Today's Agenda

Test Return
New Seats/Teams
Finish §3.5 Equations of Lines (pp. 48-49)
All of §3.7 Graphing Linear Inequalities (pp 50 - 54)
Start §5.7 Factoring Special Products (pp 67 - ??)

Write Equations of Vertical and Horizontal Lines
(See lecture notes p. 48)

Write Equations of Slanted Lines
(See lecture notes p. 48)

START The point determines which form of the line you will start with.

END The instructions determine which form of the line you will end with.

LAST CLASS

Last class we completed 3.5.17, find an equation of the line having the given slope ($\frac{5}{6}$) and containing the given point $(-18, 6)$

$m = \frac{5}{6}$ $(-18, 6)$ x_1, y_1

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

$y - 6 = \frac{5}{6}(x - -18)$

$y - 6 = \frac{5}{6}(x + 18)$

$y - 6 = \frac{5}{6}x + \frac{5}{6} \cdot 18$

$y - 6 = \frac{5}{6}x + \frac{5}{1} \cdot \frac{18^3}{1}$

$y - 6 = \frac{5}{6}x + 15$

$+6 \quad +6$

$y = \frac{5}{6}x + 21$

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$m = \frac{5}{6}$ $(-18, 6)$ x_1, y_1

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$y - 6 = \frac{5}{6}(x - -18)$

$y - 6 = \frac{5}{6}(x + 18)$

$y - 6 = \frac{5}{6}x + \frac{5}{6} \cdot \frac{18}{1}^{3}$

$y - 6 = \frac{5}{6}x + 15$

$+6 \quad +6$

$y = \frac{5}{6}x + 21$

3.5.51 Find an equation of the line thru $(-18, 6)$ and (parallel) to $-5x + 6y = 300$.
Express your answer in slope-intercept form

