

Investments With Regular Deposits.

Often when people wish to save they add regular amounts to the principal.
The recurrence relation for this is:

$$V_0 = \text{the principal} \quad V_{n+1} = R V_n + D.$$

$$R = 1 + \frac{r}{100}$$

r is interest rate per compounding period

D is the payment/deposit made.

Pg 342+344 Eg 17+18.

Eg Elroy wants to travel, next year.

He has \$1200 saved and plans to add \$50 each month. The account pays 3% pa, compounding monthly.

a) Write the recurrence relation for the investment

b) What will be the value of Elroy's investment after 12 months.

Solⁿ a) $V_0 = 1200$ $D = 50$
 $r = 3\% \text{ p.a.} = \frac{3}{12} = 0.25\% \text{ per month}$
 $R = 1 + \frac{0.25}{100} = 1.0025$

$$V_0 = 1200 \quad V_n = 1.0025 V_n + 50$$

b) Calc \rightarrow Sequence \rightarrow Recursive
 $n = 12$.

\$ 1844.82

Eg Judy invests \$500 000 at 5.5% p.a, compounding monthly. She makes regular deposits of \$500 per month. What is the value of the investment after 5 years.

Financial Solver.

$$N = 5 \times 12 = 60 \quad I = 5.5$$

$$PV = -500\,000 \quad PMT = -500 \quad FV = ?$$

-ve money from Judy.

C/Y 12 P/Y 12.

\$ 692 292.30.

Financial Solver Sign Convention Summary.

Type	PV	PMT	FV	
Reducing-Balance Loan	+	-	-	You owe Bank
			0	Loan Paid out
			+	Bank owes you
Interest-Only Loan	+	-	-	Eventually the Bank gets its Money
Annuity You put money in and receive a payment.	-	+	+	Money still there
			0	All Money withdrawn
Annuity Investment You keep putting money in	-	-	+	The money is yours to eventually draw on.

Handouts: Recursion overview
Financial modelling summary.

Questions: Ex 96 Questions on workplan.
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