

# INTRODUCTION TO FINANCIAL CALCULATORS

|    |                       |
|----|-----------------------|
|    | Total Points Earned   |
| 13 | Total Points Possible |
|    | Percentage            |

Name \_\_\_\_\_

Date \_\_\_\_\_

Class \_\_\_\_\_

Directions: Complete the following questions during the *Introduction to Financial Calculators* PowerPoint presentation 1.6.1.G1 (BAII Plus).

1. What is the time value of money? (1 point)
  
2. Define interest rate (I/Y). (1 point)
  
3. What is the difference between simple interest and compound interest? (2 points)
  
4. Define future value (FV). (1 point)
  
5. Define present value (PV). (1 point)
  
6. What is the difference between a single sum and an annuity formula? (2 points)
  
7. What two variables must be converted to the same time periods when completing calculations? (2 points)
  
8. Name three types of applications to use a financial calculator for when trying to make financial decisions. (3 points)

# USING FINANCIAL CALCULATORS

|    |                       |
|----|-----------------------|
|    | Total Points Earned   |
| 32 | Total Points Possible |
|    | Percentage            |

Name \_\_\_\_\_

Date \_\_\_\_\_

Class \_\_\_\_\_

**Directions:** Fill in the following blanks and complete the calculations. Blanks are worth 1 point each.

### Monthly Payment Calculation:

Jim's New Bike

- ★ Loan \$1,000
- ★ 14.0% APR compounded monthly
- ★ 1 year to pay
- ★ What is Jim's monthly payment?

*Turn power on.*  
*Reset*  
*Turn power off*  
*Turn power on.*  
*Clear worksheet.*  
*Set decimal to 2 places.*  
*Set payments per year to 12.*  
*Return to standard-calculator mode.*  
*Enter number of payments.*  
*Enter interest rate.*  
*Enter present value.*  
*Compute monthly payment.*

| Press                               | Display       |
|-------------------------------------|---------------|
| ON/OFF                              | 0.00          |
| [2 <sup>nd</sup> ] Reset [Enter]    | RST 0.00      |
| ON/OFF                              |               |
| ON/OFF                              | 0.00          |
| [2 <sup>nd</sup> ] Clr Work         | 0.00          |
| [2 <sup>nd</sup> ] Format 2 [Enter] | DEC = 2.00    |
| [2 <sup>nd</sup> ] P/Y 12 [Enter]   | P/Y = 12.00   |
| [2 <sup>nd</sup> ] Quit             | 0.00          |
| 1 [2 <sup>nd</sup> ] xP/Y [N]       | N = 12.00     |
| 14 [I/Y]                            | I/Y = 14.00   |
| 1000 [PV]                           | PV = 1,000.00 |
| [CPT] [PMT]                         | PMT = -89.79  |

Jim's monthly payment is \$89.79.

- In the example above, find **N = 12.00** in the display column. Notice that 12.00 indicates the total number of payments (N). What two numbers were multiplied together to find the value of N?

\_\_\_\_\_ year(s) x \_\_\_\_\_ months = 12.00 payments

- Find **I/Y = 14.00** in the display column. I/Y indicates the interest rate per year which was provided in the scenario as 14.0% APR compounded monthly. Since the interest is compounded each month, the calculator automatically generates the monthly interest rate using the entered value of I/Y = 14.00. To calculate the interest percentage rate per month, fill in the missing blank below, and complete the calculation.

14.00 % APR / \_\_\_\_\_ months = \_\_\_\_\_ % per month

- To calculate how much interest he paid during the life of his loan, look at the following calculations and complete the steps.

**Step 1:**

$$\begin{array}{r} \longrightarrow \$ \quad \text{monthly payment} \\ \times \quad \underline{\quad 12 \quad} \text{ months} \\ \\ \$ 1,077.45 \text{ total amount paid} \end{array}$$

**Step 2:**

$$\begin{array}{r} \$ 1,077.45 \text{ total amount paid} \\ \longrightarrow - \$ \quad \quad \quad \text{loan amount} \\ \\ \longrightarrow \$ \quad \quad \quad \text{total interest paid} \end{array}$$

**Future Value Calculation:**  
Molly's Certificate of Deposit (CD)

- ★ Invested \$3,000
- ★ 6.5% APR compounded monthly
- ★ 3 years
- ★ How much will Molly earn after 3 years?

