## Lesson 12: Connections between Graphs and Equations

* Let’s examine some situations, equations, and graphs.

### 12.1: Math Talk: Evaluating a Function

Here is a function: $g\left(x\right)=100−5x$

Evaluate mentally:

$g\left(0\right)$

$g\left(1\right)$

$g\left(4\right)$

$g\left(20\right)$

### 12.2: Bank Accounts

Each function represents the amount in a bank account after $t$ weeks.

$A\left(t\right)=500$

$B\left(t\right)=500+40t$

$C\left(t\right)=500−40t$

$D\left(t\right)=500⋅\left(1.5\right)^{t}$

$E\left(t\right)=500⋅\left(0.75\right)^{t}$

1. Make a table for each bank account showing the money in the account at 0, 1, 2, and 3 weeks.
2. Describe in words how the money in the account is changing week by week.
3. Use technology to create a graph of each function. How can you see your description in each graph?

### 12.3: Build a New Function

Consider the same five functions:

$A\left(t\right)=500$

$B\left(t\right)=500+40t$

$C\left(t\right)=500−40t$

$D\left(t\right)=500⋅\left(1.5\right)^{t}$

$E\left(t\right)=500⋅\left(0.75\right)^{t}$

1. Starting with one of the functions, change it so that it represents an account that . . .
	1. Starts with a balance of $300, and loses $40 each week.
	2. Starts with a balance of $500, and gains $15 each week.
	3. Starts with a balance of $500, and loses $\frac{1}{10}$ of its value each week.
	4. Starts with a balance of $700, and gains $\frac{3}{10}$ of its value each week.
2. Here are four graphs. Which graph matches each of your new equations?
* graph 1
* 
* graph 2
* 
* graph 3
* 
* graph 4
* 
1. To check, use technology to graph your equations. Make sure to use the same graphing window. Check that the graph of your equation matches the graph you chose.



© CC BY 2019 by Illustrative Mathematics®