

NOTES:

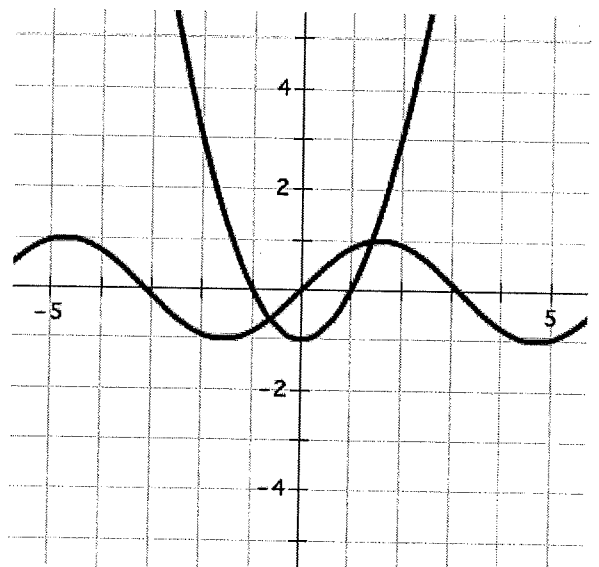
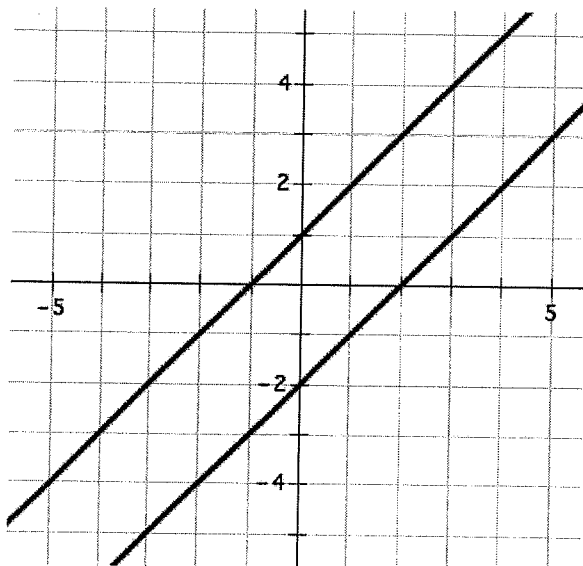
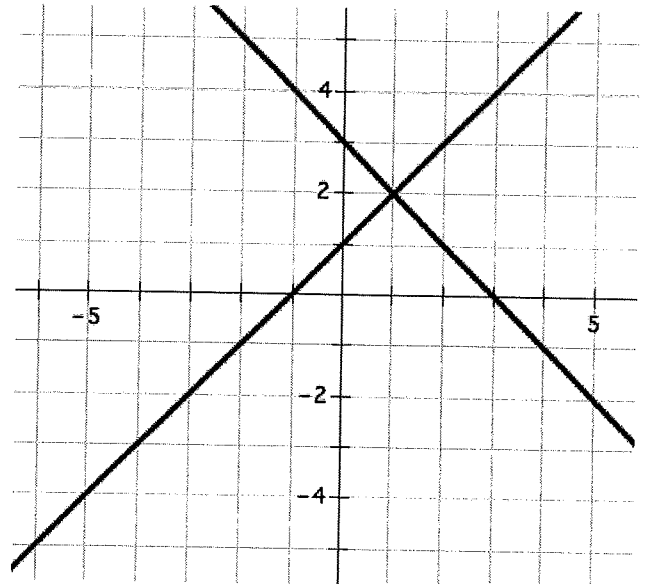
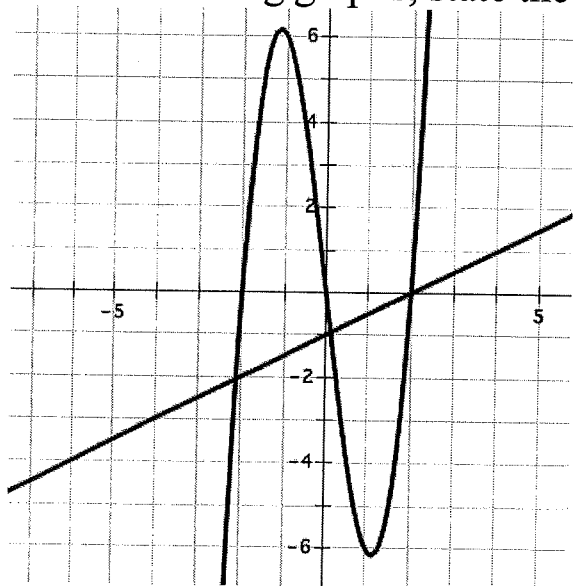
When two graphs cross, the location where they intersect is called a **Solution**.

