Name Teacher Pd _____ Date _____ **Section 2.E.3 Point-Slope Form**

$(x-x_1)\cdot m = \frac{y-y_1}{x-x_1}\cdot(x-x_1)$

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

general general

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

point slope point

Write the point-slope form of the linear equation given the information.

1) $m = 5$, point: $(-2, 4)$ (x_1, y_1)

$y-4 = 5(x--2) \longrightarrow y-4 = 5(x+2)$

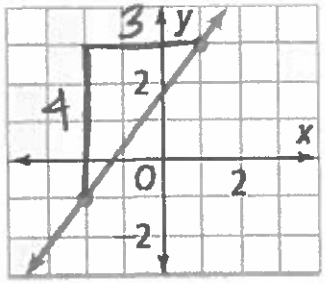
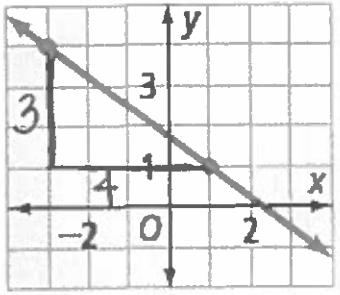
2) The slope of line is $\frac{2}{3}$, and it passes through the point $(3, -5)$.

$y--5 = \frac{2}{3}(x-3) \longrightarrow y+5 = \frac{2}{3}(x-3)$

1) distribute slope

2) use inverse ops to isolate y

Given Info	Point-Slope Form	Slope-Intercept Form
3) (3, 7) and (2, −1) (x_1, y_1 x_2, y_2) $\frac{-1-7}{2-3} = \frac{-8}{-1} = 8$	$m = 8$ point: $(3, 7)$ $y-7 = 8(x-3)$	$y-7 = 8(x-3)$ $y-7 = 8x-24$ $+7 \quad +7$ $\boxed{y = 8x-17}$
4) (5, 2) and (7, 6) (x_1, y_1 x_2, y_2) $\frac{6-2}{7-5} = \frac{4}{2} = 2$	$m = 2$ point: $(5, 2)$ $y-2 = 2(x-5)$	$y-2 = 2(x-5)$ $y-2 = 2x-10$ $+2 \quad +2$ $\boxed{y = 2x-8}$

		Point - Slope	Slope - Int
5)	 $m = \frac{4}{3}$ point $(1, 3)$ $x_1\ y_1$	$y - 3 = \frac{4}{3}(x-1)$ $-\frac{4}{3} + 3$ $\frac{3}{1}\cdot\frac{3}{3} = \frac{9}{3}$ $-\frac{4}{3} + \frac{9}{3} = \frac{5}{3}$	$y - 3 = \frac{4}{3}(x-1)$ $\frac{4}{3}\cdot\frac{-1}{1}$ $y - 3 = \frac{4}{3}x - \frac{4}{3}$ $+3 \qquad +3$ $y = \frac{4}{3}x + \frac{5}{3}$
6)	 $m = \frac{-3}{4}$ point $(-3, 4)$ $x_1\ y_1$	$y - 4 = -\frac{3}{4}(x - -3)$ $y - 4 = -\frac{3}{4}(x+3)$ $-\frac{9}{4} + \frac{16}{4} = \frac{7}{4}$ $\frac{4}{1}\cdot\frac{4}{4} = \frac{16}{4}$	$y - 4 = -\frac{3}{4}(x+3)$ $y - 4 = -\frac{3}{4}x - \frac{9}{4}$ $+4 \qquad +4$ $y = -\frac{3}{4}x + \frac{7}{4}$
7)	$+2$ | X | Y | -4 −8 | 5 −6 | 1 −4 | −3 −2 | −7 $m = \frac{-4}{2} = -2$	point: $(-8, 5)$ $x_1\ y_1$ $m = -2$ $y - 5 = -2(x - -8)$ $y - 5 = -2(x+8)$	$y - 5 = -2(x+8)$ $y - 5 = -2x - 16$ $+5 \qquad +5$ $y = -2x - 9$
8)	$+15$ | X | Y | $+10$ 30 | 110 45 | 120 60 | 130 75 | 140 $m = \frac{10 \div 5}{15 \div 5} = \frac{2}{3}$	point: $(30, 110)$ $x_1\ y_1$ $m = \frac{2}{3}$ $y - 110 = \frac{2}{3}(x-30)$ $\frac{2}{3}\cdot\frac{-30}{1} = \frac{-60}{3} = -20$	$y - 110 = \frac{2}{3}(x-30)$ $y - 110 = \frac{2}{3}x - 20$ $+110 \qquad +110$ $y = \frac{2}{3}x + 90$