

Geometry in the Coordinate Plane
 Writing Equations of Lines Given Two Points

Name: _____

Date: _____

Find the slope and the y-intercept, and then write the equation of the line.

$m = \frac{y_2 - y_1}{x_2 - x_1}$	Solve for b $y = mx + b$	Write the equation $y = mx + b$
1. (1, 5) and (2, 7) $m = \frac{+2}{+1} = 2$	$(1, 5)$ $5 = 2(1) + b$ $5 = 2 + b$ $\frac{-2}{-2} = \frac{-2}{-2}$ $3 = b$	$y = mx + b$ $y = 2x + 3$
2. (0, 1) and (3, -8) $m = \frac{-9}{+3} = -3$	$(0, 1)$ $y = mx + b$ $1 = -3(0) + b$ $1 = b$	$y = mx + b$ $y = -3x + 1$
3. (2, -3) and (4, -2) $m = \frac{+1}{+2} = \frac{1}{2}$	$(2, -3)$ $y = mx + b$ $-3 = \frac{1}{2}(2) + b$ $-3 = 1 + b$ $\frac{-1}{-1} = \frac{-1}{-1}$ $b = -4$	$y = mx + b$ $y = \frac{1}{2}x - 4$
4. (2, 5) and (4, 2) $m = \frac{-3}{+2} = -\frac{3}{2}$	$(2, 5)$ $y = mx + b$ $5 = -\frac{3}{2}(2) + b$ $5 = -3 + b$ $\frac{+3}{+3} = \frac{+3}{+3}$ $b = 8$	$y = mx + b$ $y = -\frac{3}{2}x + 8$
5. (-3, -5) and (-1, 3) $m = \frac{+8}{+2} = 4$	$(-3, -5)$ $y = mx + b$ $-5 = 4(-3) + b$ $-5 = -12 + b$ $\frac{+12}{+12} = \frac{+12}{+12}$ $7 = b$	$y = mx + b$ $y = 4x + 7$

$m = \frac{y_2 - y_1}{x_2 - x_1}$	Solve for b $y = mx + b$	Write the equation $y = mx + b$
6. (3, -1) and (-6, -4) $m = \frac{-3}{-9} = \frac{1}{3}$	$(3, -1)$ $y = mx + b$ $-1 = \frac{1}{3}(3) + b$ $-1 = 1 + b$ $-1 - 1 = b$ $-2 = b$	$y = mx + b$ $y = \frac{1}{3}x - 2$
7. (4, 1) and (-4, 7) $m = \frac{+6}{-8} = -\frac{3}{4}$	$(4, 1)$ $y = mx + b$ $1 = -\frac{3}{4}(4) + b$ $1 = -3 + b$ $+3 \quad +3$ $4 = b$	$y = mx + b$ $y = -\frac{3}{4}x + 4$
8. (-1, 2) and (3, 4) $m = \frac{+2}{+4} = \frac{1}{2}$	$(-1, 2)$ $y = mx + b$ $2 = \frac{1}{2}(-1) + b$ $2 = -\frac{1}{2} + b$ $+\frac{1}{2} \quad +\frac{1}{2}$ $2\frac{1}{2} = b$ $b = \frac{5}{2}$	$y = mx + b$ $y = \frac{1}{2}x + \frac{5}{2}$
9. (-1, -4) and (2, 0) $m = \frac{+4}{+3} = \frac{4}{3}$	$(-1, -4)$ $y = mx + b$ $-4 = \frac{4}{3}(-1) + b$ $-4 = -\frac{4}{3} + b$ $+\frac{4}{3} \quad +\frac{4}{3}$ $-\frac{8}{3} = b$ $b = -\frac{8}{3}$	$y = mx + b$ $y = \frac{4}{3}x - \frac{8}{3}$
10. (3, -1) and (-3, 5) $m = \frac{+6}{-6} = -1$	$(3, -1)$ $y = mx + b$ $-1 = -1(3) + b$ $-1 = -3 + b$ $+3 \quad +3$ $2 = b$	$y = mx + b$ $y = -1x + 2$

