Lesson 7.4 Name: _____

Parallel and Perpendicular Lines

Show You Know

Ex. 1

Determine whether the lines in each pair are parallel, perpendicular, or neither.

$y = \frac{1}{2}x - 7$ $y = 2x - 7$	$y = 3x - 4$ $y = 3x + \frac{1}{4}$	$y = \frac{2}{5}x - 6$ $5x + 2y = 8$

Ex. 2

Write the equation of a line that is parallel to 3x + y + 3 = 0 and passes through (5, -6). Express the equation in slope-intercept form and in general form. Use technology to verify that the lines are parallel.

Ex. 3

A line is perpendicular to 4x + y - 12 = 0 and passes through (8, -6). Write the equation of the line in either slope-intercept form or general form.

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Parallel and Perpendicular Lines

Practice

1. Given the slopes of two different lines, determine whether the lines are parallel, perpendicular, or neither.

$m_1 = \frac{1}{2}$ $m_2 = -2$	$m_1 = \frac{3}{4}$ $m_2 = \frac{6}{8}$	$m_1 = \frac{-1}{4}$ $m_2 = 4$
$m_1 = -0.5$ $m_2 = 2$	$m_1 = 1$ $m_2 = -1$	$m_1 = \frac{1}{4}$ $m_2 = 0.25$

2. For each given line, state the slope of a line that is parallel and the slope of a line that is perpendicular.

a) $y = -3x - 4$ Parallel: Perpendicular:	b) $y = x$ Parallel: Perpendicular:
c) $4x + y - 4 = 0$ Parallel: Perpendicular:	d) $8y - 7 = 0$ Parallel: Perpendicular:

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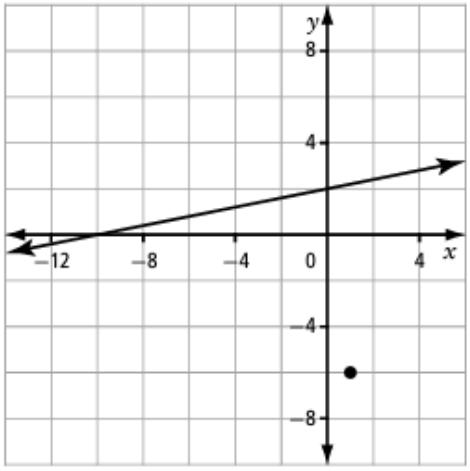
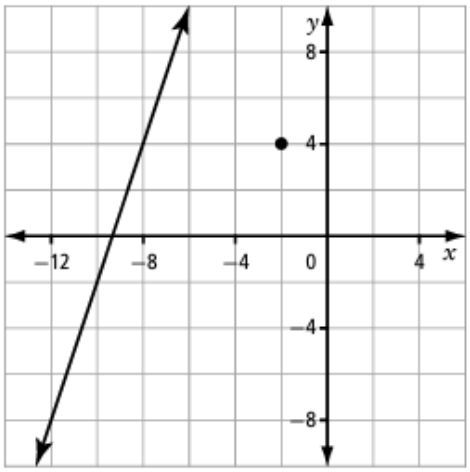
Parallel and Perpendicular Lines

3. Write the general form for the equation of a line passing through the given point and running parallel to the line.

a)



b)



4. Write the equation of the line perpendicular to $x - 12y + 15 = 0$ and having the same y-intercept as $7x + 4y - 12 = 0$.

5. The line passing through A(–2, 3) and B(0, 4) is perpendicular to the line passing through C(k, 4) and D(1, –6). What is the value of k.

6. What is the value of $\underline{k}$ if the lines $x - 2y + 6 = 0$ and $\underline{k}x + 8y + 1 = 0$ are parallel?