

Your Name

Mrs. T

9/24/21

Notes

## UNIT 3

# REWRITING LINEAR EQUATIONS

Objective: To be able to solve for  $y$  in a linear equation in standard form.

Skill: Linear and other functions can come in different forms and you will need to be able to solve for  $y$  in future chapters.

Life Lesson: If you understand how things work, you can manipulate (not in a bad way) the situation to get what you need and so it is clear what to do.

Linear Equations

Highest exponent is 1

$y = x^1$  Parent

ex.  $y = \frac{2}{3}x + 7$   $y = -7x^1$   
 $3.4x^1 + 7y = 25$

Slope Intercept Form

$y = mx + b$

m is slope

b is y-intercept

Useful for graphing

(0, b)

cross

y axis

note: x is 0

Standard Form

$Ax + By = C$

Most situations are translated into this form

This is the form used for Linear systems

A, B and C should not be fractions

Rearranging Standard to Slope Intercept

Solve for y. look like  $y = mx + b$

1. Move the x term over using + or -

2. Divide by the coefficient of y, # in front make sure to distribute the division.

$3x + y = 7$

$-6x - 3y = 12$

$3x - y = 12$

$y = -3x + 7$   
m) b)

$y = \frac{6}{-3}x + \frac{12}{-3}$   
 $y = -2x - 4$   
m) b)

$y = \frac{-3x + 12}{-1}$   
 $y = 3x - 12$

$y = -2x - 4$   
m) b)

$y = 3x - 12$

Rearranging  
Slope  
Intercept to  
Standard

Get x and y on the same side and get rid of denominators.  $Ax + By = C$

1. Move the x term over using + or -
2. Multiply by the least common denominator so there are no fractions, make sure to distribute the multiplication.

$y = -24x + 37$   
 $+24x + 24x$   
 $24x + y = 37$

$y = \frac{4}{3}x + 12$   
 $-\frac{4}{3}x - \frac{4}{3}x$   
 $3\left(-\frac{4}{3}x + y\right) = (12)3$   
 $-\frac{4}{3}x + 3 \cdot y = 36$   
 $-4x + 3y = 36$   
 $-1 \quad -1$   
 $4x - 3y = -36$   
*actual standard form*  
*A is positive*

### Wednesday Bellringer

Solve for y

$3x - 6y = 18$   
 $-3x \quad -3x$   


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 $-6y = -3x + 18$   
 $-6 \quad -6$   
 $y = \frac{3}{6}x + -3$   
 $y = \frac{1}{2}x - 3$

# Summary

Objective: To be able to solve for any variable in any formula.

Skill: Linear and other functions can come in different forms and you will need to be able to solve for y. In other scientific formulas you will need to solve for the missing variable.

Virture: If you understand how things work, you can manipulate (not in a bad way) the situation so it is clear what to do.

## Assignment: Workbooks 2-8

Name: \_\_\_\_\_ Period: \_\_\_\_\_

*Rewriting Equations Worksheet*

**Riddle:**  
Why didn't the circus managers want their human cannonball to quit?

*Coded Answer:*

THEY COULD NEVER FIND  
ANOTHER MAN OF HIS  
CALIBRE

**Directions:** Solve each equation for y. SHOW ALL STEPS! Find your answer in the answer list and notice the # to the left of it. Each time this # appears in the code, write the letter of the corresponding problem in the code.

**Problems:**

6 ①  $x + y = 2$   
 $-x \quad -x$   
 $y = -x + 2$

②  $-3x + y = -4$

③  $2x - y = -2$

④  $-2x + y = 5$

⑤  $x - y = 6$   
 $-x \quad -x$   
 $-y = -x + 6$   
 $-1 \quad -1$   
 $y = -1x + 6$   
 $y = x - 6$

⑥  $x + 2y = 0$   
 $-x \quad -x$   
 $2y = -1x + 0$   
 $\frac{2y}{2} = \frac{-1x + 0}{2}$   
 $y = -\frac{1}{2}x$

**Answer Choices:**

1.  $y = -\frac{1}{2}x$
2.  $y = -\frac{3}{5}x - 2$
3.  $y = 3x - 4$
4.  $y = \frac{1}{2}x + \frac{4}{3}$
5.  $y = \frac{3}{2}x + 2$
6.  $y = -x + 2$
7.  $y = \frac{2}{3}x$
8.  $y = 2x + 2$
9.  $y = -\frac{1}{2}x + \frac{5}{2}$
10.  $y = -5x - 1$
11.  $y = -3x - \frac{1}{2}$
12.  $y = x - 6$
13.  $y = \frac{3}{2}x$
14.  $y = -\frac{1}{4}x - \frac{1}{2}$
15.  $y = 2x + 5$
16.  $y = -2x + \frac{1}{3}$
17.  $y = 2x - \frac{1}{2}$
18.  $y = -4x - 3$

CONTINUED ON BACK →

Ⓐ  $-3x + 2y = 0$

$+3x \quad +3x$

$$\frac{2y = 3x + 0}{2} \quad \frac{3x + 0}{2}$$

$$y = \frac{3}{2}x + 0$$

$y\text{-int is } (0,0)$   
 $b=0$

Ⓥ  $-3x + 2y = 4$

Ⓒ  $6x + 3y = 1$

$-6x \quad -6x$

$$\frac{3y = -6x + 1}{3} \quad \frac{-6x + 1}{3}$$

$$y = \frac{-6}{3}x + \frac{1}{3}$$

$$y = -2x + \frac{1}{3}$$

Ⓜ  $5x - 2y = 0$

Ⓜ  $4x - 2y = 3$

Ⓔ  $-3x - 5y = 10$

Ⓒ  $x + 4y = -2$

Ⓝ  $-6x - 2y = 5$

Ⓒ  $x - 3y = -4$