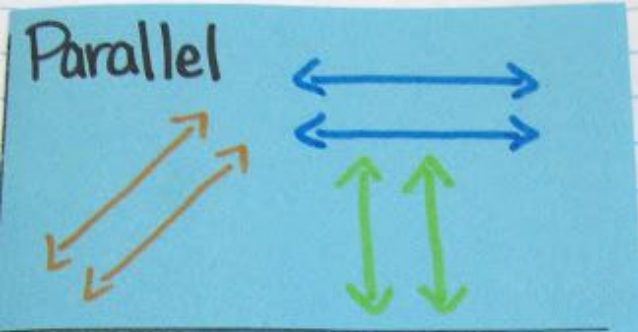
Math MAP on Wednesday, January 16th

Last day of Quarter 2 on Friday, January 18th

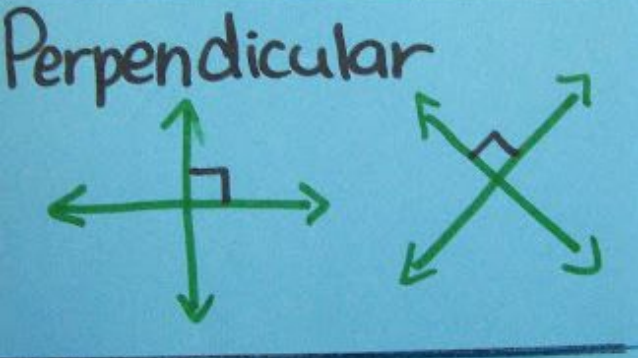
NC Check-Ins on Wednesday, February 6th

Quarter 2 Review

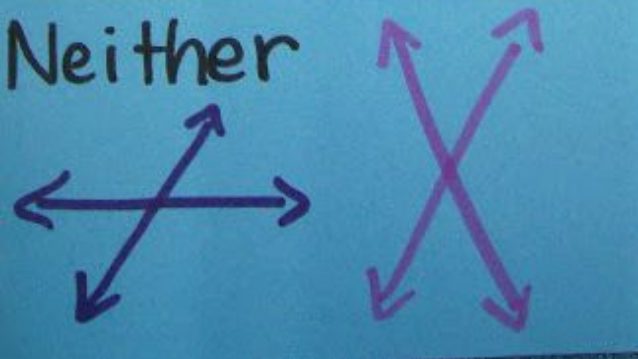
1/8/2019



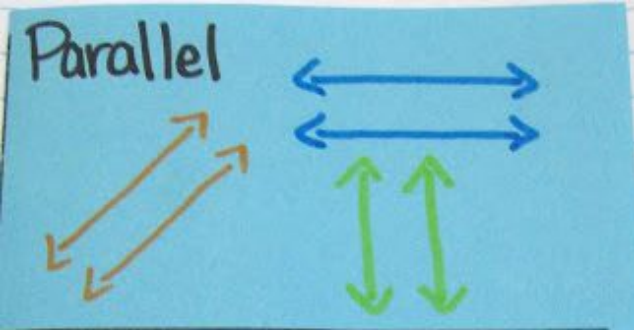
Parallel lines NEVER intersect



Perpendicular lines intersect to form a right angle



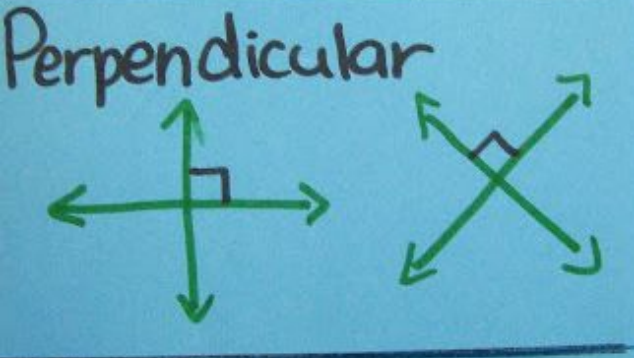
The lines shown here do intersect, but not at a right angle. They are neither parallel nor perpendicular.



