Name: Key

Lesson 6.3 – Arranging Equations

Standard Form $ax + by = c$

Slope-Intercept Form $y = mx + b$

Example: Change the following linear equation into Slope-Intercept Form. Then find the slope and y-intercept:

$8x + 2y = 4$ $-8x \quad -8x$ $\frac{2y}{2} = \frac{-8x}{2} + \frac{4}{2}$ $y = -4x + 2$ m(slope) = -4 b(y-int) = 2	$3x - 4y + 2 = 0$ $-3x \quad -3x$ $-4y + 2 = -3x$ $-2 \quad -2$ $\frac{-4y}{-4} = \frac{-3x}{-4} \frac{-2}{-4}$ $y = \frac{3}{4}x + \frac{1}{2}$ m(slope) = $3/4$ b(y-int) = $1/2$ OR 0.5

Assignment:

Change the following linear equations into Slope-Intercept Form. Then find the slope and y-intercept:

$12x + 3y = 6$ $3y = -12x + 6$ $y = \frac{-12}{3}x + \frac{6}{3}$ $y = -4x + 2$ slope $= -4$ y-int $= 2$	$-5x - y + 3 = 0$ $-y + 3 = 5x$ $-y = 5x - 3$ $y = -5x + 3$ slope $= -5$ y-int $= 3$
$-3x + 9y = -6$ $9y = 3x - 6$ $y = \frac{3}{9}x - \frac{6}{9}$ $y = \frac{1}{3}x - \frac{2}{3}$ slope $= 1/3$ y-int $= -2/3$	BONUS $0.9x - 0.3y = 1.2$ $\times 10 \quad \times 10 \quad \times 10$ $9x - 3y = 12$ $-3y = -9x + 12$ $y = 3x - 4$ slope $= 3$ y-int $= -4$

Arranging Equations

Standard Form $ax + by = c$

Slope-Intercept Form $y = mx + b$

Example: Change the following linear equation into Standard Form. Then find the x and y intercepts:

$$y = 2x + 4$$

$-2x \quad -2x$

$-2x + y = 4$

Convention: make it positive

$2x - y = -4$

Y-intercept

$2(0) - y = -4$

$y = 4$

X-intercept

$2x - (0) = -4$

$x = -2$

$$4 \quad y = 4 -\frac{3}{4}x + 5 \quad 4$$

$4y = -3x + 20$

$+3x \quad +3x$

$3x + 4y = 20$

Y-intercept

$3(0) + 4y = 20$

$y = 5$

X-intercept

$\frac{3x}{3} + 4(0) = \frac{20}{3}$

$x = \frac{20}{3}$

Assignment:

Change the following linear equation into Standard Form. Then find the x and y intercepts:

$y = -3x + 1$ $3x + y = 1$ Yint $3(0) + y = 1$ $y = 1$ Xint $3x + (0) = 1$ $x = 1/3$	$y = \frac{1}{2}x - 5$ $2y = x - 10$ $-x + 2y = -10$ $x - 2y = 10$ Yint $(0) - 2y = 10$ $y = -5$ Xint $x - 2(0) = 10$ $x = 10$
$y = -\frac{5}{3}x + 7$ $3y = -5x + 21$ $5x + 3y = 21$ Yint $y = 7$ Xint $x = \frac{21}{5}$	BONUS (no decimals in answer please) $y = 0.25x + 1.15$ $20y = 5x + 23$ $-5x + 20y = 23$ $5x - 20y = -23$ Yint $y = 23/20$ Xint $x = -23/5$

Word Problems:

Translating an English sentence into a Linear Equation…

STEP #1: Define the variable

STEP #2: Start with what it equals

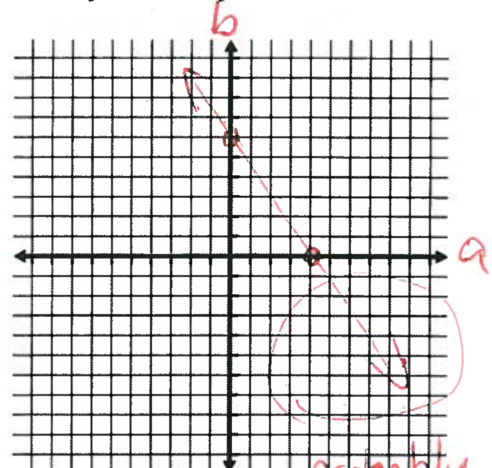
STEP #3: Write the equation

STEP #4: Draw the graph

Example:

A bag of apples cost \$3 and a bunch of bananas cost \$2. How many can I buy with \$12?

a = apples , b = bananas



$3a + 2b = 12$

B intercept $b = 6$

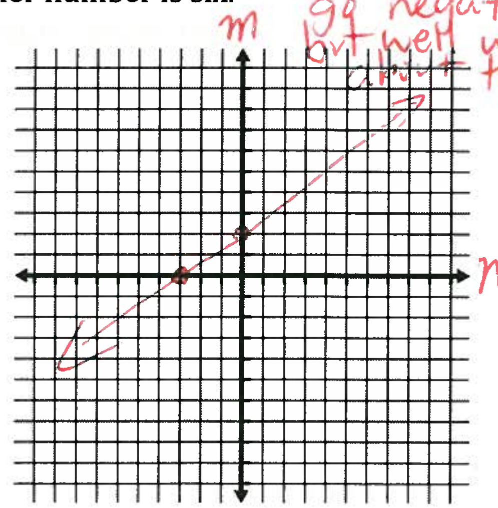
A intercept $a = 4$

The difference between double a number and triple another number is six.

