Parallel & Perpendicular Lines

Agenda

Warm-Up
Notes (p.39)
HW #1-5

Reminders

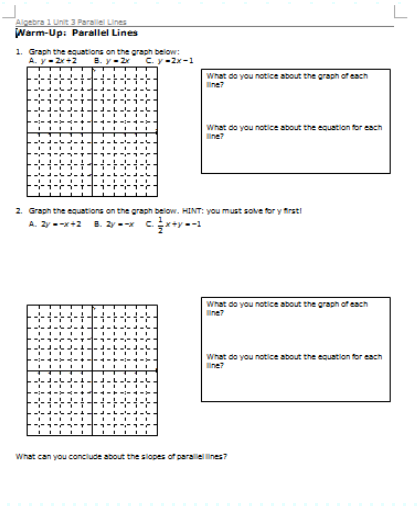
-Quiz Friday
- HW 2.3 due Friday

Essential Question

How do I identify two parallel or two perpendicular lines?

Warm-Up Wednesday

Your warm-up is on the WHITE paper! Graph the lines and answer the questions. You are welcome to use your calculator (if you solve for y first!!)



Algebra 1 Unit 3 Parallel Lines

Warm-Up: Parallel Lines

1. Graph the equations on the graph below:
   A. $y = 2x + 2$ B. $y = 2x$ C. $y = 2x - 1$

What do you notice about the graph of each line?

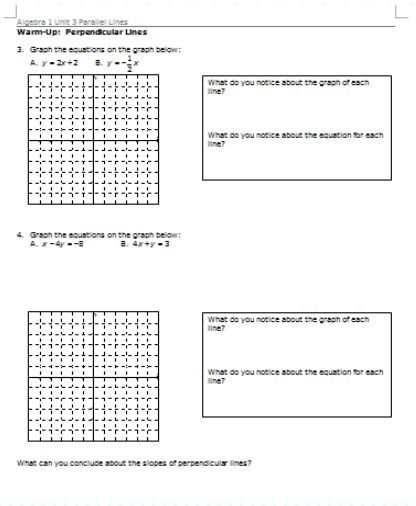
What do you notice about the equation for each line?

2. Graph the equations on the graph below. HINT: you must solve for y first!
   A. $2y = -x + 2$ B. $2y = -x$ C. $\frac{1}{2}x + y = -1$

What do you notice about the graph of each line?

What do you notice about the equation for each line?

What can you conclude about the slopes of parallel lines?



Algebra 1 Unit 3 Parallel Lines

Warm-Up: Perpendicular Lines

3. Graph the equations on the graph below:
   A. $y = 2x + 2$ B. $y = -\frac{1}{2}x$

What do you notice about the graph of each line?

What do you notice about the equation for each line?

4. Graph the equations on the graph below:
   A. $x - 4y = -8$ B. $4x + y = 3$

What do you notice about the graph of each line?

What do you notice about the equation for each line?

What can you conclude about the slopes of perpendicular lines?

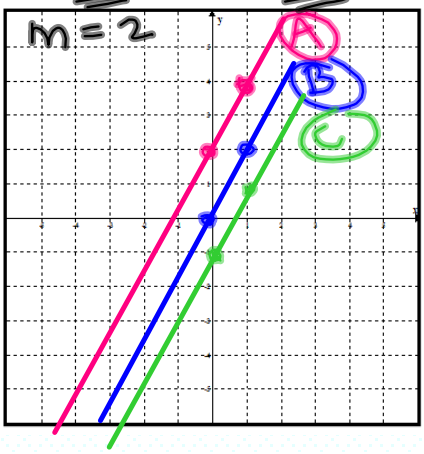
Parallel & Perpendicular Lines WU

Essential Question: How do I identify two parallel or two perpendicular lines?

Warm-Up: Parallel Lines

1. Graph the equations on the graph below:

A. $y = 2x + 2$ B. $y = 2x$ C. $y = 2x - 1$



What do you notice about the graph of each line?

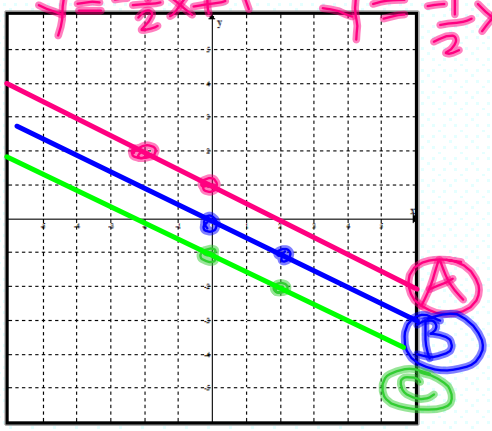
PARALLEL

What do you notice about the equation for each line?