Every time the graphs intersect is a solution. These graphs are called **Consistent** and if there is exactly one solution, they are called **Independent**. Each solution is stated as an ordered pair: (x, y) .

If the lines never intersect, then there is **NO Solution**. These graphs are called **Inconsistent**.

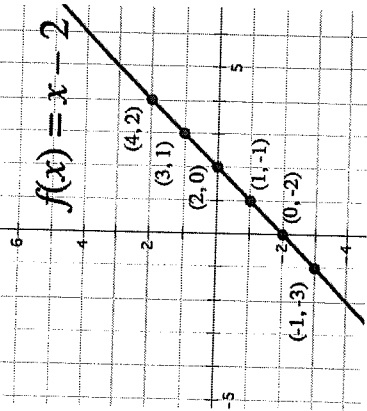
If the lines are the same, then they are always intersecting and there are **Infinite Solutions** and these graphs are called **Dependent**.

In the following graphs, state the number of solutions:

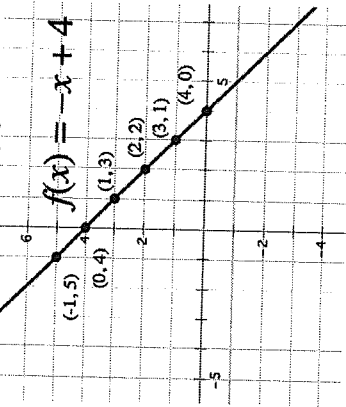


Section 6-1: Solving Systems of Equations by Graphing

Consider points along $y = x - 2$

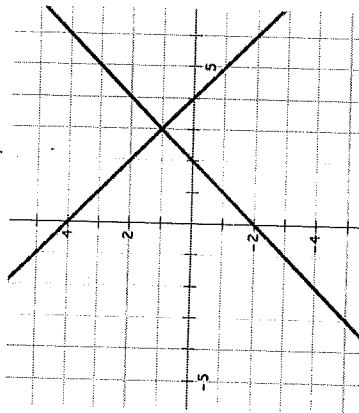


Consider points along $y = -x + 4$

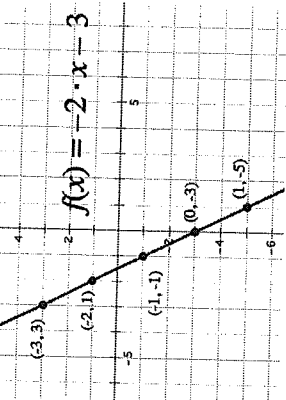


