Foundations of Math 12   Name: _____

Compound Interest and the TVM Solver - Notes

Compound interest is when the interest earned is added to the original amount invested more frequently, and so you earn more interest.

note: Annually = 1 time per year
Semi-annually = 2 times per year
Quarterly = 4 times per year
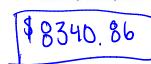Bi-weekly = 26 times per year
Daily = 365 times per year

TVM SOLVER: You can use this program in your graphing calculator to calculate compound interest.

* To start press: APPS – Finance – TVM Solver

* Enter the following values

N = total # of payments
I = annual interest rate (as a decimal)
PV = present value
PMT = payment each period   } Both are entered as negative values
FV = future value
PY = # of payments per year
CY # of compounding periods per year

BEGIN (Always use BEGIN for investments, and END for loans)

* To finish, highlight the wanted value and press: ALPHA - ENTER

Ex.1: Calculate the future value when $5000 is invested at 6.5% per annum (per year) compounded semi-annually for 8 years.

$8340.86

N = 16   FV = ?
I = 6.5   PY = 2
PV = -5000   CY = 2
PMT = 0   BEGIN

Ex.2: How long will it take $3000 to double if it is invested at 4.5% p.a. (per annum) compounded monthly?

$$\frac{185.19}{12} = 15.43 \text{yrs}$$

N = 185.19   FV = 6000
I = 4.5   PY = 12
PV = -3000   CY = 12
PMT = 0   BEGIN

Ex.3: How much must be invested at 6.8% p.a. compounded quarterly in order to have $10 000 after 5 years?

$7138.07

N = 20   FV = 10000
I = 6.8   PY = 4
PV = ? -7138.07   CY = 4
PMT = 0   BEGIN

Compound Interest and the TVM Solver – Assignment

1. Use the TVM Solver to calculate the amount (Future Value) of the following investments:
    a) $1000 invested at 6% per annum compounded semi-annually for 5 years.
    b) $ 800 invested at 4.8% per annum compounded semi-annually for 3 years.
    c) $ 600 invested at 8% per annum compounded quarterly for 3 years.
    d) $1200 invested at 6.8% per annum compounded quarterly for 10 years.
    e) $2500 invested at 12% per annum compounded monthly for 4 years.
    f) $10 000 invested at 5.4% per annum compounded monthly for 8 years.

a)	N = I = PV = PMT =	FV = PY = CY = BEGIN	b)	N = I = PV = PMT =	FV = PY = CY = BEGIN
c)	N = I = PV = PMT =	FV = PY = CY = BEGIN	d)	N = I = PV = PMT =	FV = PY = CY = BEGIN
e)	N = I = PV = PMT =	FV = PY = CY = BEGIN	f)	N = I = PV = PMT =	FV = PY = CY = BEGIN

2. Use the TVM Solver to determine the following times. Answer in years.
    a) How long will it take an investment of $1 000 to reach $1 200 at 6.5% p.a. compounded monthly?
    b) How long will it take for an investment of $5 000 at 5.6% p.a. compounded quarterly to double in value?
    c) How long will it take for an investment of $10 000 at 9.5% p.a. compounded semi-annually to triple in value?
    d) How long will it take for an investment of $3 000 at 8.2% p.a. compounded annually to reach $5000?

a)	N = I = PV = PMT =	FV = PY = CY = BEGIN	b)	N = I = PV = PMT =	FV = PY = CY = BEGIN
c)	N = I = PV = PMT =	FV = PY = CY = BEGIN	d)	N = I = PV = PMT =	FV = PY = CY = BEGIN

3. Use the TVM Solver to determine the original amount (Present Value) invested.
    a) How much must be invested at 3.5% p.a. compounded semi-annually in order to have $5000 after 8 years?
    b) How much must be invested at 4.1% p.a. compounded bi-weekly in order to have $2000 after 3 years?

a)	N = I = PV = PMT =	FV = PY = CY = BEGIN	b)	N = I = PV = PMT =	FV = PY = CY = BEGIN

Answers: 1. a) $1343.92   b)$922.34   c)$760.95 d) $2355.15   e) $4030.57   f) $15388.43
     2. a) 2.8 yrs   b) 12.46 yrs   c) 11.84 yrs d) 6.48 yrs
     3. a) $3788.08   b) 1768.70