Solving Systems with Three Variables

- Work with equations in pairs, just as you did systems of two variables.
- What is the solution of the system? Use elimination.

$$\begin{cases} 3x + y - z = 1 \\ x + 2y + z = 4 \\ 3x - y - z = 3 \end{cases}$$

- You are an office supply distributor and budget $7200 for 80 office chairs. You can buy leather chairs for $125 each, mesh chairs for $100 each, and fabric chairs for $75 each. If you want to have 3 times as many fabric chairs as leather chairs, how many of each type should you buy?

- **Solving Systems Using Matrices**
  - A *matrix* is a rectangular array of numbers. *Row x Column* 2 x 3 is read "2 by 3" and is a matrix with 2 rows and 3 columns. a_{12}
  - Row Operations
    - Switch any two rows
    - Multiply a row by a constant
    - Add one row to another
    - Combine any of these steps
  - GOAL: Reduced Row Echelon Form (rref on calculator)
  - What is the solution of this system of equations? (Manually & Calculator)

$$\begin{cases} 3a + 2b - c = 7 \\ 2a - c = 5 \\ a - 4b + c = -4 \end{cases}$$

Matrix -> Edit Matrix -> Math -> rref Matrix Name (Select from Matrix tab)