

ECM - Unit 4 Linear and Exponential

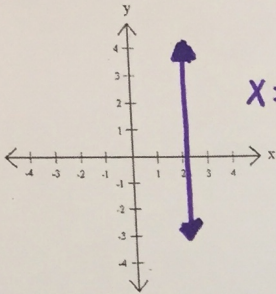
Linear Equations will have this form:

$y = mx + b$; Exponential Equ.: $y = a \cdot b^x$

Three Types of Linear Equations:

1. Vertical

Graph will look like:



An example of a vertical line is:

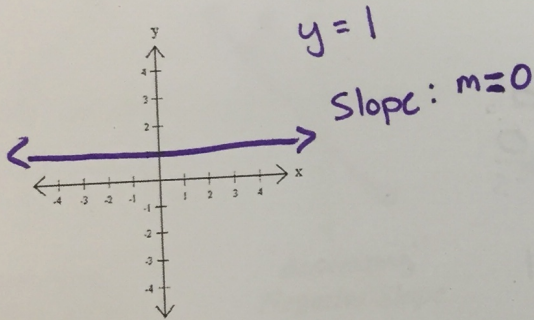
back bone, back while driving

Equation will look like:

$x = \#$

2. Horizontal

Graph will look like:



An example of a horizontal line is:

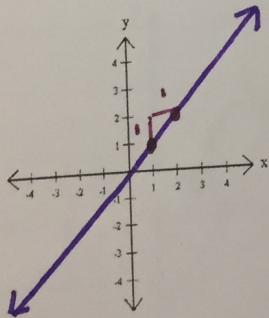
Horizon, College Rule Paper

Equation will look like:

$y = \#$

3. Oblique/diagonal

Graph will look like:



$y = x$
y-int: (0,0)
"Starting point"
Slope: $m = \frac{\text{rise}}{\text{run}} = \frac{1}{1}$

An example of a diagonal line is:

Hypotenuse of a Δ ; Hill (on a road)

Equation will look like:

$y = mx + b$

axes are like Intersections.

1 - Remember all of this

2

3

4

5 - What?? is linear??

Point (x, y)

$$\textcircled{1} \quad 2x + 3y = 12$$

$$\text{x-int: } \underline{(6, 0)}$$

$$y=0 \rightarrow 2x=12 \\ x=6$$

$$\text{y-int: } \underline{(0, 4)} \quad x=0$$

$$\textcircled{2} \quad -4x - 5y = 20$$

$$\text{x-int: } \underline{(-5, 0)}$$

$$\text{y-int: } \underline{(0, -4)}$$

$$\text{Set } x=0 \\ \underline{-5y = 20} \\ \underline{-5} \quad \underline{-5}$$

$$y = -4$$

When it comes to student success
wade.orr

ECM - Unit 4 Linear a

INTERCEPT crosses the X
the X-INTERCEPT, we

INTERCEPT crosses the
and the Y-INTERCEPT, w

d the X and Y-INTERC
Standard form: A
 $3x + 8y = -24$ Find

Which hill would yo

Draw a li

The X-INTERCEPT crosses the X-axis

To find the X-INTERCEPT, we set $y=0$ ($\#$, 0)

The Y-INTERCEPT crosses the y-axis

To find the Y-INTERCEPT, we set $x=0$ or $y=mx+b$ \leftarrow is y-int $(0, b)$

Find the X and Y-INTERCEPTS:

Standard form: $Ax + By = C$

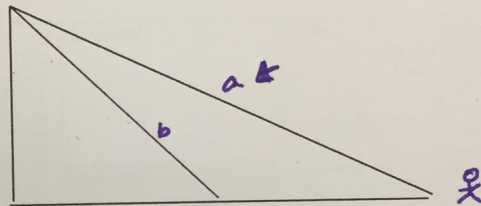
1. $3x + 8y = -24$

<p>Find y-int $x=0$ $8y = -24$ $\frac{8y}{8} = \frac{-24}{8}$ $y = -3$</p>	<p>Find x-int $y=0$ $3x = -24$ $\frac{3x}{3} = \frac{-24}{3}$ $x = -8$</p>
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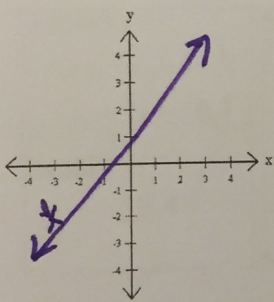
x-intercept: $(-8, 0)$

y-intercept: $(0, -3)$

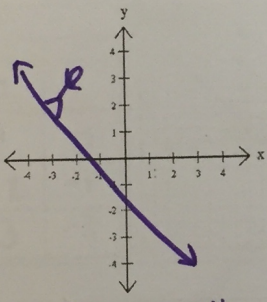
Which hill would you rather climb? Why? $x = -8$



