Which lines are parallel?

$y = 3x + 2$ (circled green)

$y = -7x + 4$

$y = \frac{1}{3} x - 6$ (circled blue)

$y = \frac{1}{7}x - 6$ (circled red)

$y = \frac{1}{3}x + 2$ (circled blue)

$y = -7x + 4$

$y = 7x + 4$

$y = 3x - 6$ (circled green)

$y = \frac{1}{7}x + 2$ (circled red)

$-x + 7y = 35$

$3x + 4y = 12$

$-3x - 4y = -12$

$\dfrac{7y}{7} = \dfrac{x}{7} + \dfrac{35}{7}$

$y = \frac{1}{7}x + 5$ (circled red)

$4y = -3x + 12$

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

$-4y = 3x - 12$

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

Homework Check:

7. $y = 3x$

8. $y = -x$

9. $y = 4x - 7$

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

11. $y = \frac{2}{3}x$

12. $x = 4$

███

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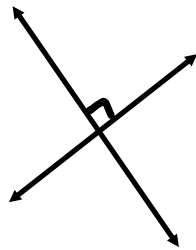
Investigation - 25 minutes

Perpendicular lines have **opposite reciprocal** slopes

$y = 3x - 2$

Slope of Perpendicular Line: $m = -1/3$

$y = -\dfrac{2}{3}x + 5$

Slope of Perpendicular Line: $m = 3/2$

What is the equation (in slope intercept form) of a line perpendicular to y = 3x + 6 and passes through the point (6, 9)

$$m = -\frac{1}{3} \rightarrow \text{opposite reciprocal}$$

$$y - y_1 = m(x - x_1)$$

$$y - 9 = -\frac{1}{3}(x - 6)$$

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

$$y = -\frac{1}{3}x + 11$$