

Parallel & Perpendicular Lines

Agenda

Warm-Up

HW Check

Kahoot

HW #1-11

Reminders

- Quiz Friday

- HW 2.3 due Friday

*PR signed due tomorrow

Essential Question

How do I identify two parallel or two perpendicular lines?

Warm-Up Thursday

1. Which of the following equations describes a line that is parallel to the line described by $y = -2x + 4$?

$$y = \underline{m}x + b$$

A. $y = 4x + 2$

B. $y = 2x - 8$

C. $y = -2x + 3$

D. $y = (1/2)x + 2$

2. Complete the sentences:

parallel

- Parallel lines have the SAME slope.
- To find a perpendicular slope, Flip the numbers and change the sign.

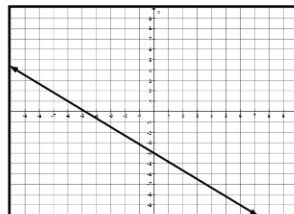
Questions, comments, concerns?

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)? _____

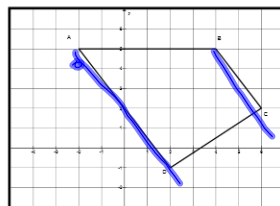
Hint.

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

- A. What is the slope of the line? $\frac{2}{3}$
- B. What is the slope of a parallel line? _____
- C. What is the slope of a perpendicular line? $-\frac{3}{2}$

$$m = \frac{\Delta y}{\Delta x} = \frac{2 - (-4)}{3 - (-6)} = \frac{6}{9} = \frac{2}{3}$$

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



$\overline{AD} \parallel \overline{BC}$ same slope?

$m = \frac{4 - (-1)}{-4 - (-4)} = \frac{5}{0}$ (undefined)

$m = \frac{4 - 1}{4 - 4} = \frac{3}{0}$ (undefined)

4. Given the table:

| | | | |
|---|---|-----|-----|
| x | 1 | 5 | 8 |
| y | 2 | -10 | -19 |

- A. What is the slope of the line? $-\frac{12}{4} = -3$
- B. What is the slope of a parallel line? _____
- C. What is the slope of a perpendicular line? _____

$$m = \frac{\Delta y}{\Delta x} = \frac{-10 - 2}{5 - 1} = \frac{-12}{4} = -3$$

$$m = \frac{\Delta y}{\Delta x} = \frac{-19 - 2}{8 - 1} = \frac{-21}{7} = -3$$

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.

Handwritten notes for problem 5:

- For A: $y = 3$ (parallel line)
- For B: $x = -3$ (perpendicular line)

Parallel & Perpendicular Lines

Essential Question

How do I identify two parallel or two perpendicular lines?

Kahoot Time!

Get out your device! Please raise your hand and wait patiently if you need to borrow an ipad.

You can use scratch paper or a whiteboard marker to show work on your table.

You will receive a participation grade for today!



Parallel & Perpendicular Lines W11

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 |

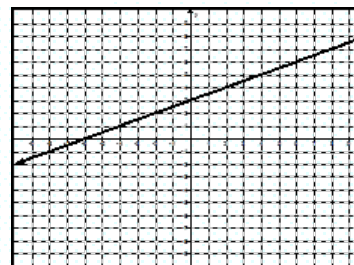
- What is the slope of the line? _____
- What is the slope of a parallel line? _____
- What is the slope of a perpendicular line? _____

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 $4x - y = -5$.

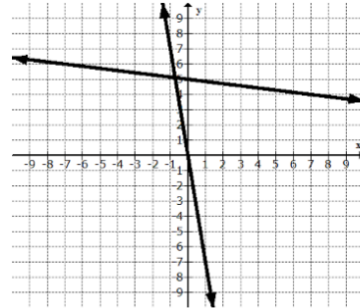
9. Write an equation in slope-intercept form of the line that passes through the point (1, 3) and perpendicular to $y = -5x + 3$

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 $y = -5$

Kahoot Questions!!

1. Are the following lines parallel, perpendicular, or neither?



Write the equation for the line described below

5. Parallel to the line $y = -\frac{2}{3}x + 5$ and passing through the point $(-3, 0)$

A. $y = -\frac{2}{3}(x+3)$

B. $y = \frac{3}{2}(x+3)$

C. $y = -\frac{2}{3}(x-3)$

D. $y+3 = -\frac{2}{3}x$

7. Perpendicular to the line $x = -6$ that passes through the point $(2, 4)$

A. $x = 2$

B. $y = 2$

C. $x = 4$

D. $y = 4$

9. What is the slope of the line perpendicular to a vertical line?

Undefined

Zero

Positive

Negative

Are the following lines parallel, perpendicular, or neither?

