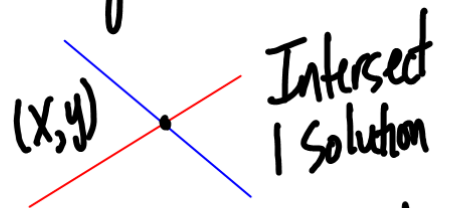


# 3.1 Systems of Equations

## 1. Graphing



Have Solution(s)  
**Consistent**

**Independent**  
1 solution  
(intersect)

**Dependent**  
Infinitely  
Many  
Solutions  
(Same Line)

Inconsistent  
No Solution  
(Parallel Lines)

$$x - 2y = 0$$

$$-2y = -x$$

$$y = \frac{1}{2}x + 0$$

X

-14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 1 2 3 4 5 6 7 8 9 10 11 12 13 14

$$2x - y = 6$$

$$-y = -2x + 6$$

$$y = 2x - 6$$

$$y = mx + b$$

(4, 2)

Consistent  
Independent

Y

Graph

$y_1$

$y_2$

2nd Calc (Trace)

5 Intersect

Enter First Curve

Enter Second Curve

Enter Guess

$x = 4$

$y = 2$

$(4, 2)$

## 2. Substitution

$$x - 2y = 0$$

$$2x - y = 6$$

$$x - 2y = 0 \quad +2y \quad +2y$$

$$x = 2y$$

Solve 1 equation  
for 1 variable

$$2x - y = 6$$

$$2(2y) - y = 6$$

$$4y - y = 6$$

$$3y = 6 \quad \frac{6}{3}$$

$$y = 2$$

Substitute into  
other equation

$$x = 2y$$

$$x = 2(2)$$

$$x = 4$$

Choose 1  
equation  
Substitute  
Solve for  
variable

$$(4, 2)$$

Write as  
ordered pair

$$\textcircled{1} \quad 2x + y = 8$$

$$\textcircled{2} \quad x - y = 3$$

$$x - y = 3 \Rightarrow$$

$$x = y + 3$$

Solve 1 eq.  
for 1 variable

$$2x + y = 8$$

Substitute

$$2(y + 3) + y = 8$$

$$2y + 6 + y = 8$$

$$3y + 6 = 8 - 6$$

$$\frac{3y}{3} = \frac{2}{3}$$

$$y = \frac{2}{3}$$

Solve

$$x = y + 3$$

$$x = \frac{2}{3} + 3$$

$$x = 3\frac{2}{3}$$

Back  
substitute

$$\left(3\frac{2}{3}, \frac{2}{3}\right)$$

$$6x + 4y = 12$$

$$2y = 6 - 3x$$

$$\frac{2y}{2} = \frac{6-3x}{2}$$

$$y = -\frac{3}{2}x + 3$$

$$6x + 4y = 12$$

$$6x + 4\left(-\frac{3}{2}x + 3\right) = 12$$

$$6x + -6x + 12 = 12$$

$$\text{True } 0 = 0$$

Classify

Consistent Dependent  
Same Line

Solve

Infinitely Many Solutions

$$y = -2x + 7$$

$$4x + 2y = 6$$

$$4x + 2(-2x + 7) = 6$$

$$4x + -4x + 14 = 6 \quad 14 \neq 6$$

$$0 \neq -8$$

Solve

No Solution

Classify

Inconsistent

Parallel Lines

10. Inconsistent
11. Consistent Dependent
12. Consistent Independent

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Graphing 14, 16 paper  
18-24 E paper or calculator

26, 28, 30, 34, 42