1. Use the Echelon Method to solve:
   \[
   \begin{align*}
   x + 3y + 2z &= 1 \\
   2x + y - z &= 2 \\
   x + y + z &= 2
   \end{align*}
   \]

2. Use the Gauss Jordan Method to solve:
   \[
   \begin{align*}
   x + 5z &= -6 + y \\
   3x + 3y &= 10 + z \\
   x + 3y + 2z &= 5
   \end{align*}
   \]

3. Solve the Matrix Equation \( Ax = B \) for \( x \):
   \[
   A = \begin{bmatrix} -2 & 4 \\ 3 & -1 \end{bmatrix}, \quad B = \begin{bmatrix} 40 \\ 80 \end{bmatrix}
   \]

4. Find the MAX. \& MIN. of the objective function: \( z = 5x + 2y \)
   \[
   \begin{align*}
   3y - 2x &\geq 0 \\
   y + 8x &\leq 52 \\
   y - 2x &\leq 2 \\
   x &\geq 3
   \end{align*}
   \]

5. Find the present value:
   \[
   A = \$32,000 \\
   t = 4\text{mos} \\
   r = 9\%
   \]

6. Find the future value:
   \$900 is deposited at 8\% compounded semiannually for 8 years.
7. Find the future value of the annuity. Mike deposits $200 at the end of each month in an account that pays interest at 7.2% compounded monthly for 20 years.

8. Let \( A = \{a, b, c, d, e, f, g\} \), \( B = \{e, f, g, h\} \), \( C = \{f, g\} \), find
   
   i. \( A \cup (B \cap C) \)
   
   ii. \( B \cap (A \cup C) \)
   
   iii. \( C \cup (A \cap B) \).

9. A jar contains 5 red, 4 black, 7 purple and 9 green marbles. If a marble is drawn at random, find
   
   \[ P(\text{red}) \]
   
   \[ P(\text{green}) \]
   
   \[ P(\text{black}) \].

10. There are 25 people in a room, 10 are Democrats and 15 are Republicans. If four people are randomly selected, find
    
    (a) \( P(\text{all 4 are Democrats}) \)
    
    (b) \( P(\text{all 4 are Republicans}) \)
    
    (c) \( P(\text{2 Democrats, 2 Republicans}) \)
    
    (d) \( P(\text{1 Democrats, 3 Republicans}) \).

11. Find the mean:
    
    86, 103, 118, 117, 126, 158, 149

12. Find the median:
    
    6, 99, 15, 21

13. Find the mode:
    
    1, 1, 2, 3, 3, 4

14. Find standard deviation of the following numbers (nearest tenth).
    
    7, 6, 12, 14, 18, and 15
15. A 60 Watt light bulb has an average life of 1200 hours with a standard deviation of 50 hours. Find the probability that the life of one of these bulbs will be between 1150 and 1300 hours. (Assume the distribution is normal)

**REVIEW SHEET -- MA280**

**ANSWERS:**

1. \( x = 2, y = -1, z = 1 \)
2. \( x = 1, y = 2, z = -1 \)
3. \( x = \begin{bmatrix} 36 & 6 \\ 28 & -2 \end{bmatrix} \)
4. Min 19 at (3,2), Max 49 at (5,12)
5. $31,067.96
6. A=$1685.68
7. $106,752.47
8. i. \{a, b, c, d, e, f, g\},
   ii. \{e, f, g\},
   iii. \{e, f, g\}
9. \( \frac{5}{25}, \frac{9}{25}, \frac{4}{25} \)
10. a) 0.0166
    b) 0.1079
    c) 0.3735
    d) 0.3597
11. 122.43
12. 18
13. 1 and 3
14. 4.7
15. 0.8186