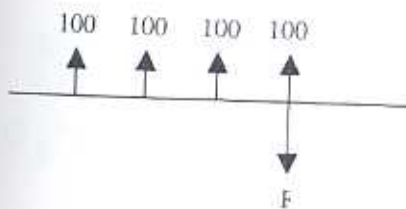


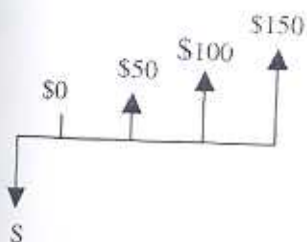
Chapter 4: More Interest Formulas

4-1

(a)

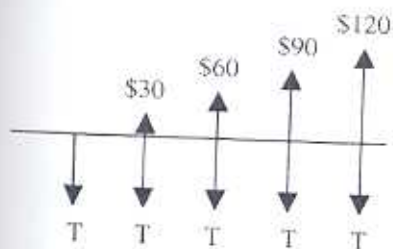


(b)



$$S = \$50 (P/G, 10\%, 4) = \$50 (4.378) \\ = \underline{\$218.90}$$

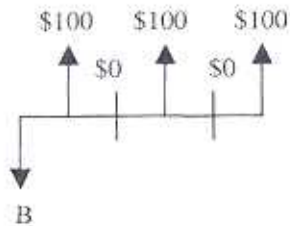
(c)



$$T = \$30 (A/G, 10\%, 5) = \$30 (1.810) \\ = \underline{\$54.30}$$

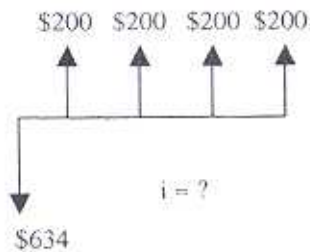
4-2

(a)



$$\begin{aligned}
 B &= \$100 (P/F, 10\%, 1) + \$100 (P/F, 10\%, 3) + \$100 (P/F, 10\%, 5) \\
 &= \$100 (0.9091 + 0.7513 + 0.6209) \\
 &= \$228.13
 \end{aligned}$$

(b)

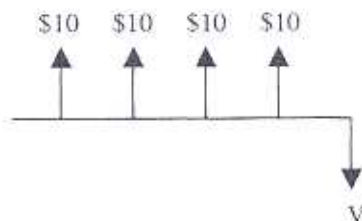


$$\$634 = \$200 (P/A, i\%, 4)$$

$$(P/A, i\%, 4) = \$634/\$200 = 3.17$$

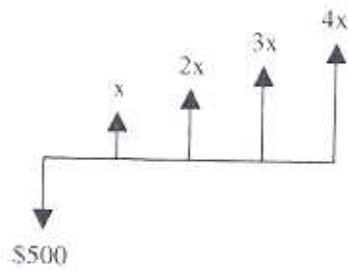
From compound interest tables, $i = \underline{10\%}$.

(c)



$$\begin{aligned}
 V &= \$10 (F/A, 10\%, 5) - \$10 \\
 &= \$10 (6.105) - \$10 \\
 &= \underline{\$51.05}
 \end{aligned}$$

(d)

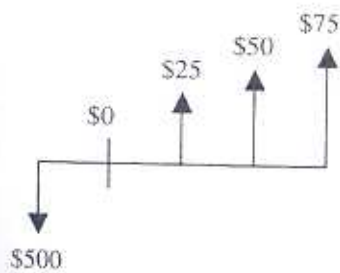


$$\begin{aligned} \$500 &= x (P/A, 10\%, 4) + x (P/G, 10\%, 4) \\ \$500 &= x (3.170 + 4.378) \end{aligned}$$

$$\begin{aligned} x &= \$500/7.548 \\ &= \underline{\$66.24} \end{aligned}$$

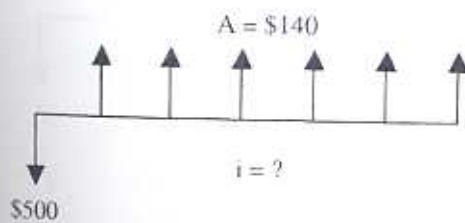
4-3

(a)



$$\begin{aligned} C &= \$25 (P/G, 10\%, 4) \\ &= \$25 (4.378) \\ &= \underline{\$109.45} \end{aligned}$$

(b)



$$\$500 = \$140 (P/A, i\%, 6)$$

$$(P/A, i\%, 6) = \$500/\$140 = 3.571$$

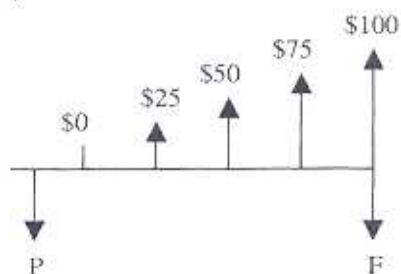
Performing linear interpolation:

