

# Independent and Dependent Variables

Real World Connection

**Variable**: a quantity or condition that can change

**Independent Variable**: a variable that stands alone and isn't changed by other variables  
- you can control it

**Dependent Variable**: a variable that can change and depends on other factors  
-you cannot control it

Independent Variables

Dependent Variables

Minutes used

Cell phone bill

Number of cookies

Total calories and fat

How fast you drive

Time it takes to drive  
somewhere

The number of  
assignments you turned  
in

Your math grade

How much money you  
earn

The hours you work

How many miles you  
went over the speed limit

Cost of a speeding ticket


Applying Real World to Math

**Variable:** a letter or symbol that represents a number.

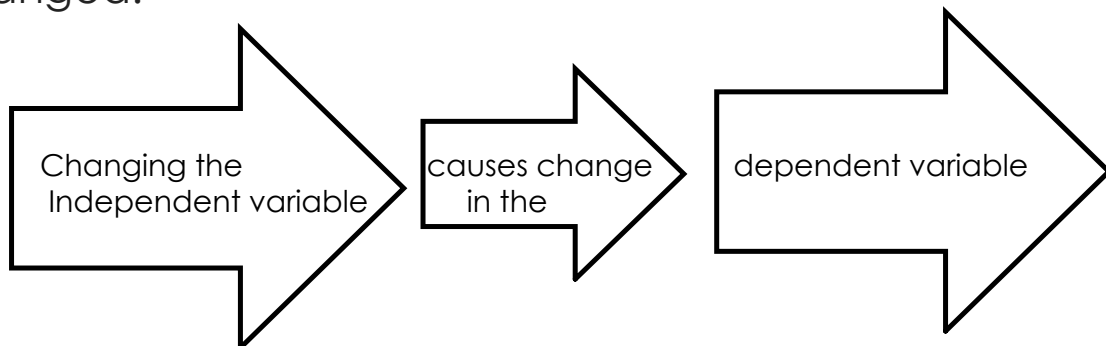
**Independent Variable:** is a variable in an equation that may have its value freely chosen without considering values of any other variable.

**Dependent Variable:** is a variable whose value depends on the values of one or more independent variables.

EX:  $y = 3x - 2$

- the **independent variable** is x
- the y is **dependent** since it depends on the number chosen for x

- If an equation shows a relationship between  $x$  and  $y$  in which the value of  $y$  is dependent upon the value of  $x$ ,  $y$  is known as the dependent variable and is sometimes referred to as 'function( $x$ )' or  $f(x)$ .
- The final solution of the equation,  $y$ , depends on the value of  $x$ , the independent variable which can be changed.



The dependent variable depends on the independent variable:

- X is always the independent variable (Input)
- Y is always the dependent variable. (Output)
  - What you get out depends on what you put in.

Translate each statement into a mathematical equation.  
Then complete the function table.

y is equal to 3 less than the product of 4 and x

$$y = 4x - 3$$

Substitute  
each  
value

x	y
3	9
5	17
8	29
10	37



Translate each statement into a mathematical equation.  
Then complete the function table.

y is equal to the sum of 10 and x divided by 2

$$y = \frac{10+x}{2}$$

x	y
2	6
4	7
8	9
12	11

Determine the equation that matches the function table.

$$y = x + 7$$

x	y
2	9
5	12
7	14

Determine the equation that matches the function table.

$$y = 2x - 4$$

x	y
8	12
9	14
12	20

Complete the function table  
Then graph the equation

$$y = 2x + 1$$

x	y
1	3
2	5
3	7