Same slope.

2. Graph the equations on the graph below. HINT: you must solve for y first!

A. $2y = -x + 2$ B. $2y = -x$ C. $\frac{1}{2}x + y = -1$



What do you notice about the graph of each line?

parallel

What do you notice about the equation for each line?

Same slope $(-\frac{1}{2})$

What can you conclude about the slopes of parallel lines?

they have the same slope!

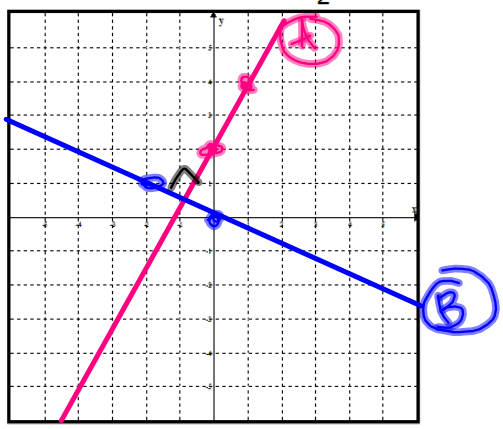
Parallel & Perpendicular Lines WU

Essential Question **How do I identify two parallel or two perpendicular lines?**

Warm-Up: Perpendicular Lines

3. Graph the equations on the graph below:

A. $y = 2x + 2$ B. $y = -\frac{1}{2}x$



What do you notice about the graph of each line?

intersecting @ right angles
perpendicular

What do you notice about the equation for each line?

A. $m = \frac{2}{1}$ opposite sign,
B. $m = -\frac{1}{2}$ flipped #s

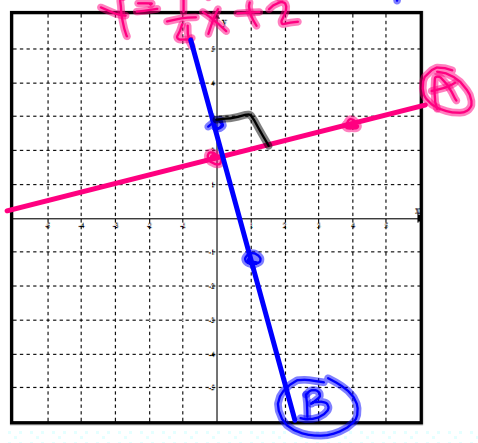
Zoom 5: Square

4. Graph the equations on the graph below:

A. $x - 4y = -8$ B. $4x + y = 3$

$-x \quad -x$
$-4y = -x - 8$
$\frac{-4y}{-4} = \frac{-x}{-4} - \frac{8}{-4}$
$y = \frac{1}{4}x + 2$

$-4x \quad -4x$
$y = -4x + 3$



What do you notice about the graph of each line?

perpendicular

What do you notice about the equation for each line?

A. $m = \frac{1}{4}$ flipped, changed sign
B. $m = -\frac{4}{1}$

What can you conclude about the slopes of perpendicular lines?

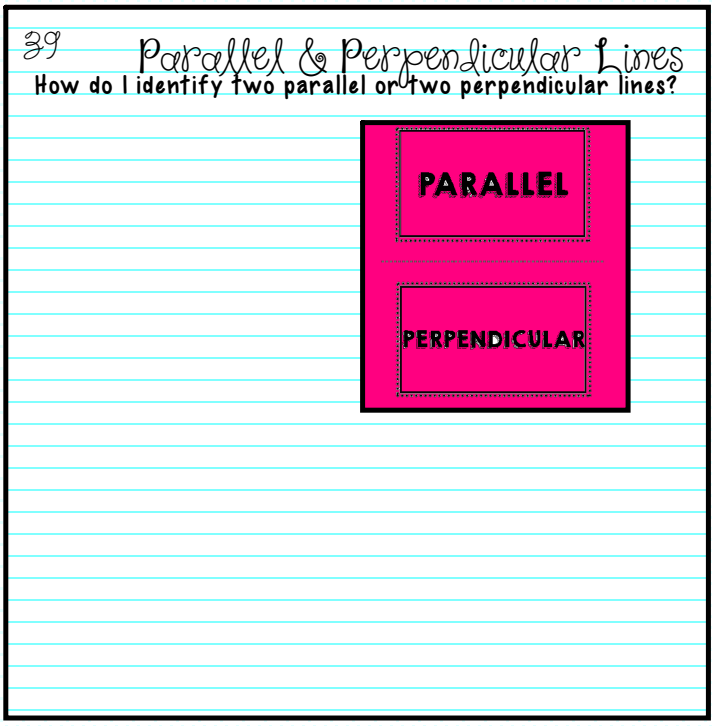
slopes are flippin' opposites
(flip fraction, change sign)

Parallel & Perpendicular Lines p.39

Essential Question How do I identify two parallel or two perpendicular lines?

