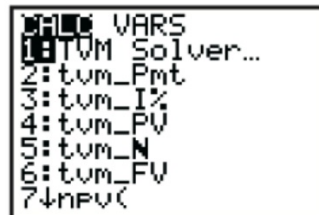


USING A GRAPHICS CALCULATOR FOR COMPOUND INTEREST PROBLEMS

TI-84 Plus

Press **APPS**, then select **1 : Finance...** and
1 : TVM Solver... .

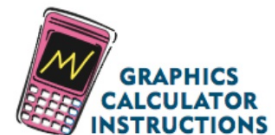
A screenshot of the TI-84 Plus TVM Solver menu. The screen shows a list of options: 1: TVM Solver... (highlighted), 2: tvn_Pmt, 3: tvn_I%, 4: tvn_PV, 5: tvn_N, 6: tvn_FV, and 7: ↓nPV(. The text is in a monospaced font typical of a calculator display.

```
1: TVM Solver...
2: tvn_Pmt
3: tvn_I%
4: tvn_PV
5: tvn_N
6: tvn_FV
7: ↓nPV(
```

The TVM Solver can be used to find any variable if all the other variables are given. For the **TI-84 Plus**, the abbreviations used are:

- N represents the **number of time periods**
- $I\%$ represents the **interest rate per year**
- PV represents the **present value** of the investment
- PMT represents the **payment each time period**
- FV represents the **future value** of the investment
- P/Y is the **number of payments per year**
- C/Y is the **number of compounding periods per year**
- $PMT : END BEGIN$ lets you choose between the payments at the end of a time period or at the beginning of a time period. Most interest payments are made at the end of the time periods.

The abbreviations used by the other calculator models are similar, and can be found in the **graphics calculator instructions** on the CD.



Holly invests 15 000 UK pounds in an account that pays 4.25% p.a. compounded monthly. How much is her investment worth after 5 years?

$$N: 60$$

$$I\%: 4.25$$

$$PV: -15000$$

$$PMT: 0$$

$$FV: \text{tum_FV}$$

$$P/Y: 12$$

$$C/Y: 12$$

How much does Halena need to deposit into an account to collect \$50 000 at the end of 3 years if the account is paying 5.2% p.a. compounded quarterly?

$$N: 12$$

$$I\%: 5.2$$

$$PV: \text{tvm} - PV = 42820.99$$

$$PMT: \emptyset$$

$$FV: 50000$$

$$P/Y: 4$$

$$C/Y: 4$$

For how long must Magnus invest €4000 at 6.45% p.a. compounded half-yearly for it to amount to €10 000?

$$FV = PV \times \left(1 + \frac{r}{100k}\right)^{kn}$$

$$\frac{10000}{4000} = \frac{4000}{4000} \left(1 + \frac{6.45}{100(2)}\right)^{2n}$$

$$2.5 = 1.03225^{2n}$$

$$\frac{28.8678}{2} = \frac{2n}{2}$$

$$\log_{1.03225} 2.5 = 2n$$

$$14.43 \approx 14.5 \text{ years}$$

Iman deposits \$5000 in an account that compounds interest monthly. 2.5 years later the account totals \$6000. What annual rate of interest was paid?

$$\frac{6000}{5000} = \frac{5000}{5000} \left(1 + \frac{r}{100(12)} \right)^{12(2.5)}$$

$$\sqrt[30]{1.2} = \sqrt[30]{\left(1 + \frac{r}{100(12)} \right)^{30}}$$

$$1.00609589 = 1 + \frac{r}{1200}$$

$$1200 \cdot 0.00609589 = \frac{r}{1200} \cdot 1200$$

$$7.315 = 7.32 = r$$

Assignment:

5 F.1 # 6

5 F.2 # 5, 10, 11