1. interest is \(= 700 - 400 = 300\)

\[ I = Prt \]

\[ 300 = 400 \times r \times 24 \]

\[ r = \frac{300}{400 \times 24} = 1.25\% \]

2. 600 is the proceeds so \(600 = M \times (1 - \frac{.15 \times \frac{5}{12}}{12})\)

solving for \(M\) gives \(M = 640\).

discount = \(M - P = 640 - 600\)

\[ D = 40 \]

3. \(N = 20 \times 12; \ I = 7.4; \ Pmt = -975; \ FV = 0;\)

\(P/y = C/y = 12\)

solve for \(PV = 121,952.80\)

Answer: \(121,952.80 + 10,000 = 131,952.80\)

4. \(N = 6 \times 2; \ I = 5; \ Pmt = 0; \ FV = 7000;\)

\(P/y = C/y = 2\)

Answer: \(\$5204.89\)

5. balance \(\times \frac{r}{m}\) = interest owed on the first payment

\[ 30,000 \times \frac{.05}{4} = 375 \]

payment = amount toward the loan

\[ \text{payment-interest} = 425 \]

6. \(N = 4 \times 4; \ I = 4; \ PV = -800; \ FV = 7000;\)

\(P/y = C/y = 4\)

Answer: \(\$342.45\)

7. \(I = 14; \ PV = -3000; \ Pmt = -150; \ P/y = C/y = 12\)

balance at end of 4th year \((N = 4 \times 12) = 14813.68\)

balance at end of 3rd year \((N = 3 \times 12) = 11218.22\)

interest = \(14813.68 - 11218.22 - 12 \times 150 = 1795.46\)

8. (a) \(N = 10 \times 12; \ I = 4.3; \ PV = 22000; \ FV = 0;\)

\(P/y = C/y = 12\)

payment = 225.89

interest = 225.89 \(\times 12 \times 10 = 22000.\)

Answer: \(\$5106.80\)

(b) \(N = 3 \times 12; \ I = 4.3; \ PV = 22000; \ PMT = -225.89; \ P/y = C/y = 12\)

Still owe \((FV) = 16360.09\)

Equity = 22000 - 16360.09 = 5639.91

9. Do the math on the left side of the equation to get

\[
\begin{bmatrix}
-5 \\
 z+6
\end{bmatrix}
\begin{bmatrix}
2x - 4y \\
7
\end{bmatrix}
= \begin{bmatrix}
-5 \\
10
\end{bmatrix}
\]

now solve these equations for the variables:

\[2x - 4y = 6\]

\[z + 6 = 10\]

\[2y = 7\]

Answer: \(x = 10, \ y = 3.5, \ z = 4\)

10. (a) \(x = 0, \ y = 7, \ z = 3\)

(b) no solution

11. (a) \[
\begin{bmatrix}
1 & 7 \\
0 & 5 \\
10 & 3
\end{bmatrix}
\]

(b) \[
\begin{bmatrix}
3a + 8 \\
3b
\end{bmatrix}
\]

(c) not possible

(d) \[
\begin{bmatrix}
C & 5 \\
2 & 1 \\
5 & F
\end{bmatrix}
\]

12. \((A + B)X = F\)

\[ X = (A + B)^{-1} F \]

13. \(x = -27 - 3y\)

\(y = \text{any number}\)

\(z = 13\)

14. \(x = \text{the number of knives}\)

\(y = \text{the number of forks}\)

\(z = \text{the number of spoons}\)

\(x + y + z = 33\)

\(6.1x + 4.5y + 3.8z = 175\)

\(z = 3(x + y)\)

15. \(J = B \times A^{-1} = \begin{bmatrix}
-8.4 & 4 \\
-6.4 & 3
\end{bmatrix}\)

16. \(x = 5 + z\)

\(y = 95 - 2z\)

\(z = 0, 1, 2, \ldots, 47\)