

Warm up

Write an equation given the following info:

1. $m = \frac{2}{3}$ (-9, -1) 2. (-2, -1) (-2, 3)

3. (-2, 6) (2, 8) 4. $m = 0$ (3, 4)

1

PERPENDICULAR LINES

- **Graphs:** Lines Intersect at right angles (90° angles)

- **Equations:**

Opposite (negative) Reciprocal Slopes

With the same or different y-int

3

Are these lines parallel, perpendicular, or neither?

1. $y = -2x + 1$

$y = -2x - 4$

2. $y = 3x - 4$

$y = -3x + 1$

3. $y = \frac{1}{5}x + 2$

$y = -5x + 6$

5

PARALLEL LINES

- **Graphs:** Lines Never Intersect and are in the same plane (coplanar)

- **Equations:**

Same Slopes

Different y-intercepts

2

Find the Opposite (negative) Reciprocal Slopes

1. $-\frac{2}{3}$

2. $\frac{11}{12}$

3. 7

4. $-\frac{1}{9}$

4

Are these lines parallel, perpendicular, or neither?

4. $y = -2x + 1$

$y = -1/2x - 4$

5. $y = 3x - 4$

$y = 1 + 3x$

6. $y = \frac{5}{6}x + 2$

$y = -\frac{6}{5}x + 6$

6

**How to Write an Equation of a Line
PARALLEL to another and given a point**

1. Given equation should be solved for y ($y = mx + b$)
2. Write down the slope of that line
3. Substitute m and (x, y) in $y = mx + b$.
4. Solve for b .
5. Write the equation using m and b .

7

Write a line **parallel** to the line $y = 3x - 5$ and passes through the point $(-5, -2)$.

9

Write a line **parallel** to the line $y = -x - 7$ and passes through the point $(-4, -4)$.

11

Write a line **parallel** to the line $2x + y = 3$ and passes through the point $(-2, 5)$.

8

Write a line **parallel** to the line $y = -4x + 1$ and passes through the point $(2, -1)$.

10

**How to Write an Equation of a Line
PERPENDICULAR to another and given a point**

1. Given equation should be solved for y ($y = mx + b$)
2. Write down the **OPPOSITE RECIPROCAL** slope of that line
3. Substitute m and (x, y) in $y = mx + b$.
4. Solve for b .
5. Write the equation using m and b .

12

Write a line **perpendicular** to the line $y = \frac{1}{2}x - 2$ and passes through the point $(1, 0)$.

13

Write a line **perpendicular** to the line $2x + 3y = 9$ and passes through the point $(6, -1)$.

15

Write a line **perpendicular** to the line $y = -\frac{1}{3}x + 2$ and passes through the point $(5, 1)$.

17

Write a line **perpendicular** to the line $y = -3x + 2$ and passes through the point $(6, 5)$. Leave the equation in standard form.

14

Write a line **perpendicular** to the line $y = 2x - 1$ and passes through the point $(2, 4)$.

16