1. Are there any order pairs (points) that exist on BOTH lines? Where?

2. Now look at both lines graphed at once. What do you notice?

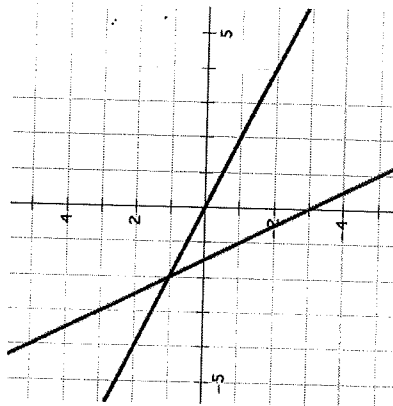


Consider points along $y = -2x - 3$

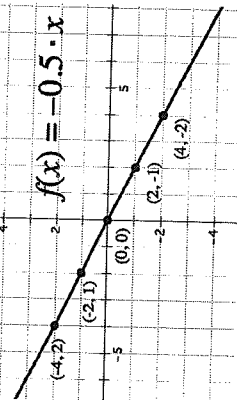


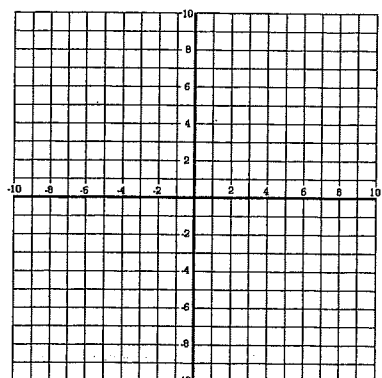
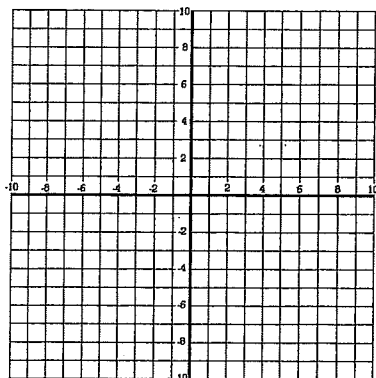
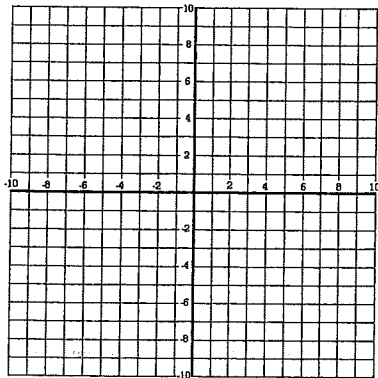
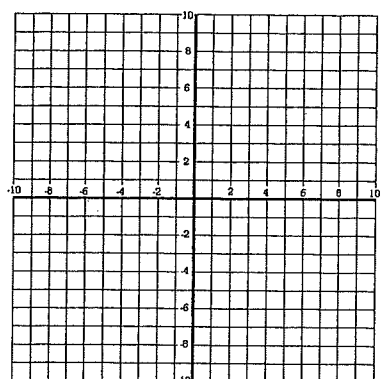
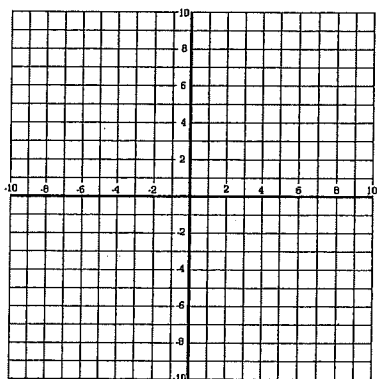
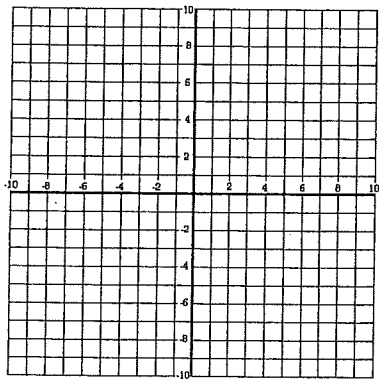
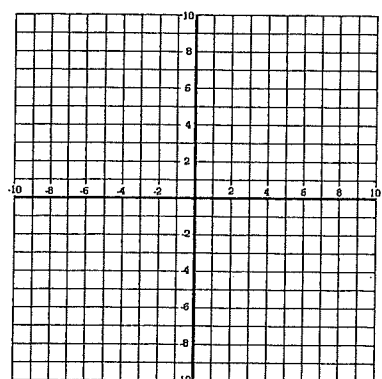
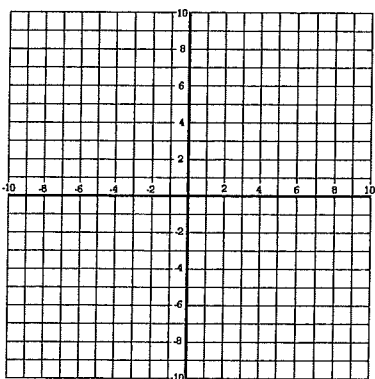
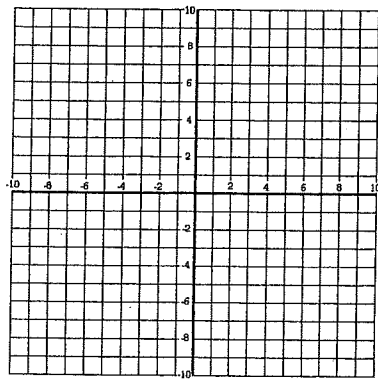
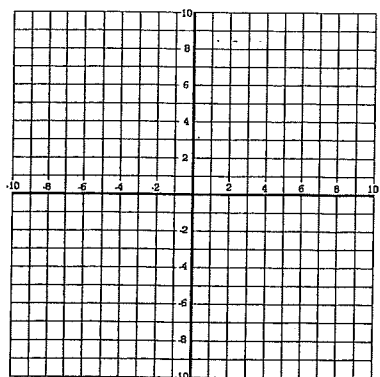
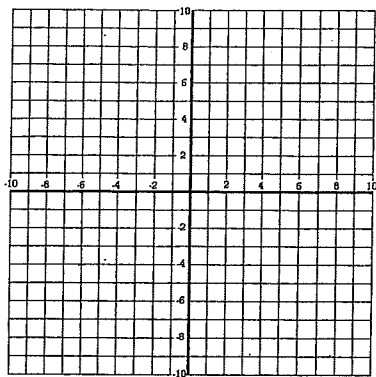
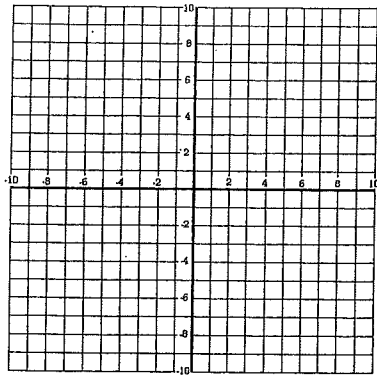
3. Are there any order pairs (points) that exist on BOTH lines? Where?

