



Name \_\_\_\_\_ Date \_\_\_\_\_

## TIME VALUE OF MONEY

Directions: As a group, use a financial function calculator, a spreadsheet program with time value-of-money functions, or financial function calculators on the Internet to solve the following problems.

1. Diane invests \$500 today in an account earning 7%. How much will it be worth in 5 years? \_\_\_\_\_ 10 years? \_\_\_\_\_ 20 years? \_\_\_\_\_
2. Same facts as #1, except Diane finds an account earning 10%. How much will it be worth in 5 years? \_\_\_\_\_ 10 years? \_\_\_\_\_ 20 years? \_\_\_\_\_
3. Elaine needs to save up \$4,000 in 4 years. If she can set aside \$1,000 today, what rate of return does she need on her account? \_\_\_\_\_
4. Same facts as in #3, except now Elaine can set aside \$50 per month. What rate of return does she need on her account? \_\_\_\_\_
5. Frank wants to buy a \$10,000 car. The car dealer offers him financing of 60 payments at 9% interest. What will his payments be? \_\_\_\_\_
6. Same facts as #5, except the dealer also offers 48 payments at 8%. Now what will Frank's payments be? \_\_\_\_\_
7. Gayle has a credit card with a \$500 balance on it and a 19% interest rate. If he wants to pay off his card in two years, what will his monthly payments be? \_\_\_\_\_ How much interest will he pay? \_\_\_\_\_
8. Same facts as #7, except now the balance is \$2,500. What will Gayle's monthly payments be? \_\_\_\_\_ How much interest will he pay? \_\_\_\_\_

# Time Value of Money KEY

1. Diane invests \$500 today in an account earning 7%. How much will it be worth in 5 years? **\$701** 10 years? **\$984** 20 years? **\$1,935**

Example for 5 years:

See The Effects Of Compound Interest On Your Future Value

## What Is The Value Of Compound Interest?

Compound interest can have a dramatic effect on the growth of an investment. Use this interest calculator to illustrate the impact of compound interest on the future value of an asset.

Savings and Assumptions	
Initial balance or deposit (\$)	<input type="text" value="500"/>
Annual savings amount (\$)	<input type="text" value="0"/>
Annual increase in contributions	<input type="text" value="0%"/>
Number of years for the analysis	<input type="text" value="5"/>
Before-tax return on savings: (%)	<input type="text" value="7%"/> ?

Answer

## RESULTS

Compound interest is the difference between the cash you contribute to an investment and the actual future value of the investment. In this case, by contributing just \$0 per year with the annual contribution being increased by 0% per year (cumulative contributions of \$500) you are able to accumulate \$701 over 5 years. Compound interest makes up \$201 of your future balance.

2. Same facts as #1, except Diane finds an account earning 10%. How much will it be worth in 5 years? **\$805** 10 years? **\$1,297** 20 years? **\$3,364**
3. Elaine needs to save up \$4,000 in 4 years. If she can set aside \$1,000 today, what rate of return does she need on her account? **41%**
4. Same facts as in #3, except now Elaine can set aside \$50 per month. What rate of return does she need on her account? **24%**
5. Frank wants to buy a \$10,000 car. The car dealer offers him financing of 60 payments at 9% interest. What will his payments be? **\$208**
6. Same facts as #5, except the dealer also offers 48 payments at 8%. Now what will Frank's payments be? **\$244**
7. Gayle has a credit card with a \$500 balance on it and a 19% interest rate. If he wants to pay off his card in two years, what will his monthly payments be? **\$25.20** How much

interest will he pay? **\$104.80** ( $\$25.20 \times 24 = \$604.80$ , less the \$500 original balance = **\$104.80**)

8. Same facts as #7, except now the balance is \$2,500. What will Gayle's monthly payments be? **\$126.02** How much interest will he pay? **\$524.48**  
( $\$126.02 \times 24 = \$3,024.48$ , less the original balance of \$2,500 = **\$524.48**)