

## Compound Interest Assignment

Name:

Date:

KEY

- 1) The following questions are based on the TVM Solver application of the graphing calculator

a) State the sequence of key strokes to get to the TVM Solver.

$[2^{nd}] [apps] [ENTER] [ENTER]$  or  $[2^{nd}] [x^{-1}]$

b) What do you do to find the value of an unknown variable?

Arrow to highlight, then  $[ALPHA] [ENTER]$   
(solve).

c) What do you have to remember about FV and PV?

PV is negative when \$ goes out and FV returns \$ as positive.  
Opposite for borrowing then owing.

d) If it is compounded quarterly, what should the value of C/Y be?

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- 2) State the values that should be entered for each of the variables in the TVM Solver. You do not need to solve.

a) Determine the amount of an investment if \$600 is invested at 3.5% interest for 7 years compounded semi-annually.

N 14  
I% 3.5  
PV -600  
PMT 0

FV ?  
P/Y 2  
C/Y 2

- b) How long would it take \$4000 to grow to \$6000 if it is invested at 2.3% compounded monthly?

|     |              |     |             |
|-----|--------------|-----|-------------|
| N   | <u>?</u>     | FV  | <u>6000</u> |
| I%  | <u>2.3</u>   | P/Y | <u>12</u>   |
| PV  | <u>-4000</u> | C/Y | <u>12</u>   |
| PMT | <u>0</u>     |     |             |

- c) What interest rate is needed for \$10 000 to double in 5 years if it is compounded quarterly?

|     |               |     |              |
|-----|---------------|-----|--------------|
| N   | <u>20</u>     | FV  | <u>20000</u> |
| I%  | <u>?</u>      | P/Y | <u>4</u>     |
| PV  | <u>-10000</u> | C/Y | <u>4</u>     |
| PMT | <u>0</u>      |     |              |

- d) What amount needs to be invested at 0.8% interest compounded weekly if you have \$650 after 1 year?

|     |            |     |            |
|-----|------------|-----|------------|
| N   | <u>52</u>  | FV  | <u>650</u> |
| I%  | <u>0.8</u> | P/Y | <u>52</u>  |
| PV  | <u>?</u>   | C/Y | <u>52</u>  |
| PMT | <u>0</u>   |     |            |

- 3) A deposit of \$1550 will grow to \$1680.20 in 2 years. What rate of interest is given if interest is calculated annually?

$$I\% = 4.11\%$$

4) Owen invested \$3500 in a savings bond. After 2 years he cashed it in for \$4235.45.

a) What was the rate of interest if it was compounded quarterly?

$$r = 1\% = 9.65\%$$

b) What was the rate of interest if it was compounded monthly?

$$9.57\%$$

c) What was the rate of interest if it was compounded weekly?

$$9.54\%$$

5) Approximately how long would it take for a \$25 000 investment to double if it is compounded semi-annually at the following interest rates?

a) 0.5%

$$N = 277.61 \text{ comps/yr} \times \frac{1 \text{ yr}}{2 \text{ comps}} = 138.9 = 139 \text{ yrs.}$$

b) 2%

$$35 \text{ yrs.}$$

c) 5.5%

$$13 \text{ yrs}$$

d) 9%

$$8 \text{ yrs}$$

e) 20%

$$4 \text{ yrs.}$$



- 6) Rick needs to have \$3000 to buy a car. He can invest his savings in a GIC that pays 5.2% compounded monthly. How much does he need to invest now, if he waits the following lengths of time?

a) 6 months  $N=6$

\$2923.17

b) 1 year  $N=12$

\$2848.31

c) 2 years  $N=24$

\$2704.28

d) 5 years  $N=60$

\$2314.4



- 7) Fred moved and forgot to let his bank know that he has a different address. As a result, the \$750 that he charged to his credit card was not paid for 3 months. If Fred's credit card interest is at 28.99% and is compounded daily (this happens for cash advances), how much does he now owe?

$N = \text{assume } \sim 30 \text{ days/mo.} = 30(3) = 90$

$I\% = 28.99$

$PV = 750$

$PMT = 0$

$FV = ?$

$P/Y = 365$

$C/Y = 365$

He now owes \$805.55

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