Name _____ Date _____

Personal Financial Literacy

Explore

Directions: Complete the tables below for two bank customers who each opened a different type of bank account at the same time with the same opening balance.

Jacob opened a savings account paying 5.25% simple interest each year. He began with $400 and will leave the account open for at least 5 years.

Year	Amount to Earn Interest	Interest Rate	Interest Earned (Amount × Rate)	Ending Balance
1	$400	5.25%	$400 × 0.0525 = $21.00	$400
2	$400	5.25%		
3		5.25%		
4		5.25%		
5		5.25%		
Total				

Caleb opened a savings account paying 5.25% compound interest each year. He began with $400 and will leave the account open for at least 5 years.

Year	Amount to Earn Interest	Interest Rate	Interest Earned (Amount × Rate)	Ending Balance
1	$400.00	5.25%	$400 × 0.0525 = $21.00	$421.00
2	$421.00	5.25%		
3		5.25%		
4		5.25%		
5		5.25%		
Total				

1. Who earned more interest, Jacob or Caleb? Why do you think that is the case?

Name _____ Date _____

2. Take another look at Caleb's table. The ending balance was calculated as $400 × 0.0525 + $400, which is equivalent to the expression $400(1.0525). Complete a new table using this approach to determine Caleb's ending balance at the end of each year.

Year	Amount to Earn Interest	Interest Rate	Ending Balance
1	$400.00	5.25%	$400 × 1.0525 = $421.00
2	$421.00	5.25%	$421 × 1.0525 = $443.10
3		5.25%	
4		5.25%	
5		5.25%	

3. The compound interest formula, for interest that is compounded once per year, is $A = P(1 + r)^t$, where A is the ending balance, P is the principal, or initial deposit, r is the annual interest rate as a decimal, and t is the number of years the interest will be compounded. How does this formula relate to Caleb's second table?

4. The compound interest formula, for interest that is compounded more than once per year, is $A = P\left(1+\frac{r}{n}\right)^{nt}$, where A is the ending balance, P is the principal, or initial deposit, r is the annual interest rate as a decimal, n is the number of times each year the interest is compounded, and t is the number of years the interest will be compounded. How is this formula similar to the compound interest formula for one year, and how is it different?

Debriefing Questions:

1. Which do you think would generate more interest, an account that is compounded once per year or one that is compounded 4 times per year? Explain your reasoning.

Name_____Date_____

2. Which do you think would generate more interest, an account that is compounded 4 times per year or one that is compounded 12 times per year? Explain your reasoning.

3. Credit card interest charges are also computed using compound interest. Some cards compound monthly, and some cards compound daily. Which do you think would yield a lesser amount of interest: a credit card that is compounded daily or one that is compounded monthly?