START point $(-18, 6)$ Not a y-intercept

"point" – slope

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

Our Slope ← SAME | Their Slope

slope $\frac{5}{6}$ | $-5x + 6y = 300$

point $(-18, 6)$ | $A \quad B$

See previous exercise | $-\frac{A}{B}$

Slope $= -\frac{-5}{6}$

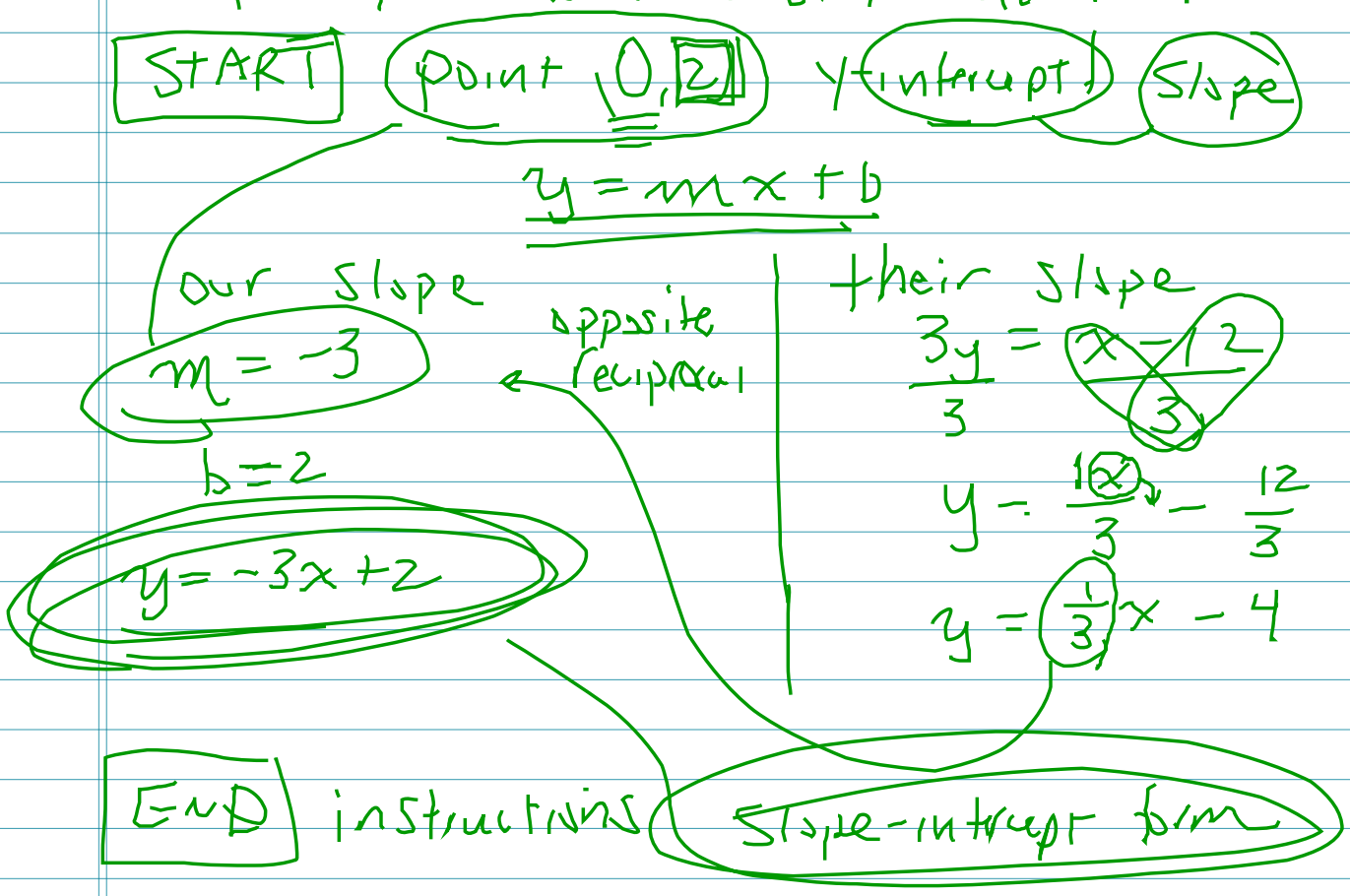
Slope $= \frac{5}{6}$

END instructions

$y = mx + b$

$y = \frac{5}{6}x + 21$

3.5.49 Find an equation of the line thru $(0,2)$ and perpendicular to $3y = x - 12$.
Express your answer in slope-intercept form.



$(0, 371)$ $(10, 574)$
x_1, y_1 x_2, y_2

3.5.79 Find an equation of the line through points $(0, 371)$ and $(10, 574)$. Use the point $(0, 371)$ for (x_1, y_1). Write the equation in slope-intercept form.

START point $(0, 371)$ → b → y-intercept → slope

$y = mx + b$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{574 - 371}{10 - 0} = \frac{203}{10} = 20.3$$

$y = mx + b$

$y = 20.3x + 371$

END instructions → slope intercept form

year	x
2008	0
2009	1
2010	2
201.	3
2012	4
2013	5
2014	6
2015	7
2016	8
2017	9

(a) $y = 20.3x + 371$

y: # of medical assistants (in thousands)

x is the year where $x = 0$ represents 2008

(b) Estimate the number of medical assistants in 2017.

$y = 20.3(9) + 371$

$= 182.7 + 371$

$= 553.7$ thousands

$= 553.7 \cdot 1000$

$= 553700$ medical assistants

§3.7 Graph Linear Inequalities

(a) $y <$ down

(b) $y >$ up

(c) $x \geq$ right

(d) $x \leq$ left

(e) $y \geq$ up

(f) $y >$ up

(g) $y <$ down

(h) $y \leq$ down

(i) $x <$ left

p 52

Graph (3.73i) $3x - 5y \geq -15$

[1] Solve for y

$(-1)(-5y) > (-3x - 15)(-1)$

$\frac{5y}{5} < \frac{3x + 15}{5}$

$y < \frac{3}{5}x + \frac{15}{5}$

$y \leq \frac{3}{5}x + 3$

[2] Graph as if it was an equality

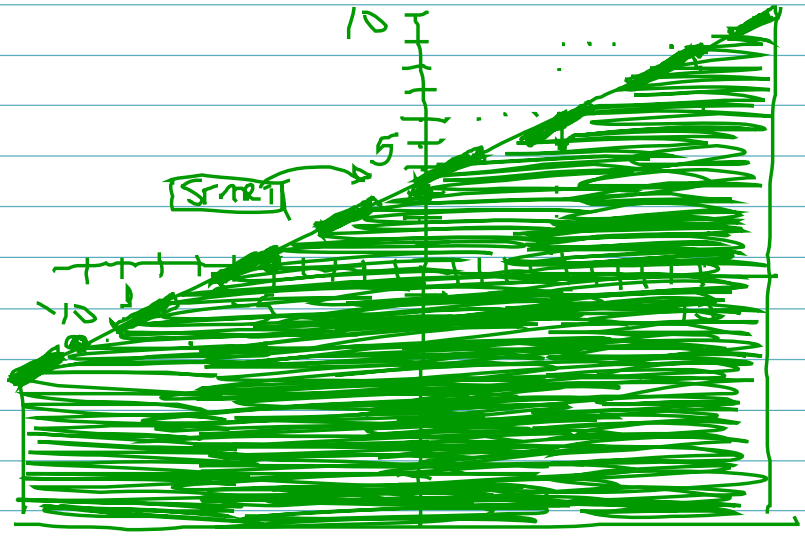
$<$ $>$ dashed

$\leq \geq$ solid

(2) $y = \frac{3}{5}x + 3$ dashed line

y-int (0, 3)

$m = \frac{3}{5}$ $\frac{\text{rise}}{\text{run}}$



(3) $y < \frac{3}{5}x + 3$

down