2. $y = -2x + 11$

$y = -2x$

3. $y + 4 = \frac{3}{2}(x - 2)$

$y - 1 = -\frac{2}{3}(x + 9)$

4. $4x + 5y = -6$

$-5x + 4y = 2$

6. Parallel to the line $2x + 3y = 6$ and passes through the point $(0, 4)$

A. $y = \frac{3}{2}x + 4$

B. $y = -\frac{3}{2}x + 4$

C. $y = \frac{2}{3}x + 4$

D. $y = -\frac{2}{3}x + 4$

8. Perpendicular to the line $y = -3x$ that passes through the point $(0, -10)$

A. $y = \frac{1}{3}x - 10$

B. $y = -3x - 10$

C. $y = -\frac{1}{3}x - 10$

D. $y = 3x - 10$

10. Find the slope of $3x + 4y = 8$

$\frac{3}{4}$

$\frac{4}{3}$

$-\frac{3}{4}$

$-\frac{4}{3}$

HW 2.3 due tomorrow!!

Algebra I - Unit 3 Writing Equations of Parallel and Perpendicular Lines

Practice - Equations of Parallel and Perpendicular Lines

Name _____ Date _____ Period _____


#1-6. Tell whether each pair of lines are parallel, perpendicular, or neither.

1. $y = -7x$
 $y = -\frac{1}{7}x + 5$

2. $y = -2x$
 $y - 3 = -2(x - 4)$

3. $x + y = 0$
 $y = x + 10$

4. $y = 6x + 16$
 $y - 6x = -4$

 $4x + 5y = -6$
 $-5x + 4y = 2$

6. $y = 2x + 6$
 $y + 1 = -2x$

7. Use the following equation for parts A & B.

$$3x - 4y = 8$$

A. Write an equation in slope-intercept form for the line that is parallel to the line and passes through the point (0,4).

B. Write an equation in point-slope form for the line that is perpendicular to the line and passes through the point (-6, 5)

8. Use the following equation for parts A & B.

$$x = 4$$

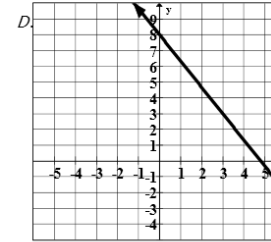
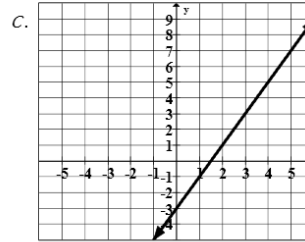
A. Write an equation for the line parallel to the given line and passes through the point (-3, 2)

B. Write an equation for the line perpendicular to the given line and passes through the point (5, 7)

Algebra I - Unit 3 Writing Equations of Parallel and Perpendicular Lines

9. Which describes a line passing through (3, 3) that is perpendicular to the line described by $y = \frac{3}{5}x + 2$?

A. $y = \frac{5}{3}x - 2$ B. $y = \frac{3}{5}x + \frac{6}{5}$



10. Which table shows a linear relationship that is parallel to the equation $y = \frac{1}{2}x + 3$?

$m = \frac{1}{2}$

~~A.~~

| X | Y |
|----|---|
| -4 | 3 |
| -2 | 2 |
| 0 | 1 |
| 2 | 0 |

$m = -\frac{1}{2}$

B.

| X | Y |
|----|---|
| -6 | 0 |
| -2 | 2 |
| 0 | 3 |
| 4 | 5 |

$m = \frac{2}{4} = \frac{1}{2}$

C.

| X | Y |
|----|----|
| -4 | -5 |
| 2 | -2 |
| 8 | 1 |
| 10 | 2 |

$m = \frac{3}{6} = \frac{1}{2}$

~~D.~~

| X | Y |
|----|-----|
| -6 | -11 |
| -3 | -5 |
| 0 | 1 |
| 3 | 7 |

$m = \frac{6}{3} = 2$

11. What is the equation of the line that has a slope of 0 and passes through the point (6, -8)?

- A. $x = 6$
 B. $y = 6$
 C. $x = -8$
 D. $y = -8$

Parallel & Perpendicular Lines Day 2 HW Help

**Remember: Parallel lines have the SAME slope,
Perpendicular lines have FLIPPIN' OPPOSITE slopes!**

NO WORK = NO CREDIT = NO KIDDING!

#1-6. Solve BOTH equations for $y =$. Then you can...

- use your calculator (ZOOM 5:Square) OR
- you can check your slopes.

1. Neither 2. Parallel 3. Perpendicular You try 4-6!

7. If you solve the equation for y , you should get $y = (3/4)x - 2$. What is your slope?

A. Parallel = same slope! (0,4) is your Y-intercept.

B. Perpendicular = flip the numbers, change the sign! Use point-slope form
($y - y_1 = m(x - x_1)$) and label what you know.

8. What kind of line is $x = 4$? HOY VUX!

9. The slope of your original line is $3/5$. What would be the perpendicular slope?

HINT: change the sign!!

10. C. The slope of the original line is $1/2$. Only B & C have a parallel slope, but letter B IS the original line! A line cannot be parallel to itself. :(This is a STAAR question!!

11. HOY VUX!