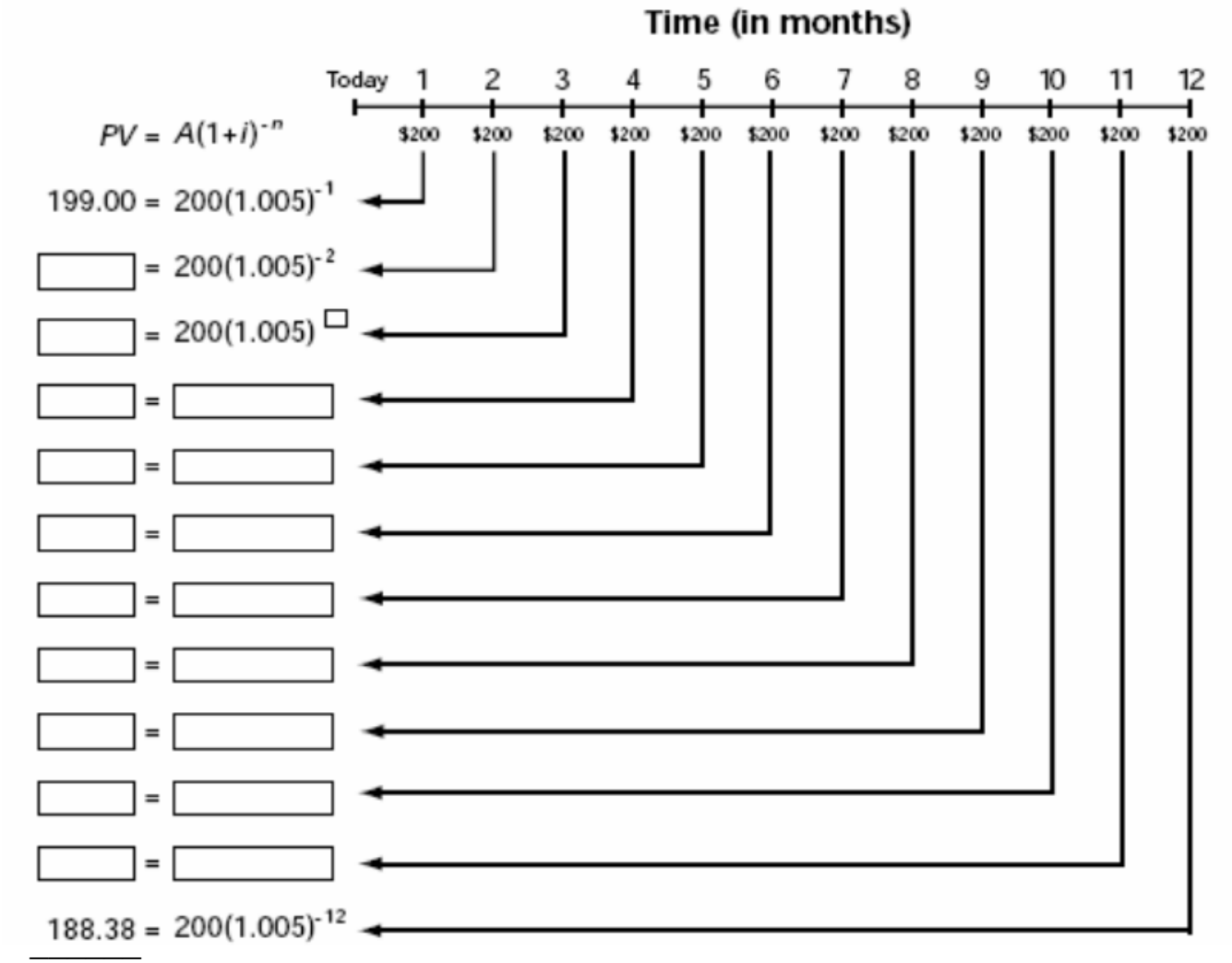
7.7 Present Value of an Ordinary Annuity

How much do you need to invest NOW to make regular payments….

Solve a PV Annuity Problem:

Method 1: Use a time line diagram

Holly must begin to repay her student loan. Her monthly payments of $200 will be withdrawn at the end of each month from an account earning 6% interest compounded monthly.
How much must she deposit in the account today so that loan payments can be made for one year?



Method 2: Use a Formula

Holly must begin to repay her student loan. Her monthly payments of $200 will be withdrawn at the end of each month from an account earning 6% interest compounded monthly. How much must she deposit in the account today so that loan payments can be made for one year?

$$PV = \frac{R[1-(1+i)^{-n}]}{i}$$

where PV is the present value in $
R is the regular payment
i is interest rate per period
n is total the number of deposits

<u>Method 3</u>: Use a Graphing Calculator

Holly must begin to repay her student loan. Her monthly payments of $200 will be withdrawn at the end of each month from an account earning 6% interest compounded monthly.
How much must she deposit in the account today so that loan payments can be made for one year?

Step 1: Press (MODE) and set the number of decimal places to 2:

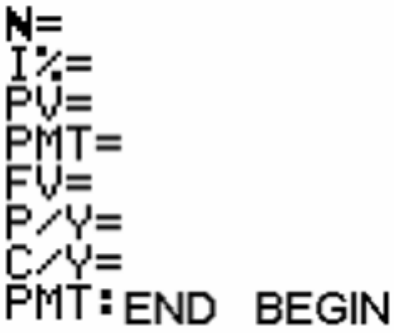
Step 2: Press (APPS) 1 1 to open the **TVM Solver**:

Step 3: Enter the values of the variables as shown.

What the variables represent:

N (Number of Payments)
I% (Annual Interest Rate)
PV (Present Value)
PMT (Payment)
FV (Future Value)
P/Y (Number of Payments/Year)
C/Y (Number of Compounding Periods/Year)
PMT: END BEGIN (Payments at End of Payment Interval)

PV = 0.00 because it is the variable to be solved
PMT is negative because money is being paid out
FV = 0.00 because there will be no money in the account when the payments are finished



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