Unit Summary - Algebra Unit

- Linear Equations $(y = mx + b)$
  - ↳ $m = \text{slope} = \dfrac{\text{rise}}{\text{run}} = \dfrac{\Delta y}{\Delta x} = \dfrac{y_2 - y_1}{x_2 - x_1}$
  - ↳ $b = y\text{-intercept}$ (when $x = 0$, crosses the y-axis)
  - ↳ Graphing linear equations
    - ↳ rearrange to slope-int. form $(y = mx + b)$
    - ↳ Intercept method (plot both x & y intercepts)
  - ↳ Finding equation of a line
    - ↳ slope (m) & y-intercept (b)
  - ↳ Linear modelling (word problems)
  - ↳ Supply/demand equations
- Solving Systems of Equations
  (2 or more equations)
  - ↳ 2×2 system (2 eqns & 2 unknowns/variables)
    - ↳ # of eqns must match the # of variables in order to get a numeric answer.
  - ↳ solve by graphing
    - ↳ solution = intersection point
  - ↳ Solve by substitution
  - ↳ solve by elimination
    - ↳ rearrange the eqn to $\#x + \#y + \#z = \text{Constant}$
      - ↳ all variables on one side, constant on other
    - ↳ manipulate eqns & add to create one eqn w/ one unknown
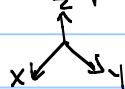 - ↳ Conditional Solutions
- 3×3 System of Equations
  - ↳ elimination (create a 2×2 system)
  - ↳ matrices ⇒ $[X] = [A^{-1}][B]$
    - variable ↑   coefficient ↑   constant ↑
  - ↳ Quadric Applications of 3×3 systems.
- 3D Graphing

  - ↳ sketching 3D planes
    - ↳ find & plot all 3 intercepts
  - ↳ Finding eqns of planes $(z = ax + by + c)$