

## What's Going On?

**Checking In**

Concept Quiz

**Minds on**

Slope and y-Intercept?

**Action!**

Standard Form Equations

**Consolidation**

Whiteboards and Exit Card

**Learning Goal - I will be able to convert Standard Form Equations into Slope y-Intercept Form.**

# Unit 4

## Analyse Linear Relations

### Day 2: Standard Form Equations

## Minds on

### Slope and y-Intercept?

$$y = 4x - 5$$

The slope is 4

The y-intercept is -5

$$6x - 3y - 9 = 0$$

What's the slope and y-intercept???

slope: 6, 2, -3, 0

y-intercept: 9, -9, 3, 6  
-3

**Minds on**

## Slope and y-Intercept?

$$y = 4x - 5$$

The slope is 4

The y-intercept is -5

$$6x - 3y - 9 = 0$$

What's the slope and y-intercept???

The slope is 2

The y-intercept is -3

**BUT WHY?????**

Minds on

Today's topic!

## Standard Form Equations

$$6x - 3y - 9 = 0$$

What's the slope and y-intercept???

The slope is 2  
The y-intercept is -3  
**BUT WHY?????**

Because this line is currently in **Standard Form**.

We can only get the slope and y-intercept from lines that are in the form  $y = mx + b$ !!

How do we do that?? **next slide!**

**Minds on**

## Standard Form Equations

$$6x - 3y - 9 = 0$$

What's the slope and y-intercept???

To find the slope and y-intercept, we need to get the line into slope y-intercept form.

Basically... we need to isolate/rearrange and solve for y!!

(Remember this? We did it a few units ago!)

**We will do this on the next slide.  
Get excited!**

## Minds on

## Standard Form Equations

$$6x - 3y - 9 = 0$$

What's the slope and y-intercept???

1. First, we move every term **except the term with the y** in it to the **right side**.

$$\begin{array}{r} \cancel{6x} - 3y - \cancel{9} = 0 \\ -6x \quad +9 \quad -6x + 9 \end{array} \quad \begin{array}{l} \text{multiplying} \\ -3y = -6x + 9 \end{array}$$

2. Next, we divide **every term** by the **coefficient on y** to get y by itself.

$$\frac{-3y}{-3} = \frac{-6x}{-3} + \frac{9}{-3}$$

$$y = 2x - 3$$

The slope is 2  
The y-intercept is -3  
**BUT WHY?????**

→ That's why!

$$\cancel{4x} \quad \boxed{+2y} \quad \cancel{-6} = 0$$
$$-4x \quad +6 \quad -4x+6$$

$$\frac{\cancel{+2y}}{2} = \frac{-4x}{2} + \frac{6}{2}$$

$$y = -2x + 3$$



**Action!**

## Standard Form Equations

Standard form equations are in the form  $Ax + By + C = 0$

$A$ ,  $B$ , and  $C$  are integers! (no fractions)

Standard Form Equations are useful for many reasons but they are **not ideal** for finding the slope and y-intercept.

So, we often have to rearrange Standard Form Equations into slope y-intercept form ( $y = mx + b$ )

## Action!

# You Try With A Partner!

Determine the slope and y-intercept of the line.

$$3x + 5y - 7 = 0$$

1. First, we move every term except the term with the **y** in it to the **right side**.

$$\begin{array}{r} \cancel{3x} + 5y - \cancel{7} = 0 \\ -3x \quad +7 \quad -3x + 7 \end{array} \quad 5y = -3x + 7$$

2. Next, we divide every term by the **coefficient on y** to get y by itself.

$$\begin{array}{r} \cancel{5}y = \frac{-3x}{5} + \frac{7}{5} \\ y = \frac{-3x}{5} + \frac{7}{5} \end{array}$$

The slope is  $\frac{-3}{5}$

The y-intercept is  $\frac{7}{5}$

## Action!

# You Try On Your Own!!

Determine the slope and y-intercept of the line.

$$2x - 9y + 4 = 0$$

1. First, we move every term except the term with the **y** in it to the **right side**.

$$\begin{array}{r} 2x - 9y + 4 = 0 \\ -2x \quad -4 \quad -2x - 4 \end{array}$$

$$-9y = -2x - 4$$

2. Next, we divide every term by the **coefficient on y** to get y by itself.

$$\frac{-9y}{-9} = \frac{-2x}{-9} - \frac{4}{-9}$$

$$y = \frac{2x}{9} + \frac{4}{9}$$

A negative over a negative is a positive!!!

the slope is  $\frac{2}{9}$   
the y-intercept is  $\frac{4}{9}$

## Consolidation

### Exit Card

On the half piece of scrap provided, write your name and the question, then **SHOW ALL YOUR STEPS**

Find the slope and y-intercept of the line in Standard Form below.

$$5x - 4y - 20 = 0$$

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Page 312

#1-4, 7, 8, 10

**YOU DO NOT NEED TO GRAPH**  
**USE THE TIME IN CLASS.**

**Consolidation**

Practice it!

Page 312

#1-4, 7, 8, 10

**YOU DO NOT NEED TO GRAPH**

USE THE TIME IN CLASS.