Equations of Lines **Name:** Key

1. What is the equation for slope-intercept form? $y = mx + b$

2. Give an equation of a line given the following criteria.

a. $m = -\frac{2}{3}$, through $(-4, 7)$

$7 = -2/3(-4) + b$

$7 = 8/3 + b$

$-8/3 \quad -8/3$

$b = 13/3$

$y = -2/3x + \frac{13}{3}$ $(4.\overline{3})$

b. $m = \frac{5}{2}$, through $(9, -6)$

$-6 = \frac{5}{2}(9) + b$

$-6 = \frac{45}{2} + b$

$-\frac{45}{2} \quad -\frac{45}{2}$

$b = -57/2$

$y = 5/2x - \frac{57}{2}$ (-28.5)

c. Through $(-5, 6)$ *and* $(-8, 2)$

$\frac{y_2 - y_1}{x_2 - x_1} \quad \frac{6-2}{-5-(-8)} = \frac{4}{3}$

$2 = 4/3(-8) + b$

$2 = \frac{-32}{3} + b$

$+\frac{32}{3} \quad +\frac{32}{3}$

$b = 38/3$

$y = \frac{4}{3}x + \frac{38}{3}$ $(12.\overline{6})$

d. Through $(6, -7)$ *and* $(2, 1)$

$\frac{-7-1}{6-2} \quad \frac{-8}{4} = -2$

$1 = -2(2) + b$

$1 = -4 + b$

$+4 \quad +4$

$b = 5$

$y = -2x + 5$

e. Through $(-4, 9)$, $\parallel$ *to* $y = -\frac{3}{4}x + 25$

$m = -3/4$

$9 = -3/4(-4) + b$

$9 = 3 + b$

$-3 \quad -3$

$6 = b$

$y = -3/4x + 6$

f. Through $(-5, 4)$, $\parallel$ *to* $y = -3x - 8$

$m = -3$

$4 = -3(-5) + b$

$4 = 15 + b$

$-15 \quad -15$

$b = -11$

$y = -3x - 11$

g. Through $(6, -2)$, $\perp$ *to* $y = \frac{3}{4}x + 20$

$m = -4/3$

$-2 = -4/3(6) + b$

$-2 = -8 + b$

$+8 \quad +8$

$6 = b$

$b = 6$

$y = -4/3x + 6$

h. Through $(5, 9)$, $\perp$ *to* $y = 6x - 13$

$m = -1/6$

$9 = -1/6(5) + b$

$9 = -5/6 + b$

$+5/6 \quad +5/6$

$b = \frac{59}{6}$

$y = -1/6x + 5\frac{9}{6}$ $(9.8\overline{3})$