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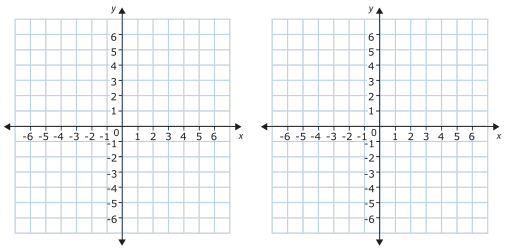
2.03 Key Features & Linear Functions Note Guide

Topics	Practice & Videos

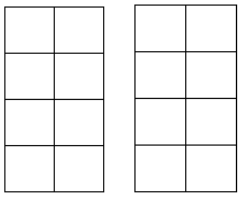
Linear Functions & Representations

Linear Function - A function whose graph is a _____ with the exception of a vertical line. (Think of it as _____).

- Graph (straight line, non-vertical)

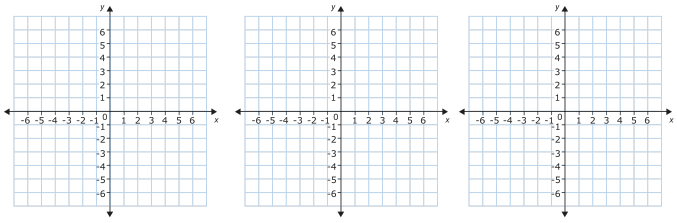


- Table



- Equation (highest variable exponent = 1)
  - _____
  - _____
  - _____
  - _____
- Verbal: description of linear function in _____.

NON-Examples Linear Functions:



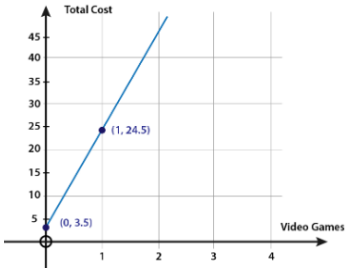
NON-Examples Linear Equations:

- _____
- _____
- _____
- _____

[2.03Video1]

These ALL represent the SAME linear function:

Graph



Table

d	f(d)
0	3.5
1	24.5
2	45.5
3	66.5

Equation: f(d) = 21d + 3.5

Verbal: Zora plans to purchase video games that cost $21 each. Regardless of how many video games she buys, she must buy a gallon of milk for her mom. The milk costs $3.50.

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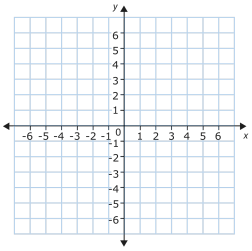
Intercepts

Intercept - where the line intersects the axes of the coordinate plane. (Think of it as _____)

- X Intercept - a line intersecting the _____
- Y Intercept - a line intersecting the _____

2.03Video2



Slope

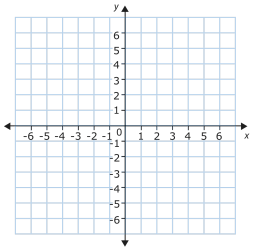
Slope - the direction of a line.