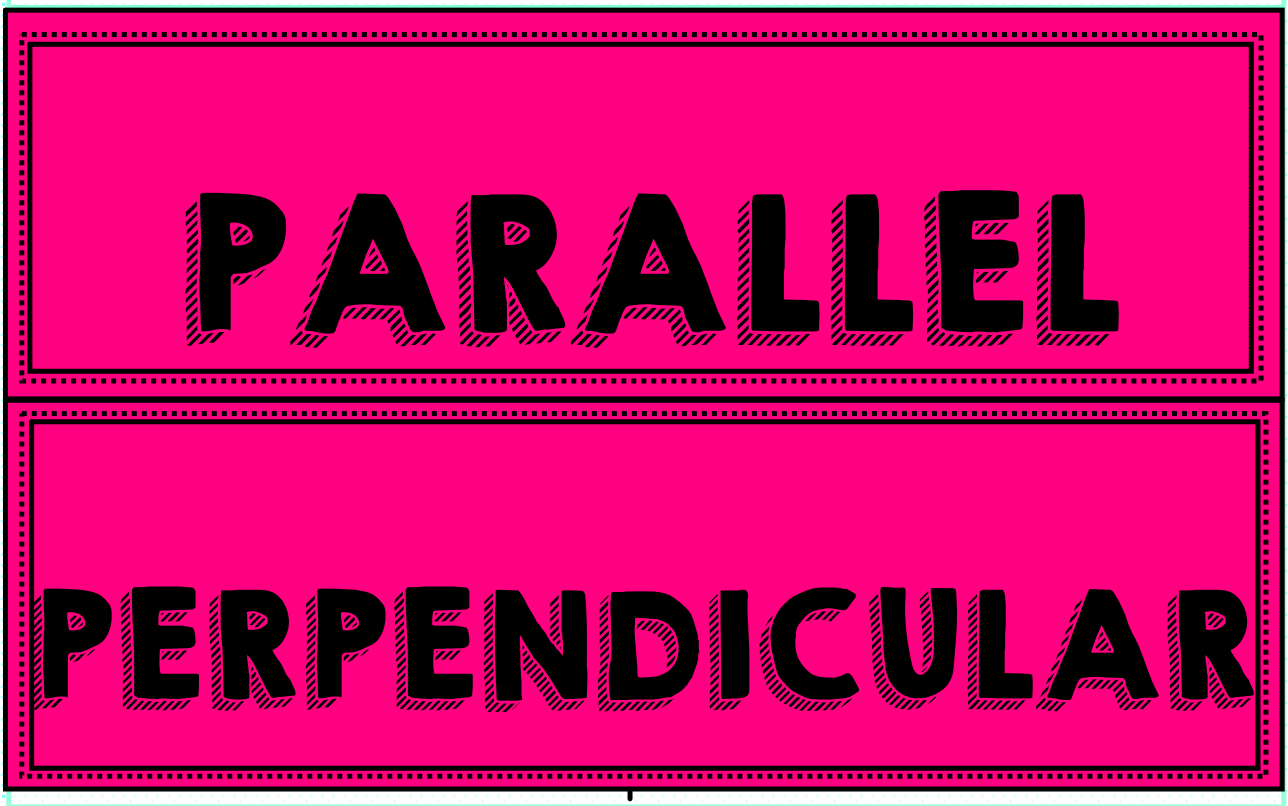
If you haven't done so already: your equations of lines book needs a pocket to live in!

Fold the pink paper in half, cut along the the thin dashed line. Glue near the TOP of the next blank page.



Parallel & Perpendicular Lines p.29

Essential Question How do I identify two parallel or two perpendicular lines?



Parallel & Perpendicular Lines p.29

Essential Question: How do I identify two parallel or two perpendicular lines?

1. Write an equation for a line that is parallel to the line 2x + 3y = 6 and passes through the point (0, 4).

① Find original slope. ② $\parallel m = -\frac{2}{3}$

$2x + 3y = 6$, $-2x$, $3y = -2x + 6$, $\frac{3}{3}$, $y = -\frac{2}{3}x + 2$

③ Plug in $y = -\frac{2}{3}x + 4$

2. Write an equation for a line that passes through the point (-1,6) and is parallel to the line y = 4.

HOY VUX $y = 6$

If two lines have the SAME SLOPE, then they are parallel.

