

Check your grade in MATH.

Formative....Correct and turn it homework.

Summative....Fill out retake form.

**Answers**

1. a) 4                      b) 50

2. a) 15                      b)  $10\frac{2}{3}$

3. Range = 14  
Median = 3

4. a) 34                      b) 69

5. \$1040

## COLLEGE FUND

Five years ago, Gustavo's grandmother put some money in a college savings account for him on his birthday. The account pays simple interest, and now, after five years, the account is worth \$500. Gustavo predicts that if he does not deposit or withdraw any money, then the account balance will be \$1000 five years from now.

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- a. How do you think Gustavo made his prediction?  
Ten years is double five years, and \$1000 is double \$500.
- b. Do you agree with Gustavo's reasoning? Explain why or why not.

No. The \$500 in the bank is not all interest. Grandma had to start with some money at the beginning, or the bank won't pay.

Last week, Gustavo got his bank statement in the mail. He was surprised to see a graph that showed that, although his balance was growing at a steady rate, the bank predicted that in five years his account balance would be only \$600. “What is going on?” he wondered. “Why isn’t my money growing the way I thought it would?”

With your team, discuss how much Gustavo’s account appears to be growing every year. Why might his account be growing in a different way than he expected? Be ready to share your ideas.

Gustavo decided to look more carefully at his balances for the last few years to see if the bank’s prediction might be a mistake. He put together the table below.

Time Since Original Deposit (years)	2	3	4	5
Bank Balance (dollars)	440	460	480	500

- a. How has Gustavo’s bank balance been growing?

Adding \$20 each year.

Time Since Original Deposit (years)	2	3	4	5
Bank Balance (dollars)	<u>440</u>	460	<u>480</u>	500

- b. Does Gustavo's money seem to be doubling as the number of years doubles? Explain your reasoning.

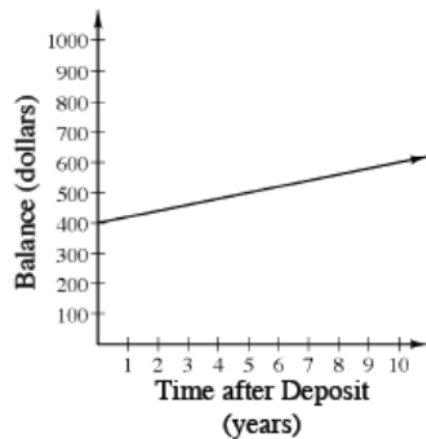
No, if you double the number of years from 2 to 4, the money doesn't double.

- c. Is the bank's prediction a mistake? Explain your answer.

No. The money can't double, since some of the \$500 was in the bank on the first day.

Once Gustavo saw the balances written in a table, he decided to take a closer look at the graph from the bank to see if he could figure out where he made the mistake in his prediction. Find the graph at right on the Lesson 4.2.1 Resource Page.

- a. There is additional information about Gustavo's account that you can tell from the graph. For example, what was his starting balance? How much does it grow in 5 years?

