

### 3.2H Systems: Setting Equal & Substitute

Name: \_\_\_\_\_ Per: \_\_\_\_\_

SHOW YOUR WORK FOR FULL CREDIT. NO WORK IN PEN.

Solve the following systems of equations by **substitution or setting equal (#1 and #3)**. Check your solution.

1.  $\begin{cases} y - x = -4 \\ y - 4 = 3x - 4 \end{cases}$

2.  $\begin{cases} x + y = -2 \\ 4y - 12x = -5x + 3 \end{cases}$

3.  $\begin{cases} -2x - 6 = y \\ y = -2x - 6 \end{cases}$

Solution: \_\_\_\_\_

Solution: \_\_\_\_\_

Solution: \_\_\_\_\_

4.  $\begin{cases} 2x + 2y = 17 \\ -4x + 2y = 20 \end{cases}$

5.  $\begin{cases} 8x + 14y = 4 \\ -6x - 7y = -10 \end{cases}$

6.  $\begin{cases} y = x + 4 \\ 3(y - 4) = 3x + 2 \end{cases}$

Solution: \_\_\_\_\_

Solution: \_\_\_\_\_

Solution: \_\_\_\_\_

### 7. Solve the following by finding the number of cats and dogs.

a. A pet store currently has a total of 45 dogs and cats. Fill in Table 1 with possible combinations of cats and dogs.

b. Write the equation for table 1:

\_\_\_\_\_

c. We also know that there are 7 more cats than dogs. Fill in Table 2 with possible combinations of cats and dogs.

d. Write the equation for table 2:

\_\_\_\_\_

e. Graph your tables/equations to estimate the solution.

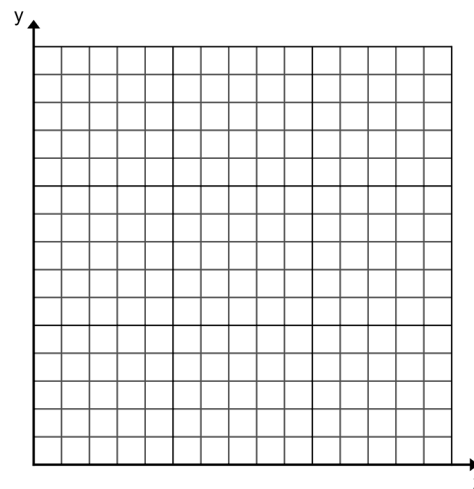
f. Interpret the solution (what does it mean?)

**Table 1**

Dogs	Cats
5	
	10
15	
	20

**Table 2**

Dogs	Cats
	10
15	
19	
	20



\_\_\_\_\_

8. The equations  $5a + 2s = 48$  and  $3a + 2s = 32$  represent the money collected from school concert tickets sales during two evening performances. If  $a$  represents the cost for each adult ticket and  $s$  represents the cost for each student ticket, explain what the two equations could mean.

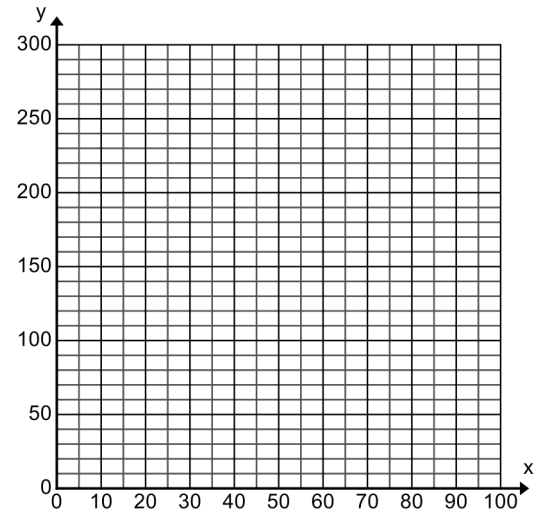
a. What is the cost of an adult and student ticket?

9. Aaron and Xavier are going to meet at the Westlake tennis courts. They leave their houses at the same time. Xavier jogs 300 meters to the courts and passes Aaron's house after 100 m. Xavier's jogging rate is 4 meters per second. Aaron's walking rate is 2 meters per second.

a. Fill in the two tables to show their positions from the tennis courts at any time.

Xavier	
Time (seconds)	Distance to tennis courts
0	
	0

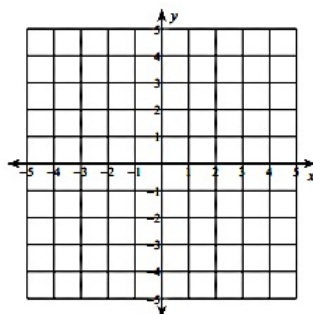
Aaron	
Time (seconds)	Distance to tennis courts
	200
	0



- b. Graph & label the points from your tables on the grid.
- c. What is the x-intercept for Xavier? \_\_\_\_\_
- d. What is the x-intercept for Aaron? \_\_\_\_\_
- e. What does the x-intercept mean? \_\_\_\_\_
- f. What is the y-int. for Xavier? \_\_\_\_\_ Aaron? \_\_\_\_\_
- g. What does the y-intercept mean? \_\_\_\_\_
- h. Write an equation for Xavier \_\_\_\_\_
- i. Write an equation for Aaron \_\_\_\_\_
- j. Circle where your graphs intersect. Estimate the solution \_\_\_\_\_
- k. What is the solution to the system? \_\_\_\_\_
- l. Use the two equations that you wrote and solve the system by substitution
- m. What does your solution mean? \_\_\_\_\_

Solve the systems of inequalities by graphing. **Highlight/Circle your solution set.**

10.  $y \leq -x - 2$   
 $y \geq -5x + 2$



11.  $y > x + 2$   
 $y < -2x + 1$

