

Investigating Interest with the *fx-9750G PLUS* A Pre-Algebra Activity

Many middle school students have savings accounts and some notion of the idea of **interest**. The calculator can be used to help them discover some of the concepts of **simple and compound interest** for themselves. Building conceptual knowledge of the *power of compounding* will serve them well in school mathematics as well as the real world of finance.

Have students complete the following charts with the *fx-9750G PLUS* using the formula for simple interest $I = PRT$.

Students: Use your calculator to find the new principle in your savings account at the end of one year for the following:

Principle	Rate	Interest	New Principle
\$100	4.5%	$\$100 \times 4.5\% = \4.50	$\$100 + \$4.50 = \$104.50$
\$500	5%		
\$750	4%		
\$1000	5.5%		

$100 \times .045$	4.5
$100 + 4.5$	104.5

Try a different method. Complete the following chart by multiplying the principle by $(1+R)$.

Principle	Rate	Principle * (1+Rate)
\$100	4.5%	$\$100 \times (1 + .045) =$
\$500	5%	
\$750	4%	
\$1000	5.5%	

$100 \times (1 + .045)$	104.5
100×1.045	104.5

What did you discover? Work with a partner to write an explanation of the results.

Teacher: After a **thorough** class discussion of why we can eliminate that step (principle + interest = new principle) in determining the principle amount, pose the following problem to them:

Suppose you have \$100 to invest in a savings account. Let's investigate your earnings over several years at an annual interest rate of 4.5%. We will figure (**compound**) this interest at the end of each year.

The amount of money in your account at the end of the first year will be $\$100 \times (1.045)$ or \$104.50. Use your calculator to complete the following chart:

Time (in years)	New Principle
1	$\$100 \times 1.045 = \104.50
2	$\$100 \times 1.045 \times 1.045 =$
3	$\$100 \times 1.045 \times 1.045 \times 1.045 =$
4	
5	
6	
7	
8	
9	
10	

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100×1.045
104.5
100×1.045×1.045
109.2025
100×1.045×1.045×1.045
114.1166125
    
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Did you find a shortcut while you were working? Work with a partner to write a short formula for finding the interest on savings compounded annually.

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100×1.045^4
119.2518601
    
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Once again, after a **thorough** class discussion of the formula $I = P*(1+R)^T$ ask them if they think it might be beneficial for a savings institution to compound their interest more often.

Work through the formula for finding compound interest $I = P*(1 + \frac{R}{N})^{NT}$ where N is the number of times per year the interest is calculated with the students. Have them complete the following chart using the formula and their calculators to determine how much difference the number of times per year the interest is compounded on \$100 invested at 4.5% for 10 years:

T	N	New Principle
10	Annually (1)	$\$100(1 + \frac{0.045}{1})^{(1*10)} =$
10	Semi-annually (2)	$\$100(1 + \frac{0.045}{2})^{(2*10)} =$
10	Quarterly (4)	
10	Monthly (12)	
10	Weekly (52)	
10	Daily (365)	

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100(1+(0.045÷1))^(1×10)
155.2969422
100(1+(0.045÷2))^(2×10)
156.0509201

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What did you learn? What would you do with your money? Investigate the possibilities at financial institutions in your area. What are their interest rates? Why more than one? How often do they compound interest?