$(P/A, P\%, 6)$	i
3.784	15%
3.498	18%

$$i = 15\% + (18\% - 15\%) ((3.487 - 3.571)/(3.784 - 3.498))$$

$$= \underline{17.24\%}$$

(c)

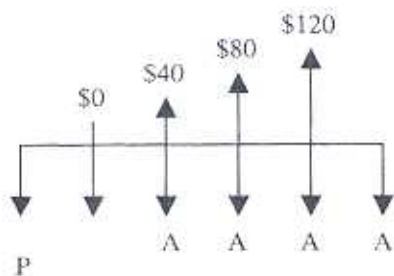


$$F = \$25 (P/G, 10\%, 5) (F/P, 10\%, 5)$$

$$= \$25 (6.862) (1.611)$$

$$= \underline{\$276.37}$$

(d)



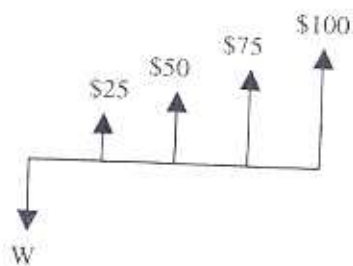
$$A = \$40 (P/G, 10\%, 4) (F/P, 10\%, 1) (A/P, 10\%, 4)$$

$$= \$40 (4.378) (1.10) (0.3155)$$

$$= \underline{\$60.78}$$

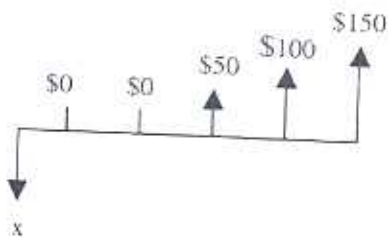
4-4

(a)



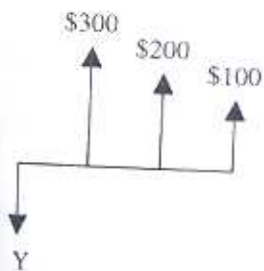
$$\begin{aligned} W &= \$25 (P/A, 10\%, 4) + \$25 (P/G, 10\%, 4) \\ &= \$25 (3.170 + 4.378) \\ &= \underline{\$188.70} \end{aligned}$$

(b)



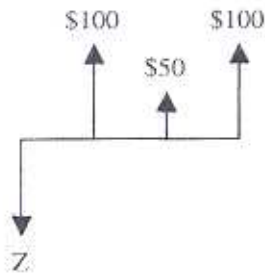
$$\begin{aligned} x &= \$100 (P/G, 10\%, 4) (P/F, 10\%, 1) \\ &= \$100 (4.378) (0.9091) \\ &= \underline{\$398.00} \end{aligned}$$

(c)



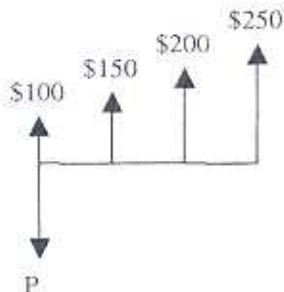
$$\begin{aligned} Y &= \$300 (P/A, 10\%, 3) - \$100 (P/G, 10\%, 3) \\ &= \$300 (2.487 - 2.329) \\ &= \underline{\$513.20} \end{aligned}$$

(d)



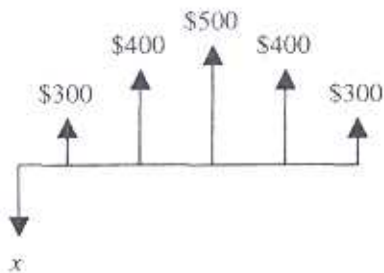
$$\begin{aligned}
 Z &= \$100 (P/A, 10\%, 3) - \$50 (P/F, 10\%, 2) \\
 &= \$100 (2.487) - \$50 (0.8264) \\
 &= \underline{\$207.38}
 \end{aligned}$$

4-5



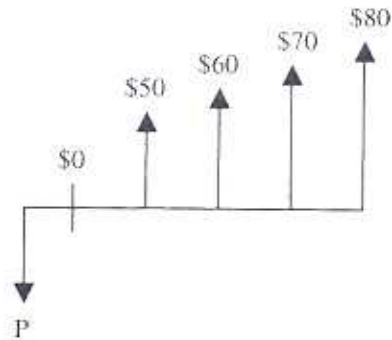
$$\begin{aligned}
 P &= \$100 + \$150 (P/A, 10\%, 3) + \$50 (P/G, 10\%, 3) \\
 &= \$100 + \$150 (2.487) + \$50 (2.329) \\
 &= \underline{\$589.50}
 \end{aligned}$$

4-6



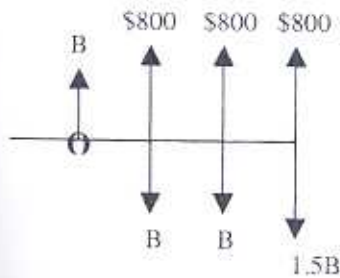
$$\begin{aligned}
 x &= \$300 (P/A, 10\%, 5) + \$100 (P/G, 10\%, 3) + \$100 (P/F, 10\%, 4) \\
 &= \$300 (3.791) + \$100 (2.329) + \$100 (0.6830) \\
 &= \underline{\$1,438.50}
 \end{aligned}$$