ex. $y = -\frac{1}{2}x + 2$

$y = -\frac{1}{2}x - 1$

3. Write an equation for a line that is perpendicular to the line y = 4x + 8 that passes through the point (2,-1)

① $y = 4x + 8$, $m = 4$ ② $\perp m = -\frac{1}{4}$

$m = \frac{4}{1}$

4. Write an equation for a line that passes through the point (-1,6) and is perpendicular to the line y = 4.

HOY VUX $x = -1$

If two lines have the FLIPPIN' OPPOSITE SLOPES, then they are perpendicular.

flip #s, change sign

ex. $y = \frac{1}{4}x + 1$

$y = -\frac{4}{1}x + 3$

Parallel & Perpendicular Lines WU

Essential Question **How do I identify two parallel or two perpendicular lines?**

5. Given the table:

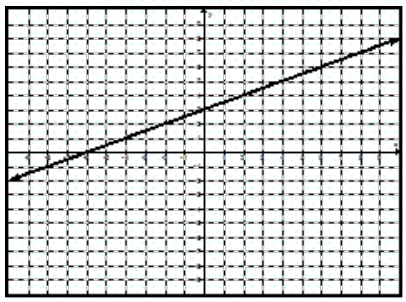
x	-3	1	6	11	14
y	28	12	-8	-28	-40

- What is the slope of the line? _____
- What is the slope of a parallel line? _____
- What is the slope of a perpendicular line? _____

6. If given these two points from a linear function: (2, 8) and (4, 14)

- What is the slope of the line? _____
- What is the slope of a parallel line? _____
- What is the slope of a perpendicular line? _____

7. Given the graph to the right:



- What is the slope of the line? _____
- What is the slope of a parallel line? _____
- What is the slope of a perpendicular line? _____

8. Write an equation in slope-intercept form for a line passing through the point (4, -8) and parallel to $4x - y = -5$.

9. Write an equation in slope-intercept form of the line that passes through the point (1,3) and perpendicular to $y = -5x + 3$

10. Write an equation in standard form of the line that passes through the point (1,3) and perpendicular to $y = -5$

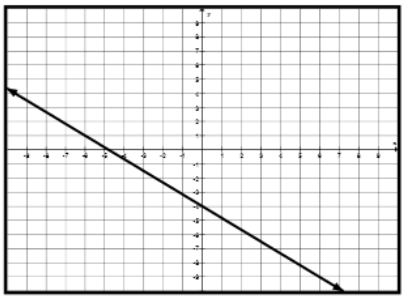
11. Write an equation in standard form of the line that passes through (4, -2), and parallel to $y = -5$

Algebra 1 Unit 3 Parallel and Perpendicular Lines

Practice –Parallel and Perpendicular Lines Day 1

Name _____ Date _____ Period _____

1. Given the graph:



A. What is the slope of the line? _____

B. What is the slope of a parallel line? _____

C. What is the equation of a line parallel and passes through the point (0, 2)? _____

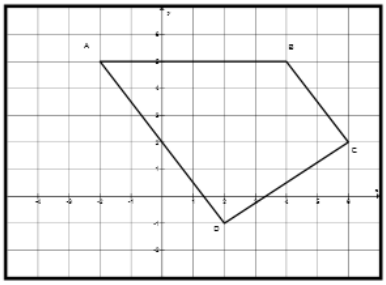
2. If given these two points from a linear function: (-6, -4) and (3, 2)

A. What is the slope of the line? _____

B. What is the slope of a parallel line? _____

C. What is the slope of a perpendicular line? _____

3. Show that *ABCD* is a trapezoid. (Hint: In a trapezoid, exactly one pair of opposite sides is parallel).



4. Given the table:

x		1	5	8
y		2	-10	-19

A. What is the slope of the line? _____

B. What is the slope of a parallel line? _____

C. What is the slope of a perpendicular line? _____

5. Given the equation: y = 3

A. Find the equation of the line that passes through the point (1,2) that is parallel to the line.

B. Find the equation of the line that passes through the point (-3, 4) that is perpendicular to the line given.

Parallel & Perpendicular Lines HW Help

General Help: Parallel Lines have the SAME slope.
Perpendicular Lines have FLIPPIN' OPPOSITE slopes.

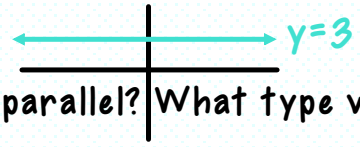
1. Find 2 pretty points and count your RISE & RUN. On part C: the point (0,2) is the y-intercept...y=mx+b!
2. Put your points in a table! Or use slope formula.

x	y
-6	-4
3	2

3. Line AD is parallel to Line BC. Check their slopes to prove it!

4. Remember: ignore the first point (it is a typo). Your slope should be -3/1.
C. FLIP the numbers and CHANGE the signs!

5. Remember HOY VUX!



What kind of line would be parallel? What type would be perpendicular?