

Unit 5 Lesson 12: Connections between Graphs and Equations

1 Math Talk: Evaluating a Function (Warm up)

Student Task Statement

Here is a function: $g(x) = 100 - 5x$

Evaluate mentally:

$$g(0)$$

$$g(1)$$

$$g(4)$$

$$g(20)$$

2 Bank Accounts

Student Task Statement

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

$$A(t) = 500$$

$$B(t) = 500 + 40t$$

$$C(t) = 500 - 40t$$

$$D(t) = 500 \cdot (1.5)^t$$

$$E(t) = 500 \cdot (0.75)^t$$

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?

3 Build a New Function

Student Task Statement

Consider the same five functions:

$$A(t) = 500$$

$$B(t) = 500 + 40t$$

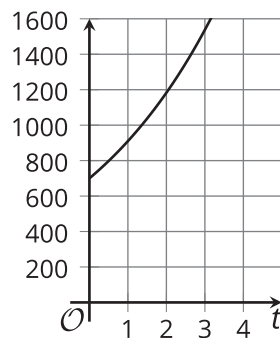
$$C(t) = 500 - 40t$$

$$D(t) = 500 \cdot (1.5)^t$$

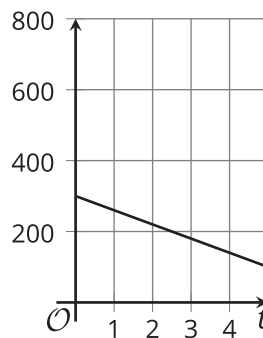
$$E(t) = 500 \cdot (0.75)^t$$

- Starting with one of the functions, change it so that it represents an account that . . .
 - Starts with a balance of \$300, and loses \$40 each week.
 - Starts with a balance of \$500, and gains \$15 each week.
 - Starts with a balance of \$500, and loses $\frac{1}{10}$ of its value each week.
 - Starts with a balance of \$700, and gains $\frac{3}{10}$ of its value each week.
- Here are four graphs. Which graph matches each of your new equations?

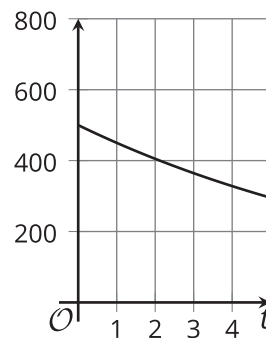
graph 1



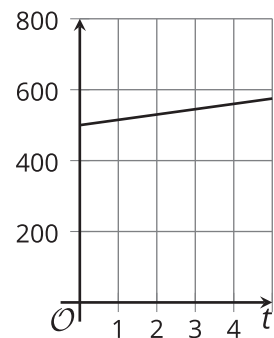
graph 2



graph 3



graph 4



- 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.