4. Now look at both lines graphed at once. What do you notice?



Consider points along $y = -\frac{1}{2}x$





Substitution HW 1

Name _____

$$\begin{aligned} \textcircled{1} \quad y &= x + 1 \\ y &= 4x - 8 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad y &= 2x + 4 \\ y &= 12x - 6 \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad y &= -x + 3 \\ y &= -5x + 15 \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad y &= 10x \\ y &= -4x - 24 \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad y &= -2x + 1 \\ y &= 2x - 1 \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad y &= 8x + 2 \\ y &= -7x + 32 \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad y &= \frac{1}{2}x - 4 \\ y &= \frac{3}{2}x + 1 \end{aligned}$$

$$\begin{aligned} \textcircled{8} \quad y &= x \\ y &= \frac{1}{3}x + 6 \end{aligned}$$

Alg 1

6-2 A

Name _____ Pd _____

Use substitution to solve each system of equations.

1. $y = x + 5$
 $3x + y = 25$

2. $x = y - 2$
 $4x + y = 2$

3. $3x + y = 6$
 $4x + 2y = 8$

4. $2x + 3y = 4$
 $4x + 6y = 9$

5. $x - y = 1$
 $3x = 3y + 3$

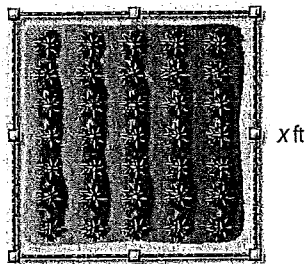
6. $2x - y = 6$
 $-3y = -6x + 18$

8. $y = 5x + 1$
 $4x + y = 10$

9. $y = 4x + 5$
 $2x + y = 17$

10. $y = 3x - 34$
 $y = 2x - 5$

19. **GARDENING** Bill is building a fence around a square garden to keep deer out. He has 60 feet of fencing. Find the maximum length of a side of the garden. (Lesson 5-2)



