**System of Equations** **Corbin Cooper**

1. **Methods for solving system of equations-**
   - Graphing
   - Substitution
   - Elimination

2. **Explain Methods-**

Graphing – Graphing 2 equations and finding there intersection

Step 1: Place equations in slope intercept form
Step 2: Find slope & Y-Intercept
Step 3: Graph and label equations
Step 3: Find where the lines intersect
Step 4: Put answer in an ordered pair
Step 5: Check when there is a solution

Solutions can be:

- Parallel - No solution (inconsistent)
- Perpendicular - 1 solution
- Coincide - Both lines are on top of each other - infinite number of solutions

Substitution-using one equation to find a variable in terms of the other, the substituting in another equation of the system

Step 1: Get one equation to equal y
Step 2: Substitute the first equation in for y in the second equation
Step 3: Solve for x
Step 5:Replace x in the 1st equation with the answer
Step 6: Solve for y
Step 7: Write the solutions as an ordered pair
Step 8: To check fill in X & Y from ordered pair into the original equation

Elimination-uses multiplication + addition to eliminate variable from one equation

Step 1: Multiply equations to get similar leading coefficients and to cancel out X
Step 2: Add both equations to get Y
Step 3: Put Y into original equation
Step 4: Solve for X
Step 5: Write answer as ordered pair
Step 6: plug solutions into the equation

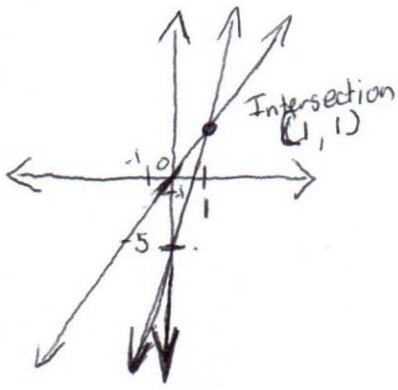
3. **Worked Examples-** $6X - Y = 5$ ; $Y = X$

Substitution-

$6X - Y = 5$
$6X - X = 5$
$5X = 5$
$X = 1$
$Y = X$
$Y = 1$
$(1,1)$

Elimination-

$6X - Y = 5$ $\quad -6 \cdot Y = X \cdot -6$
$6X - 5 = Y$ $\quad -6Y = -6X$
$-6X \quad -6Y$
$-5 = -5Y$
$1 = Y$
$Y = X$
$1 = X$
$(1,1)$

Graphing-

$Y = X$
Slope = 1
Y-Intercept = (0,0)
$6X - Y = 5$
$6X - 5 = Y$
Slope = 6
Y-Intercept = (0,-5)