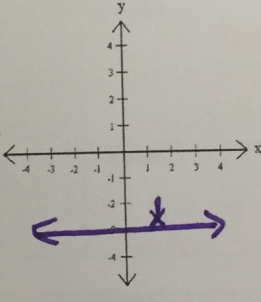
Draw a line with *positive*, *negative*, *zero*, and *undefined* slope:



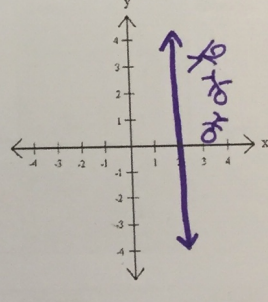
"Increasing"
Positive slope



"decreasing"
Negative Slope



Zero Slope



Undefined Slope

FINDING SLOPE:

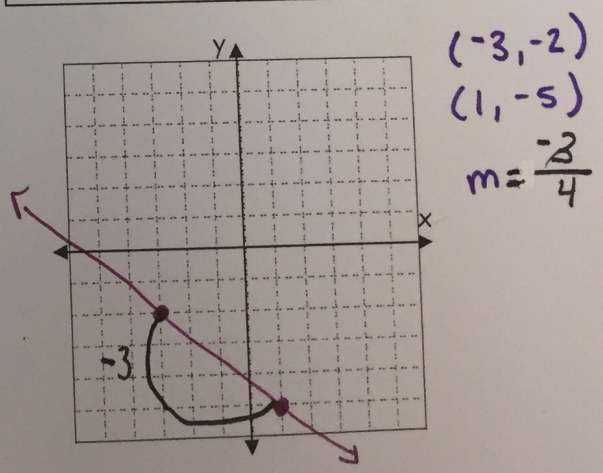
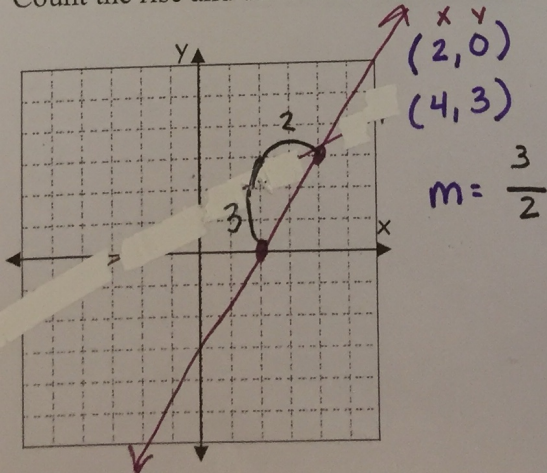
I. To find slope, if we have the graph of a line, we use the

Count the rise and the run and find the slope!

Rise over Run

method.

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



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

$$\text{slope} = \frac{-1}{3} \text{ or } \frac{1}{-3} \text{ or } -\frac{1}{3}$$

How do I graph a Linear Function?

Name: _____

<p>1) Verbal:</p> <p>The line has a y-intercept at (0, 5) and a slope of 2.</p> <p>Equation:</p> $y = 2x + 5$	<p>Table:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">X</th> <th style="width: 50%;">Y</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">7</td> </tr> <tr> <td style="text-align: center;">-1</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">-2</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>	X	Y	0	5	1	7	-1	3	-2	1	<p>Graph:</p>	<p>2) Verbal:</p> <p>Equation:</p> $y = -\frac{1}{3}x + 2$	<p>Table:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">X</th> <th style="width: 50%;">Y</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	X	Y									<p>Graph:</p>
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<p>3) Verbal: ✓</p> <p>Slope is -1 and y-int (0, 1)</p> <p>Equation:</p> $y = -1x + 1$	<p>Table:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">X</th> <th style="width: 50%;">Y</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">-1</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">-2</td> </tr> </tbody> </table>	X	Y	0	1	1	0	2	-1	3	-2	<p>Graph:</p>	<p>4) Verbal:</p> <p>The line has y-int (0, -4) and slope is 5</p> <p>Equation:</p> $y = 5x - 4 \text{ or } y = 5x + -4$	<p>Table:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">X</th> <th style="width: 50%;">Y</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">-4</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">11</td> </tr> </tbody> </table>	X	Y	0	-4	1	1	2	6	3	11	<p>Graph:</p>
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<p>5) Verbal:</p> <p>The x-intercept of the line is (4, 0) and the y-intercept is (0, -2).</p> <p>Equation:</p>	<p>Table:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">X</th> <th style="width: 50%;">Y</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	X	Y									<p>Graph:</p>	<p>6) Verbal:</p> <p>The line has a y-int of (0, -7) and slope of 3</p> <p>Equation:</p> $y + 1 = 3(x - 2)$ $y + 1 = 3x - 6$ $y = 3x - 7$	<p>Table:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">X</th> <th style="width: 50%;">Y</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">-7</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">-4</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">-1</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	X	Y	0	-7	1	-4	2	-1	3	2	<p>Graph:</p>
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