Parallel lines NEVER intersect

Parallel lines have the same slope, but different y intercepts

Ex: $y = \frac{1}{2}x + 3$ and $y = \frac{1}{2}x - 2$

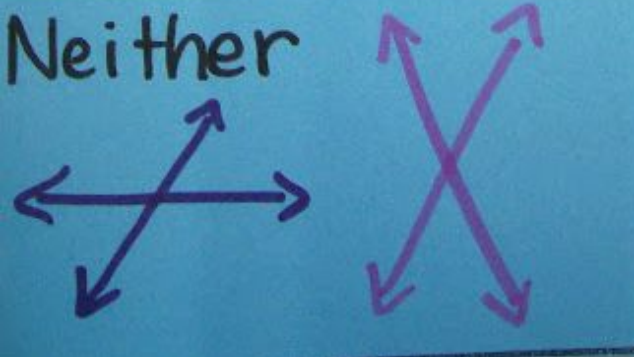


Perpendicular lines intersect to form a right angle

Perpendicular lines have opposite reciprocals for slope

Two numbers are opposite reciprocals if their product is -1 .

Ex: $y = \frac{1}{2}x + 3$ and $y = -2x + 3$



Notice $\frac{1}{2}(-2) = -1$

The lines shown here do intersect, but not at a right angle.

They are neither parallel nor perpendicular.

Their slopes are not equal or opposite reciprocals

Classifying Lines

Are the graphs of $4y = -5x + 12$ and $y = \frac{4}{5}x + 8$ parallel, perpendicular, or neither?

Step one: find the slopes!

Step two: compare the slopes!

You practice

a. $y = \frac{3}{4}x + 7$ and $4x - 3y = 9$

b. $6y = -x + 6$ and $y = -\frac{1}{6}x + 6$

Writing the equation of a parallel line

A line passes through $(12, 5)$ and is parallel to the graph of $y = \frac{2}{3}x - 1$.
What equation represents the line in slope-intercept form?

Step one: Identify the slope!

Step two: Use point slope form to write the equation!

You practice

- A line passes through $(-3, -1)$ and is parallel to the graph of $y = 2x + 3$.
What equation represents the line in slope-intercept form?

Writing the equation of a perpendicular line

What is the equation of the line that passes through (2,4) and is perpendicular to the graph of $y = \frac{1}{3}x - 1$

Step one: Identify the slope

Step two: Find the opposite reciprocal of the slope

Step three: Use point slope form to write the equation

You practice

A line passes through $(1, 8)$ and is perpendicular to the graph of $y = 2x + 1$. What equation represents the line in slope-intercept form?

Three Types of Correlation

Positive Correlation

Negative Correlation

No Correlation

Positive Correlation

Both x and y values
increase

Both x and y values
decrease

Negative Correlation

One value increases
One value decreases

No Correlation

Does not increase or
decrease

Strong Correlation vs. Weak Correlation

Strong Correlation

Weak Correlation

All of the points are close to the line of best fit

The points are not close to the line of best fit

- Correlation Coefficient (r): tells you how close the equation of the line of best fit models the data
 - If r is close to 1 or -1 it shows that the data lie close to the line of best fit with a positive slope (1) and a negative slope (-1)
 - If r is close to 0, there is no correlation.

- You can use the trend line to do several things.
 - Interpolation: Estimating a value between two known values
 - Extrapolation: Predicting a value outside the range of known values
 - Causation: When a change in one quantity causes a change in a second quantity

Clear Your Calculator (We Will Do This Often)

2nd + 7 > > Enter 2

EVERY TIME YOU CLEAR YOUR CALCULATOR:

2nd 0 Diagnostic On

How to graph a scatter plot on your calculator

- 1) STAT; EDIT; ENTER
- 2) Enter x's in L1 column and y's in L2 column
- 3) Go to Y= and turn Plot 1 on
- 4) Graph
- 5) Zoom 9 if needed

* If you do not see your graph then your window needs to be adjusted. Use the ZOOM button.

How to graph the equation of the line of best fit

- 1) STAT; CALC; LinReg; ENTER
- 2) Press ENTER until the equation appears
- 3) Now go to $y=$ and click VARS, 5, > >, ENTER

For each table, make a scatter plot of the data. Describe the type of correlation the scatter plot shows.

Test Score	76	85	83	97	92
Study Time (min)	33	52	49	101	65

1.

Adult Tickets	10	20	30	40	50
Children Tickets	30	55	80	112	137

2.