4-7



$$\begin{aligned}
 P &= \$10 (P/G, 15\%, 5) + \$40 (P/A, 15\%, 4)(P/F, 15\%, 1) \\
 &= \$10 (5.775) + \$40 (2.855) (0.8696) \\
 &= \underline{\$157.06}
 \end{aligned}$$

4-8



Receipts (upward) at time O:

$$PW = B + \$800 (P/A, 12\%, 3) = B + \$1,921.6$$

Expenditures (downward) at time O:

$$PW = B (P/A, 12\%, 2) + 1.5B (P/F, 12\%, 3) = 2.757B$$

Equating:

$$B + \$1,921.6 = 2.757B$$

$$\begin{aligned}
 B &= \$1,921.6/2.757 \\
 &= \underline{\$1,093.70}
 \end{aligned}$$

4-9

$$\begin{aligned} F &= A (F/A, 10\%, n) \\ \$35.95 &= 1 (F/A, 10\%, n) \\ (F/A, 10\%, n) &= 35.95 \end{aligned}$$

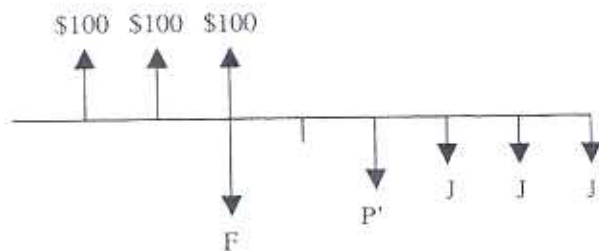
From the 10% interest table, $n = \underline{16}$.

4-10

$$\begin{aligned} P &= A (P/A, 3.5\%, n) \\ \$1,000 &= \$50 (P/A, 3.5\%, n) \\ (P/A, 3.5\%, n) &= 20 \end{aligned}$$

From the 3.5% interest table, $n = \underline{35}$.

4-11



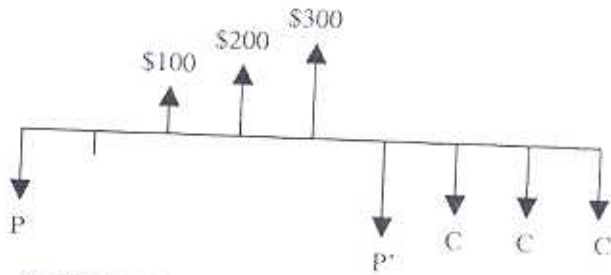
$$\begin{aligned} F &= \$100 (F/A, 10\%, 3) = \$100 (3.310) = \$331 \\ P' &= \$331 (F/P, 10\%, 2) = \$331 (1.210) = \$400.51 \\ J &= \$400.51 (A/P, 10\%, 3) = \$400.51 (0.4021) = \underline{\$161.05} \end{aligned}$$

Alternate Solution:

One may observe that J is equivalent to the future worth of \$100 after five interest periods, or:

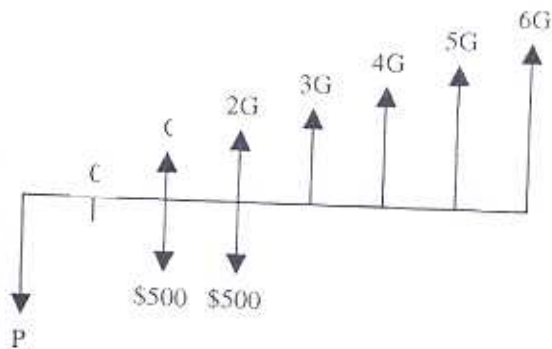
$$J = \$100 (F/P, 10\%, 5) = \$100 (1.611) = \underline{\$161.10}$$

4-12



$$\begin{aligned}
 P &= \$100 (P/G, 10\%, 4) = \$100 (4.378) = \$437.80 \\
 P^* &= \$437.80 (F/P, 10\%, 5) = \$437.80 (1.611) = \$705.30 \\
 C &= \$705.30 (A/P, 10\%, 3) = \$705.30 (0.4021) = \underline{\$283.60}
 \end{aligned}$$

4-13



Present Worth P of the two \$500 amounts:

$$\begin{aligned}
 P &= \$500 (P/F, 12\%, 2) + \$500 (P/F, 12\%, 1) \\
 &= \$500 (0.7972) + \$500 (0.7118) \\
 &= \$754.50
 \end{aligned}$$

Also:

$$\begin{aligned}
 P &= G (P/G, 12\%, 7) \\
 \$754.50 &= G (P/G, 12\%, 7) \\
 &= G (11.644)
 \end{aligned}$$

$$\begin{aligned}
 G &= \$754.50 / 11.644 \\
 &= \underline{\$64.80}
 \end{aligned}$$