probably doesn't need to go negative but well worry about that late

n = one number

m = another number



$3m - 2n = 6$

M intercept = 2

N intercept = -3

Assignment:

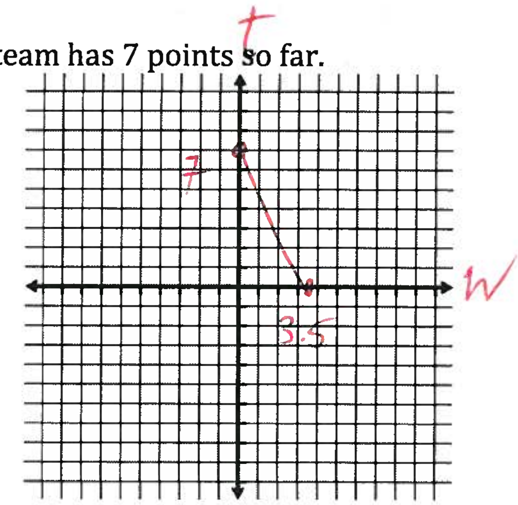
Wins are worth 2 points and ties are worth 1 point. My team has 7 points so far.

W = wins t = ties

$$2w + t = 7$$

T intercept = 7

W intercept = 3.5



The difference between half of one number and triple another number is three.

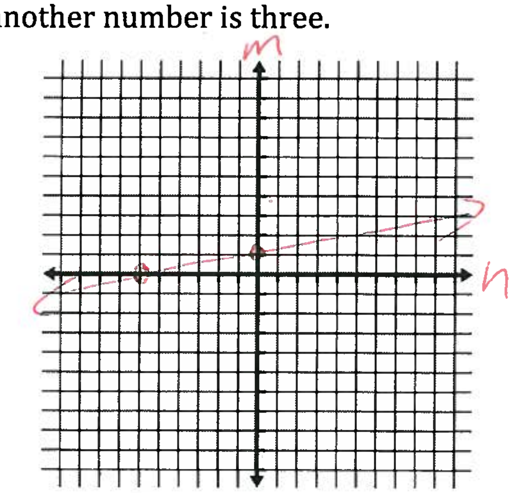
n = one number

m = another number

$$3m - \frac{1}{2}n = 3$$

M intercept = 1

N intercept = −6



You have pennies and nickels worth a total of ten cents.

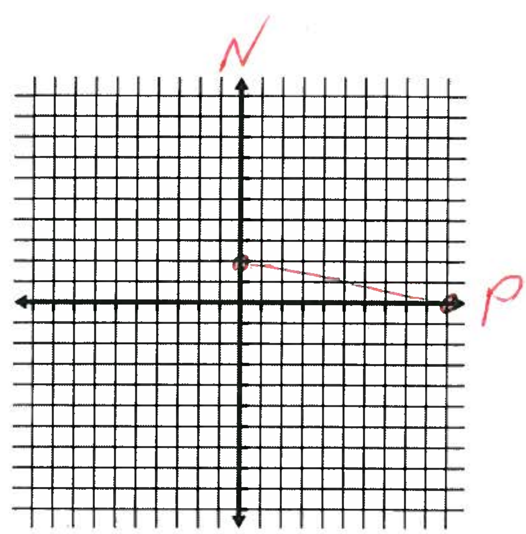
p = pennies

n = nickels

$$p + 5n = 10$$

P intercept = 10

n intercept = 2



Practice Quiz:

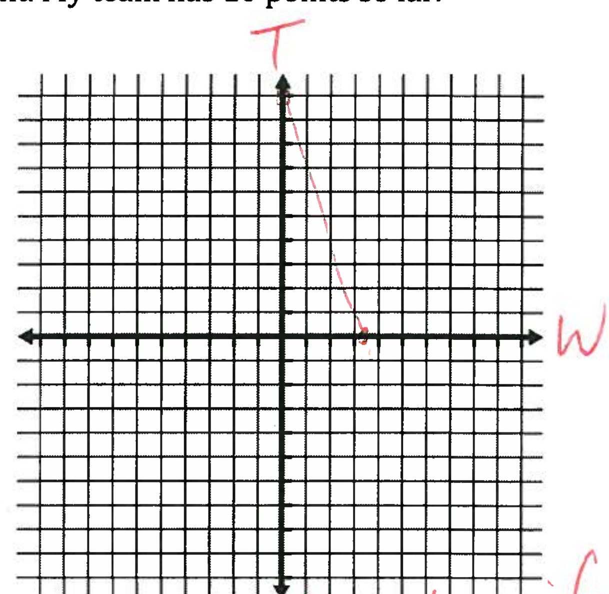
Change the following linear equation into Standard Form. Then find the x and y intercepts:	Change the following linear equation into Slope Intercept Form. Then find the slope and the y-intercept:
$$y = -\frac{2}{3}x + 4$$	$$2x - 3y = 9$$
$3y = -2x + 12$ $2x + 3y = 12$ Xintercept $2x + 3(0) = 12$ $x = 6$ Yintercept $2(0) + 3y = 12$ $y = 4$	$-3y = -2x + 9$ $y = \frac{-2}{-3}x + \frac{9}{-3}$ $y = \frac{2}{3}x - 3$ slope $= \frac{2}{3}$ y intercept $= -3$

Write a linear equation and draw the corresponding graph:
Wins are worth 3 points and ties are worth 1 point. My team has 10 points so far.

w = wins
t = ties

$3w + t = 10$

Tintercept $= 10$
Wintercept $= \frac{10}{3} = 3.3$



It's okay if you put arrows on graph for now we'll sort that out later