As soon as we know the question is using compound interest, we use the Time-Value of Money row of buttons on the calculator and the P/Y and I/Y:

- $N =$ Number of Payments = Years x $P/Y$
- $I/Y =$ Interest Rate Per Year (\(^\%\)) don't change to a decimal
- $PV =$ Present Value
- $PMT =$ Payments (ongoing payments that take place at a regular interval)
- $FV =$ Future Value

2nd and $I/Y$ $P/Y =$ Payment Per Year (when no payments $P/Y = C/Y$)

$C/Y =$ Compounding Periods Per Year

Compounding Periods are:
- Annual (1)
- Semiannual (2)
- Quarterly (4)
- Monthly (12)

1) 2nd and $I/Y$ $P/Y$ and $C/Y = 12$ Enter 2nd and $CPT$

$N = 15 \div 12 = 1.25 \text{ years} \times 12 = 15$

$I/Y = 5.6 \%$

$PV =$ Invested today $= ? =$ $9,791.72$

$PMT =$ $\theta$

$FV =$ $10500$

To input for $N$, $I/Y$, $PV$, $PMT$ and $FV$, type the number then push the button when solving. $CPT$ then push the button you are solving for.
Now both answers are at 3 Months, so we add them together:

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4) \[ \text{PV} = \text{Loan} = $2000 \]

\[ FV = ? \]

\[ FV = 2398.76 \times 1.0708 = 2398.76 \]

\[ \text{Interest} + \text{Paid} = FV - PV = 2398.76 - 2000 = 398.76 \]

\[ 33 \text{ Months} \]

\[ \text{Interest} \text{ Paid} = 398.76 \]

5) \[ i/4 = 11.5\% \]

\[ \text{Monthly} \]

\[ \text{Time} = \frac{5 \times 12 - 33}{12} = 27 \text{ Months} \]

\[ \text{Today (Issue Date)} \rightarrow 5 \text{ Years (End Date)} \]

\[ \text{PV} = 9500 \]

\[ \text{No Interest} \]

\[ \text{FV} = 9500 \]

1. No calculation required because this is a non-interest bearing promissory note. The value of the note does not change.
2. 5 years back to 33 months.
3. \[ \text{PV} = \frac{1343.19}{1.117} = 1343.19 \]

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\[ \text{FV} = 9500 \]
7 - 3 = 4 years

Today (Issue Date) ≤ 3 years → 0.2%
7 years (Due Date) → ?

$4800 6.9% for 7 years → ?

1) Calculate FV of Interest Bearing Promissory Note (7 years)

\[
\text{N} = 7 \times 4 = 28
\]

\[
\text{FV} = ? \quad \text{P/Y and C/Y} = 4 \quad \text{Enter 2nd} \quad \text{CPT}
\]

\[
\begin{align*}
\text{FV} & = 7748.48
\end{align*}
\]

2) Calculate PV of computed PV from calculation #1

7 years back to 4 years

\[
\text{N} = 3 \times 1 = 3
\]

\[
\text{PV} = ? \quad \text{P/Y and C/Y} = 1 \quad \text{Enter 2nd} \quad \text{CPT}
\]

\[
\begin{align*}
\text{PV} & = 5789.91 \quad \text{FV} = 7748.48
\end{align*}
\]

7) Strip Bond Value = FV

\[
\text{N} = 10 \times 2 = 20
\]

\[
\text{FV} = ? \quad \text{P/Y and C/Y} = 2 \quad \text{Enter 2nd} \quad \text{CPT}
\]

\[
\begin{align*}
\text{PMT} & = 0
\end{align*}
\]

\[
\begin{align*}
\text{FV} & = ? \quad \text{P/Y and C/Y} = 2 \quad \text{Enter 2nd} \quad \text{CPT}
\end{align*}
\]

\[
\begin{align*}
\text{FV} & = 25000
\end{align*}
\]

\[
\begin{align*}
\text{PV} & = 13708.18 \quad \text{FV} = 25000
\end{align*}
\]
7) Calculate PV for the Beginning of year 5 and calculate PV for the End of year 5. Then subtract the two answers.

1) Calculate PV For Beginning of Year 5 (End of Year 4)
   2nd 2nd [CPT] P/Y and C/Y = 2 [Enter] 2nd [CPT]
   N = 10-4 = 6 x 2 = 12
   I/Y 6.0% ↑ PMT = 0
   PV = ? $17432.67 587 FV = $25000
   $17432.68

2) Calculate PV For End of Year 5
   2nd 2nd [CPT] P/Y and C/Y = 2 [Enter] 2nd [CPT]
   N = 10-5 = 5 x 2 = 10
   I/Y 6.0% ↑ PMT = 0
   PV = ? = $18512.29 584 FV = $25000
   $18512.29

3) Subtract the 2 answers: $18512.29 - $17432.68 = $1079.61

8) For this question, just go 1 time period into the future and solve for FV. Then subtract FV - PV = Interest Payment
   2nd 2nd [CPT] P/Y and C/Y = 4 [Enter] 2nd [CPT]
   N 1
   I/Y 3.82%  PMT = A
   PV = $25000  FV = ? = $25238.75

$25238.75 - $25000 = $238.75
1) In this question it is easier to use the formula because there are 5 years of different interest rates.

Add the bracket of \((1 + i)^n\) for each year.

\[FV = PV (1+i_1)^n_1 \times (1+i_2)^n_2 \times (1+i_3)^n_3 \times (1+i_4)^n_4 \times (1+i_5)^n_5\]

\[FV = \$50,000 \times (1+0.03)^1 \times (1+0.0325)^1 \times (1+0.0375)^1 \times (1+0.045)^1 \times (1+0.055)^1\]

\[FV = \$50,000 \times (1.03) \times (1.0325) \times (1.0375) \times (1.045) \times (1.055)\]

\[FV = \$60,821.08\]

2) Calculate the end of the 2nd year (Beginning of 3rd year)

3) Calculate the end of the 3rd year

\[FV = \$50,000 \times (1.03) \times (1.0325) = \$53,173.75\]

\[FV = \$50,000 \times (1.03) \times (1.0325) \times (1.0375) = \$55,167.77\]

\[\text{Find the difference} = \$55,167.77 - \$53,173.75 = \$1,994.02\]

10) \[
\begin{array}{ccc}
\text{Today} & \text{6 Months} & \text{9 Months} & \text{18 Months} & \text{\$350} \\
\hline
\text{P/Y and C/Y} & 12 & 12 & & \\
N & 6 \div 12 = 0.5 \times 12 = 6 & N = 18 \div 12 = 1.5 \times 12 = 18 & N = 9 \div 12 = 0.75 \times 12 = 9 \\
\text{PMT} & \$850 & \text{\$307.32} & \text{\$307.32} & \\
FV & \text{\$887.65} & \text{\$350} & \text{\$500} & \\
\hline
\end{array}
\]

\[
\text{Original Debt} \quad 1 + 2 = \text{Replacement Payments} \quad 3 + 4
\]

\[
\text{\$887.65 + \$307.32 = \$468.53 + x}
\]

\[
\text{\$1194.97 = \$468.53 + x} \quad x = \text{\$726.44}
\]