Molly's  
have a  
value of

*Turn power on.*  
*Reset*  
*Turn power off.*  
*Turn power on.*  
*Clear worksheet.*  
*Set decimal to 2 places.*  
*Set payments per year to 12.*  
*Return to standard-calculator mode.*  
*Enter number of payments.*  
*Enter interest rate.*  
*Enter present value.*  
*Compute future value.*

| Press                               | Display        |
|-------------------------------------|----------------|
| ON/OFF                              | 0.00           |
| [2 <sup>nd</sup> ] Reset [Enter]    | RST 0.00       |
| ON/OFF                              |                |
| ON/OFF                              | 0.00           |
| [2 <sup>nd</sup> ] Clr Work         | 0.00           |
| [2 <sup>nd</sup> ] Format 2 [Enter] | DEC = 2.00     |
| [2 <sup>nd</sup> ] P/Y 12 [Enter]   | P/Y = 12.00    |
| [2 <sup>nd</sup> ] Quit             | 0.00           |
| 3 [2 <sup>nd</sup> ] xP/Y [N]       | N = 36.00      |
| 6.5 [I/Y]                           | I/Y = 6.50     |
| 3000 [+/-] [PV]                     | PV = -3,000.00 |
| [CPT] [FV]                          | FV = 3,644.01  |

CD will  
future  
\$3,644.01

- In the example above, find **N = 36.00** in the display column. Notice that 36.00 indicates the total number of payments (N). What two numbers were multiplied together to find the value of N?

$$\underline{\quad\quad\quad} \text{ years } \times \underline{\quad\quad\quad} \text{ months } = \underline{\quad 36.00 \quad}$$

- Now find **I/Y = 6.50** in the display column. I/Y indicates the interest rate per year which was provided in the scenario as 6.5% APR compounded monthly. Since the interest is compounded each month, the calculator automatically generates the monthly interest rate using the entered value of I/Y = 6.50. What other number would be used to figure out the interest percentage rate per month? Complete the calculation.

$$\underline{\quad 6.5 \quad} \% \text{ APR } / \underline{\quad\quad\quad} \text{ months } = \underline{\quad\quad\quad} \% \text{ per month}$$

- To calculate how much interest she earned on her CD, fill in the missing information and complete the following calculation.

$$\begin{array}{r} \$ \quad \quad \quad \text{value of CD after 3 years (FV)} \\ \\ - \underline{\quad\quad\quad} \text{ principal amount (PV)} \\ \\ \$ \quad \quad \quad \text{total interest earned} \end{array}$$

What would the future value of her CD be if it was invested for 5 years? \_\_\_\_\_  
(Hint: Substitute "5" into the original equation)

**Time Length Calculation:**  
Jason's TV

- ★ Loan \$750
- ★ 13.99% APR compounded monthly
- ★ \$75 payment per month
- ★ How long will it take Jason to pay for his new TV?

**Directions:** Fill in the missing blanks indicated by the arrows in the chart below.

|                                     | Press                               | Display     |
|-------------------------------------|-------------------------------------|-------------|
| Turn power on.                      | ON/OFF                              | 0.00        |
| Reset                               | [2 <sup>nd</sup> ] Reset [Enter]    | RST 0.00    |
| Turn power off.                     | ON/OFF                              |             |
| Turn power on.                      | ON/OFF                              | 0.00        |
| Clear worksheet.                    | [2 <sup>nd</sup> ] Clr Work         | 0.00        |
| Set decimal to 2 places.            | [2 <sup>nd</sup> ] Format 2 [Enter] | DEC = 2.00  |
| Set payments per year to 12.        | [2 <sup>nd</sup> ] P/Y 12 [Enter]   | P/Y = 12.00 |
| Return to standard-calculator mode. | [2 <sup>nd</sup> ] Quit             | 0.00        |
| Enter payment amount.               | 75 [PMT]                            | PMT = 75.00 |
| Enter interest rate.                | [I/Y]                               | I/Y =       |
| Enter amount of loan.               | [FV]                                | FV =        |
| Compute number of payments.         | [CPT] [ ]                           | N = 10.69   |

Jason will take 10.69 months to pay off his TV.

- How many year(s) will this take? \_\_\_\_\_
- Now find I/Y = \_\_\_\_\_ in the display column. I/Y indicates the interest rate per year which was provided in the scenario as \_\_\_\_\_% APR compounded monthly. Since the interest is compounded each month, the calculator automatically generates the monthly interest rate using the entered value of I/Y. What other number is used to figure out the interest percentage rate per month? Complete the calculation.  
\_\_\_\_\_ % APR / \_\_\_\_\_ months = \_\_\_\_\_ % per month
- To calculate how much interest he paid during the life of his loan, fill in the missing information and complete the calculation.

|                |                              |                |                                |
|----------------|------------------------------|----------------|--------------------------------|
| <b>Step 1:</b> | \$ 75.00 monthly payment     | <b>Step 2:</b> | \$ _____ total amount paid     |
|                | → x _____ months             |                | → - \$ _____ loan amount       |
|                | → \$ _____ total amount paid |                | → \$ _____ total interest paid |

How much did Jason pay in interest during the life of the loan for his TV? \_\_\_\_\_