Let's get some practice

Graph the scatterplot and trend line on your calculator

-3	-13	15	17	24	-2
0	-15	8	5	24	4

Estimate y when $x = 4$

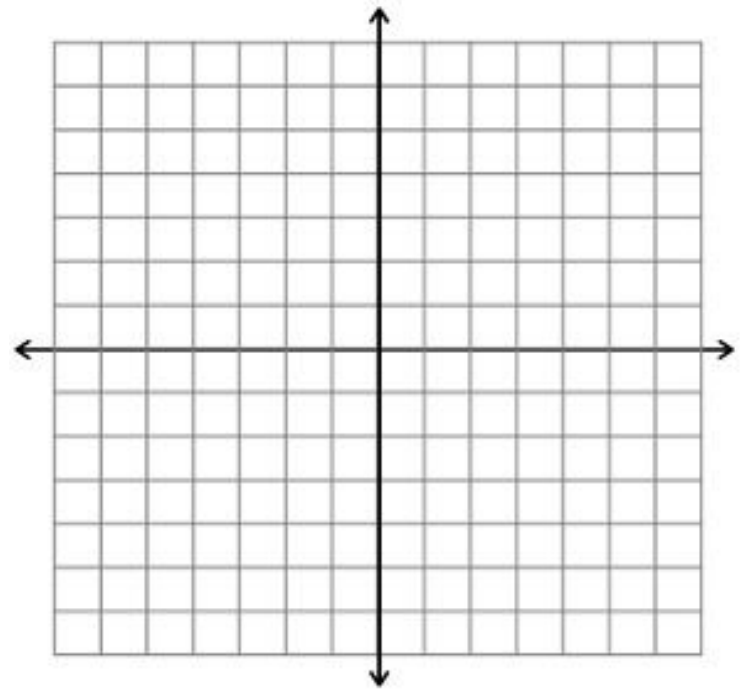
Is this interpolation or extrapolation?

What is the correlation coefficient? What does it mean?

Graphing Calculator Kahoot

<https://play.kahoot.it/#/?quizId=6017b6ec-7879-43da-aa60-a3a47981927a>

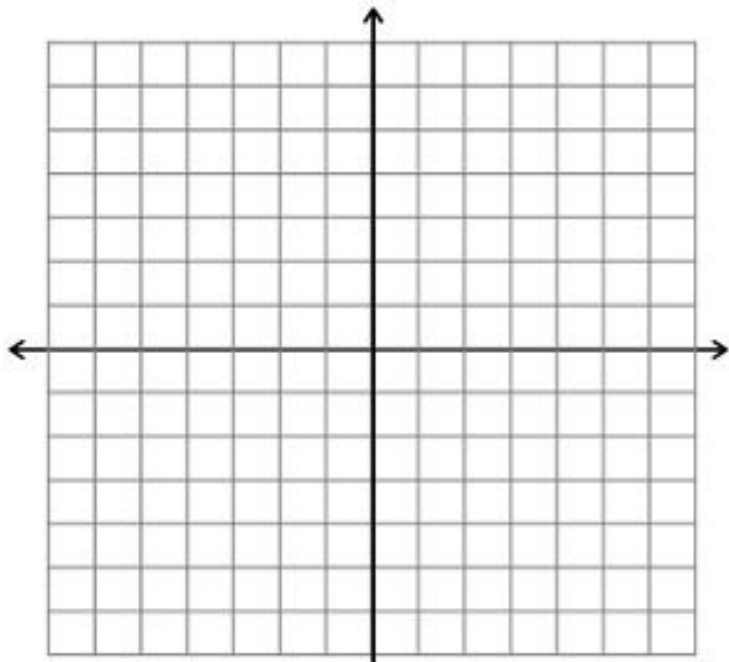
Parent Function for absolute value $\rightarrow y=|x|$



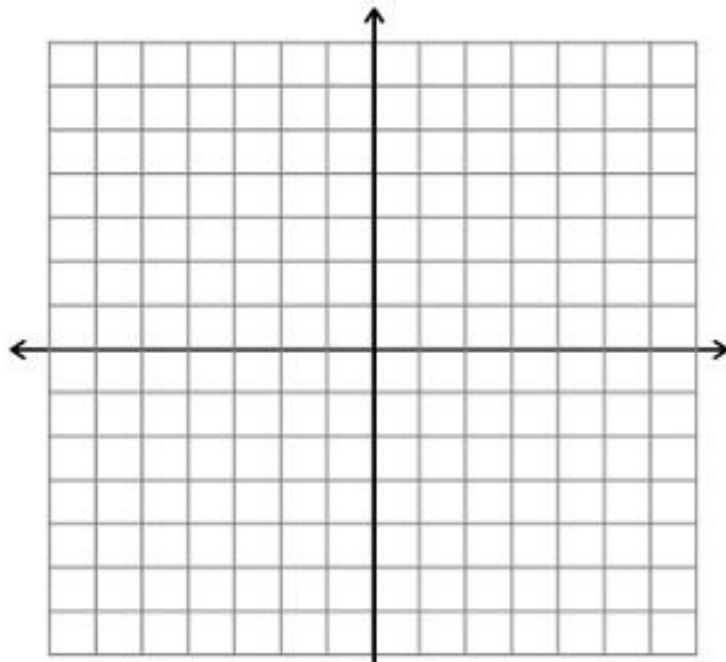
What happens when I add a value outside of the absolute value bars???

$$f(x) = |x| + k$$

$$f(x) = |x| + 2$$



$$f(x) = |x| - 4$$



So a rule...