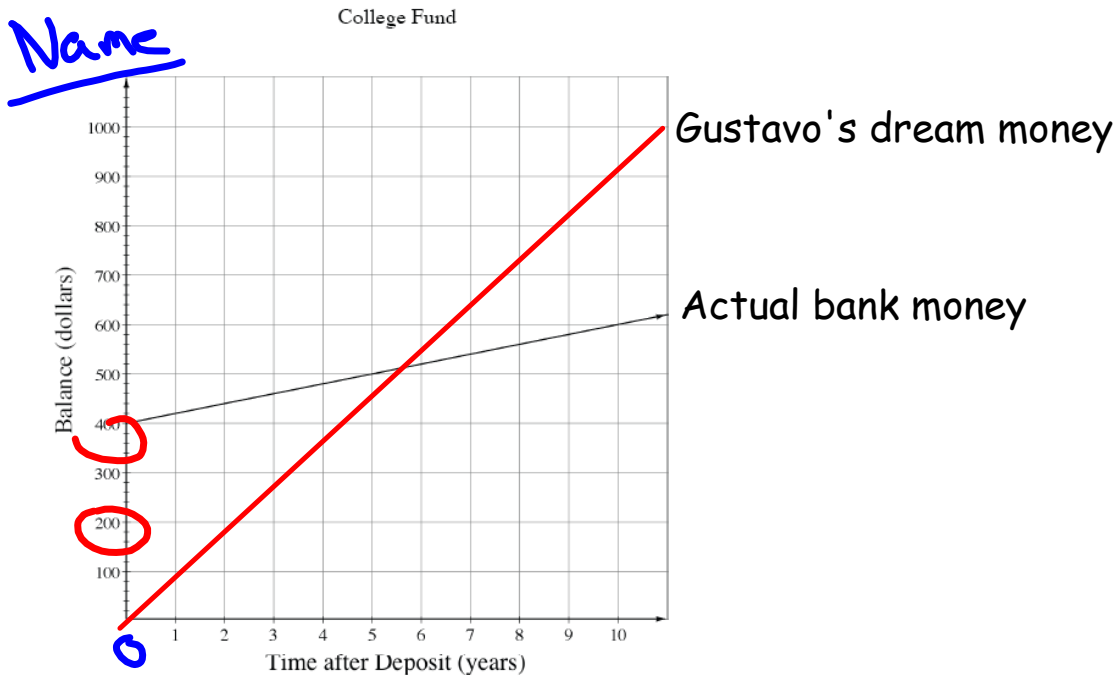


\$400

Grows by \$200, to \$600

Gustavo had assumed his money would double after 10 years. What would the graph look like if that were true? Add a line to the graph that represents what Gustavo was thinking.

Lesson 4.2.1 Resource Page



Is it possible that Gustavo's account could have had \$0 in it in Year 0? Why or why not?

No. The bank won't give any interest to \$0.

## FOR THE BIRDS

When filling her bird feeder, Sonja noticed that she paid \$27 for four pounds of bulk birdseed. *“Next time, I’m going to buy 8 pounds instead so I can make it through the spring. That should cost \$54.”*

- a. Does Sonja’s assumption that doubling the amount of birdseed would double the price make sense? Why or why not? How much would you predict that 2 pounds of birdseed would cost?



Yes, if she bought twice as much bulk birdseed, then it would cost twice as much.

- b. To check her assumption, she found a receipt for 1 pound of birdseed. She decided to make a table, which is started below. Copy and complete her table.

Pounds	0	1	2	3	4	5	6	8
Cost	\$0	\$6.75	13.50	20.25	\$27	\$33.75	\$40.50	\$54

$$\begin{aligned} & \text{pounds: } 7 \\ \therefore & \text{Cost: } 47.25 \end{aligned}$$

How do the amounts in the table grow? 😊

If you double the pounds of seed, then you double the cost.


Does the table confirm Sonja's doubling relationship? Give two examples from the table that show how doubling the pounds will double the cost.



The pattern of growth in Sonja's example of buying birdseed is an example of a **proportional relationship**. In a proportional relationship, if one quantity is multiplied by a scale factor, the other is scaled by the same amount. Gustavo's bank account is *not* proportional, because it grows differently; when the number of years doubled, his balance did not.

## Proportional Relationship

If one quantity is doubled, then the other quantity will double.



## Proportional Relationship

If one is doubled, then the other will double.

### **IS IT PROPORTIONAL?**

Carlos wants to buy some new video games. Each game he buys costs him \$36. Is the relationship between the number of games Carlos buys and the total price proportional?

Yes

If you double the number of games, then you double the cost.

## Proportional Relationship

If one is doubled, then the other will double.

### **IS IT PROPORTIONAL?**

A single ticket to a concert costs \$56, while buying five tickets costs \$250. Is the relationship between the number of tickets bought and the total price proportional?

No, because if you buy five tickets at \$250, it won't cost five times the price of one ticket, at \$56.

