BE-1A | TUESDAY 2-8-11

① Find EOL through $(-3,-1), (6,-4)$

② Solve: $\frac{4x}{3} = \frac{2}{9}$

③ What is the name of the type of equation in #2? What property do you use to solve it?

④ $16 \div 2 \cdot 5 \cdot 3 \div 6$

What other types of linear equation problems can you now solve?

Two Points

$(-3,-4), (-2,-8)$

$\frac{-8+4}{-2+3} \cdot \frac{-4}{1} = -4 = m$

$y = mx + b$

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

$-4 = 12 + b$

$-12 \quad -12$

$-16 = b$

$y = mx + b$

$y = -4x - 16$

Equation of line through $(-3,-4), (-2,-8)$

One Point & Slope

$(2,-3) \quad m = \frac{1}{2}$

$m = \frac{1}{2}$

$y = mx + b$

$-3 = \frac{1}{2}(2) + b$

$-3 = 1 + b$

$-1 \quad -1$

$-4 = b$

$y = mx + b$

$y = \frac{1}{2}x - 4$

Equation of line through $(2,-3)$ with slope of $\frac{1}{2}$

Slope & y-intercept

$m = 5 \quad y_{int} = -2$

$m = 5$

$-2 = b$

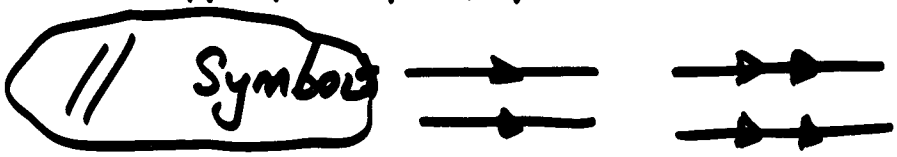
$y = mx + b$

$y = 5x - 2$

Equation of line with slope 5 and y-intercept of -2

Parallel Lines — Lines in the same plane that never cross.

// Symbol



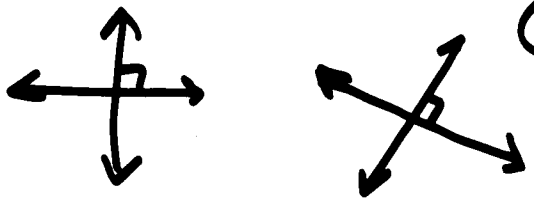
etc

* Parallel line have the <u>same</u> slope!

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

Perpendicular Lines — Lines in the same plane that cross at 90 degrees (a right angle)

⊥ Symbol



* Perpendicular lines have slopes that are negative reciprocals (opposite signs) (flipped)

$y = 2x - 6$ ⊥ to $y = -\frac{1}{2}x + 4$
$y = \frac{1}{5}x + 2$ ⊥ to $y = 5x + 6$

Problems involving // or ⊥ lines are just like the ones we have been doing, with one extra step to find the slope you want. This extra step requires you to know that // lines have same $m = m_{//}$

⊥ lines have m, $-\frac{1}{m} = m_{\perp}$

Ch. 5-6 // and ⊥ Lines

(Ex 1) Find EOL through $(-1,-2)$ that is parallel to $y = -3x - 2$

$(-1,-2)$, want $m = -3$

x, y

$$y = mx + b$$

$$-2 = -3(-1) + b$$

$$-2 = 3 + b$$

$$-3 \quad -3$$

$$-5 = b$$

$$y = -3x - 5$$

(Ex) Find EOL through $(-1,-2)$ that is perpendicular to $y = -3x - 2$

$m_\perp = \frac{1}{3}$ $(-1,-2)$ x, y

$$y = mx + b$$

$$-2 = \frac{1}{3}(-1) + b$$

$$-2 = -\frac{1}{3} + b$$

$$+\frac{1}{3} \quad +\frac{1}{3}$$

$$-\frac{2}{1} + \frac{1}{3} = b$$

$$-\frac{6}{3} + \frac{1}{3} = b$$

$$-\frac{5}{3} = b$$

$$y = \frac{1}{3}x - \frac{5}{3}$$

Homework: Pg. 295 # 6, 7, 9, 10