Indicator 26 Class Notes by Mrs. Joshi
Dependent and Independent Variables
(AL Standard 21, 21a)

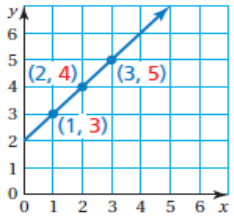
I can identify independent & dependent variables from word problems.
I can determine if an ordered pair is a solution to a two variable equation.

Key Idea

Graph of a Function

A function can be represented by a **graph**. The graph below is for the function $y = x + 2$.

Input, x	Output, y	Ordered Pair, (x, y)
1	3	(1, 3)
2	4	(2, 4)
3	5	(3, 5)



When you draw a line through the points, you graph *all* of the solutions of $y = x + 2$.

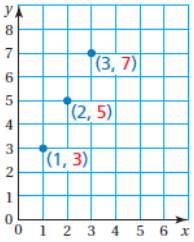
EXAMPLE 1 Graphing a Function

Graph $y = 2x + 1$.

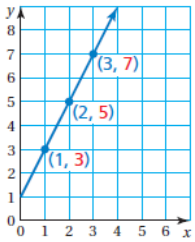
Make an input-output table. Use the values 1, 2, and 3 for x.

x	$y = 2x + 1$	y	(x, y)
1	$y = 2(1) + 1$	3	(1, 3)
2	$y = 2(2) + 1$	5	(2, 5)
3	$y = 2(3) + 1$	7	(3, 7)

Plot the ordered pairs.



Draw a line through the points.



Indicator 26 Class Notes by Mrs. Joshi

EXAMPLE 2 Graphing a Function

Use the function $p = 20g$ to find the number of pounds p of carbon dioxide produced by burning g gallons of gasoline. Graph the function.

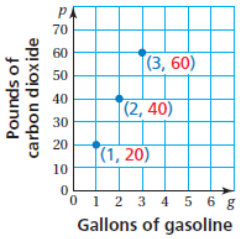
Make an input-output table.

Input, g	$p = 20g$	Output, p	Ordered Pair, (g, p)
1	$p = 20(1)$	20	(1, 20)
2	$p = 20(2)$	40	(2, 40)
3	$p = 20(3)$	60	(3, 60)

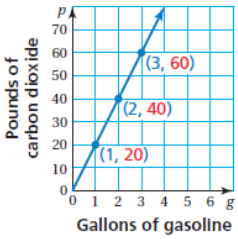
Reading

Because you cannot have a negative number of gallons, use only positive values of g.

Plot the ordered pairs.



Draw a line through the points.



Summary

Representing a Function

There are several ways to represent a function.

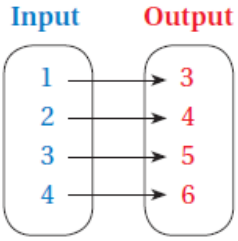
Words Each output is 2 more than the input.

Equation $y = x + 2$

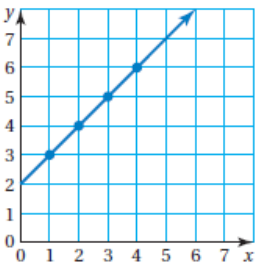
Input-Output Table

Input, x	Output, y
1	3
2	4
3	5
4	6

Mapping Diagram



Graph



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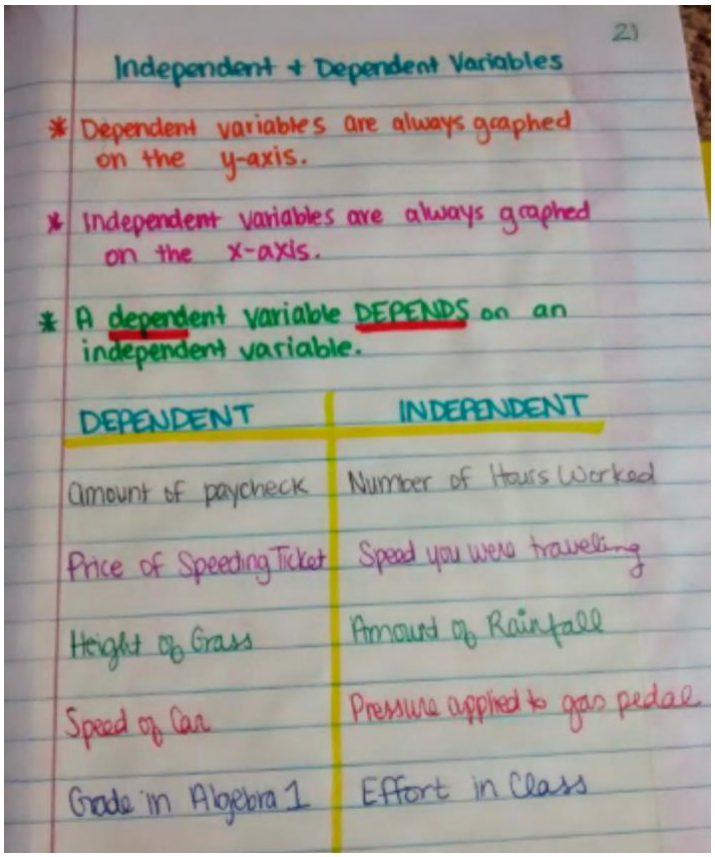
Dependent and Independent Variable

There are two **variables**. One is called the **independent variable** (*often represented by x*) and the other is called the **dependent variable** (*often represented by y*). The **variable** whose value does not depend on the other **variable** is the **independent variable** (*often represented by x*). The **variable** (*often represented by y*) whose value depends on the other **variable** is the **dependent variable**.



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What is an example of a dependent variable in math?

The "output" value of a function.
(It is called **dependent** because its value depends on what you put into the function.) **Example**: $y = x^2$.

- x is **an Independent Variable**.
- y is the **Dependent Variable**.