Solve each inequality. Check your solution. (Lesson 5-3)

20. $4a - 2 > 14$
21. $2x + 11 \leq 5x - 10$
22. $-p + 4 < -9$
23. $\frac{d}{4} + 1 \geq -3$
24. $-2(4b + 1) < -3b + 8$

Define a variable, write an inequality, and solve each problem.
Check your solution. (Lesson 5-3)

25. Three times a number increased by 8 is no more than the number decreased by 4.
26. Two thirds of a number plus 5 is greater than 17.
27. **MULTIPLE CHOICE** Shoe rental costs \$2, and each game bowled costs \$3. How many games can Kyle bowl without spending more than \$15? (Lesson 5-3)

F 2

H 4

G 3

J 5

Solving Systems of Equations by Substitution

Solve each system by substitution.

1) $y = 6x - 11$
 $-2x - 3y = -7$

2) $2x - 3y = -1$
 $y = x - 1$

3) $y = -3x + 5$
 $5x - 4y = -3$

4) $-3x - 3y = 3$
 $y = -5x - 17$

5) $y = -2$
 $4x - 3y = 18$

6) $y = 5x - 7$
 $-3x - 2y = -12$

7) $-4x + y = 6$
 $-5x - y = 21$

8) $-7x - 2y = -13$
 $x - 2y = 11$

9) $-5x + y = -2$
 $-3x + 6y = -12$

10) $-5x + y = -3$
 $3x - 8y = 24$

$$\begin{aligned} 11) \quad x + 3y &= 1 \\ -3x - 3y &= -15 \end{aligned}$$

$$\begin{aligned} 12) \quad -3x - 8y &= 20 \\ -5x + y &= 19 \end{aligned}$$

$$\begin{aligned} 13) \quad -3x + 3y &= 4 \\ -x + y &= 3 \end{aligned}$$

$$\begin{aligned} 14) \quad -3x + 3y &= 3 \\ -5x + y &= 13 \end{aligned}$$

$$\begin{aligned} 15) \quad 6x + 6y &= -6 \\ 5x + y &= -13 \end{aligned}$$

$$\begin{aligned} 16) \quad 2x + y &= 20 \\ 6x - 5y &= 12 \end{aligned}$$

$$\begin{aligned} 17) \quad -3x - 4y &= 2 \\ 3x + 3y &= -3 \end{aligned}$$

$$\begin{aligned} 18) \quad -2x + 6y &= 6 \\ -7x + 8y &= -5 \end{aligned}$$

$$\begin{aligned} 19) \quad -5x - 8y &= 17 \\ 2x - 7y &= -17 \end{aligned}$$

$$\begin{aligned} 20) \quad -2x - y &= -9 \\ 5x - 2y &= 18 \end{aligned}$$

6) The state fair is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 8 vans and 8 buses with 240 students. High School B rented and filled 4 vans and 1 bus with 54 students. Every van had the same number of students in it as did the buses. Find the number of students in each van and in each bus.

7) The senior classes at High School A and High School B planned separate trips to New York City. The senior class at High School A rented and filled 1 van and 6 buses with 372 students. High School B rented and filled 4 vans and 12 buses with 780 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

8) Brenda's school is selling tickets to a spring musical. On the first day of ticket sales the school sold 3 senior citizen tickets and 9 child tickets for a total of \$75. The school took in \$67 on the second day by selling 8 senior citizen tickets and 5 child tickets. What is the price each of one senior citizen ticket and one child ticket?

9) Matt and Ming are selling fruit for a school fundraiser. Customers can buy small boxes of oranges and large boxes of oranges. Matt sold 3 small boxes of oranges and 14 large boxes of oranges for a total of \$203. Ming sold 11 small boxes of oranges and 11 large boxes of oranges for a total of \$220. Find the cost each of one small box of oranges and one large box of oranges.

1. 4 and 8
2. 5 and 8
3. plane: 135 km/h, wind: 23km/h
4. senior = \$8 child = \$14
5. boat 12 mph current 9 mph
6. van = 8 bus = 22
7. van = 18 bus = 59
8. senior = 4 child = 7
9. small = 7 large = 13