_____ = _____ = _____

2.03Video3

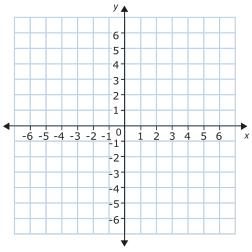
2.03Video4

Positive



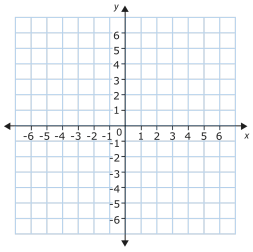
Slope: _____

Negative



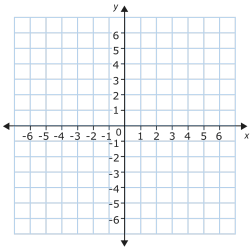
Slope: _____

Horizontal



Slope: _____

Vertical



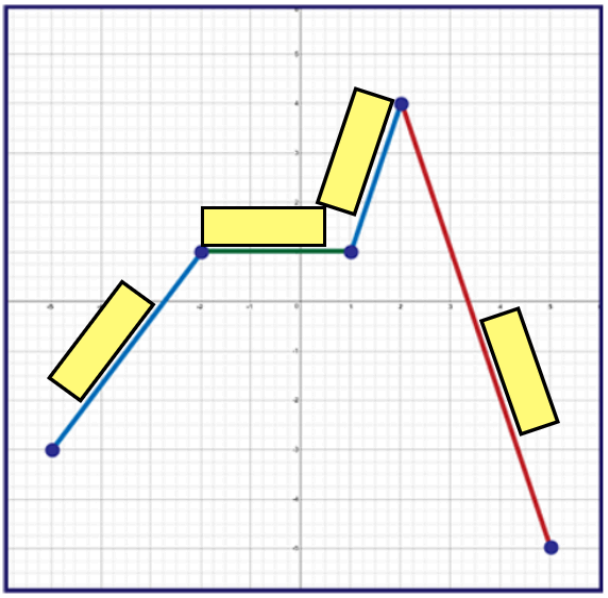
Slope: _____

CAUTION!!!: Keep the slope in fraction form (even a fraction greater than 1) because you want to know the rise (_____) and the run (_____). If you have a mixed number or a decimal, you do not have quick access to that information.

Intervals

2.03Video5

2.03Video6



x	f(x)
0	
1	
2	
3	
4	
5	

Variables

The _____ variable determines the _____ variable.

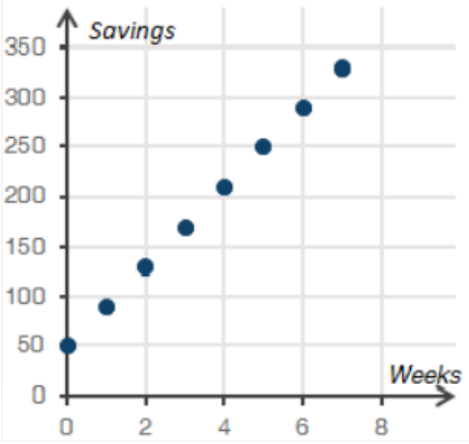
Example: School is out, and you want to save money for a summer camp. You already saved $25, and your parents will give you another $25. You work part time, which will allow you to save $40 per week for 7 weeks.

Table:

X _____	**F (x) = _____**
0	$50
1	$90
2	$130
3	$170
4	$210
5	$250
6	$290
7	$330

2.03Video7

Graph:



Linear Equation: Slope-Intercept Form

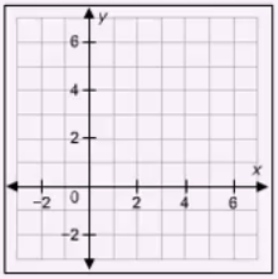
Slope-Intercept Form - a specific way of writing a linear equation in which the y variable is _____ on one side of the equation:

_____

m = _____

b = _____

Graph Equation Using Slope-Intercept Form



2.03Video8

2.03Video9

SHOW YOUR WORK:

$2x + 3y = 12$

Linear Equation: Standard Form

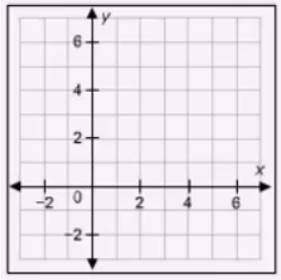
Standard Form - a specific way of writing a linear equation in which the x term and the y term are written on the _____ of the equal sign, with the constant (number) on the other side

_____

IMPORTANT! The three MUSTS of Standard Form

1) A, B, and C MUST be _____
2) A & B MUST be_____ numbers
3) A MUST be _____

Graph Equation Using Standard Form



2.03Video10

2.03Video11

SHOW YOUR WORK:

$Ax + By = C$

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Interpreting Descriptions

You can identify and interpret a linear function from a description.

Example: A car dealership has 15 cars to sell. Due to a holiday and unusual weather, the dealership does not sell any cars during a 10-day period.

Domain (__):_____

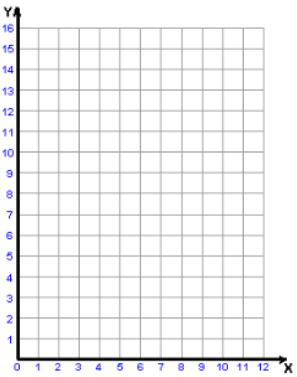
Range (__):_____

Slope:_____

Is the function increasing, decreasing, or staying constant?_____
Why?_____
What does this mean?_____

2.03Video12

x	y
0	15
1	15
2	15
3	15
4	15
5	15
6	15
7	15
8	15
9	15
10	15



Practice

Example 1
Write the equation y = -1/2x + 3 in standard form.

y = -1/2x + 3

_____

2y = -x + 6

_____

_____

2.03Video13

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- **Want More Practice?**

Topic	
Standard Form to Slope-Intercept Form	Try It
Converting to Standard Form	Try It
Finding x- and y-intercepts (Standard Form)	Try It
Intervals	Try It
Finding slope and y-intercepts (Slope-Intercept Form)	Try It