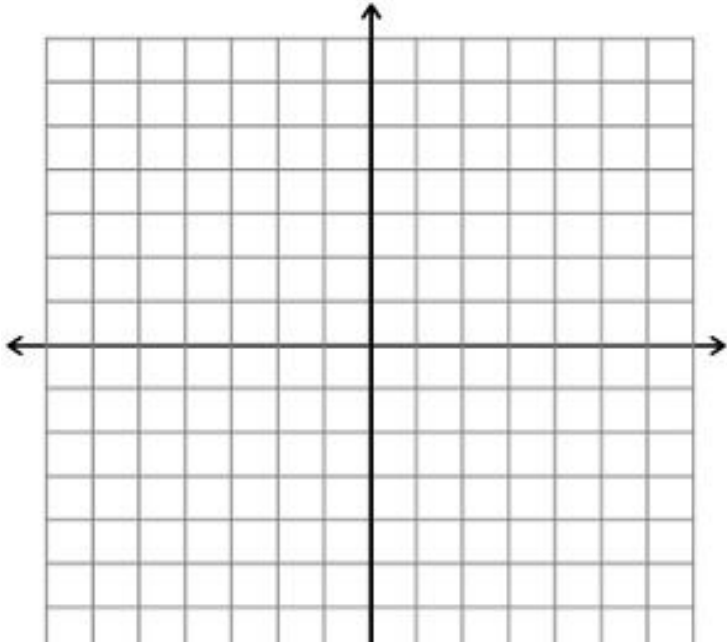
When adding outside of the absolute value bars,

When subtracting outside of the absolute value bars,

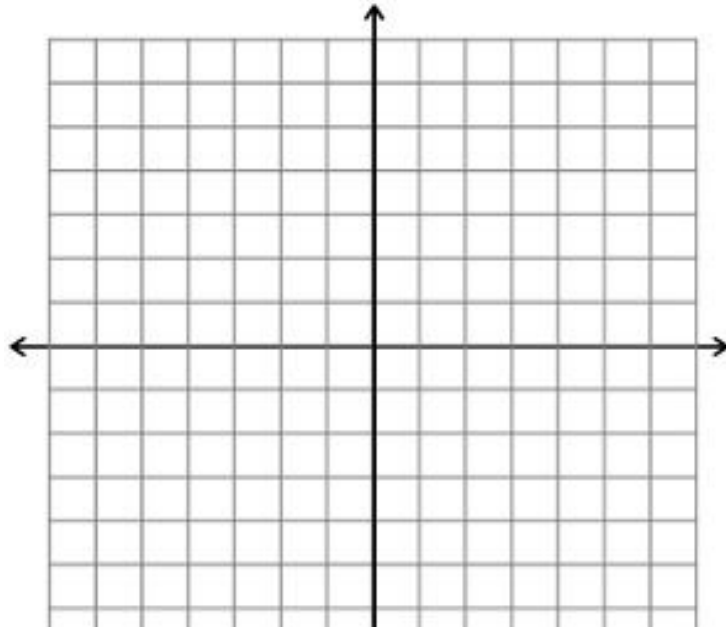
What happens when I add a value inside of the absolute value bars???

$$f(x) = |x+h|$$

$$f(x) = |x-3|$$



$$f(x) = |x+1|$$



So a rule...

When adding inside of the absolute value bars,

When subtracting inside of the absolute value bars,

Absolute value on your calculator

MATH > Abs(

Systems of Equations - Graphing, Elimination, Substitution

https://docs.google.com/document/d/1dUh2vPT3KiX2IUcZ7blaSjMLVJ_FCZMi-hiy_mPOiZUo/edit?usp=sharing

On the graphing calculator

Graph in Y1 and Y2

2nd Trace Intersect

ENTER ENTER ENTER

Systems of linear inequalities and graphing linear inequalities

Practice $f(x)$ problems

Two functions are given: $f(x) = 4x - 1$ and $g(x) = 6x + 2$

What is the value of x when $f(x) = g(x)$?

Practice $f(x)$ problems

If $f(x) = 2x^2 + 3x - 1$, what is $f(-3)$?

Practice $f(x)$ problems

If $f(x) = 3x - 4$, what is $f(x+2)$?