

Parallel and Perpendicular Lines: Day 2 Notes

Name: Note Key

Objective: I can determine whether lines are parallel, perpendicular or neither and write equations of them.

Word	Defintion	Example
Parallel Lines $//, \parallel$	lines that <u>never</u> intersect slopes = <u>same</u> y-intercept = <u>different</u>	
Perpendicular Lines \perp	lines intersect to form <u>right</u> angles slopes = <u>(sign!) opposite reciprocals</u> product = <u>-1</u> ex) $\frac{1}{2}, -2$	

Determine whether the graphs of the lines are parallel, perpendicular or neither.

a) $y = 4x + 5$ $m = 4$

$-4x + y = -13$

$+4x \quad +4x$
 $y = 4x - 13$ $m = 4$

parallel

b) $y = \frac{7}{9}x - 7$

$y = -\frac{7}{9}x + 3$

neither

c) $y = -6x - 8$ $m = -6$

$-x + 6y = 12$

$+x \quad +x$

perpendicular

$m = 0 \rightarrow$ horizontal

$x = -6 \rightarrow$ vertical

$m =$ undefined

perpendicular

$\frac{6y}{6} = \frac{x}{6} + \frac{12}{6}$

$y = \frac{1}{6}x + 2$ $m = \frac{1}{6}$

Write an equation of a line that passes through a given point and is parallel to the given equation.

$y = mx + b$

a) $(3, 2); y = 3x - 2$

$m_{\parallel} = 3$ $(3, 2)$
 $x \quad y$

$y = 3x - 7$

$2 = 3(3) + b$

$2 = 9 + b$

$-9 \quad -9$

$b = -7$

b) $(-8, 6); y = -\frac{1}{4}x + 5$ $m_{\parallel} = -\frac{1}{4}$

$6 = (-8)(-\frac{1}{4}) + b$

$6 = 2 + b$

$-\frac{2}{4} = -\frac{2}{4}$

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