

# Summer Assignment



## Algebra Review

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

## Welcome to Algebra 2

Algebra 2 requires students to think, reason, and communicate mathematically. The skills learned during the Algebra 2 curriculum will be used as a foundation in all subsequent math classes.

### Directions:

- The summer packet contains material learned during Algebra 1 and Geometry curriculum. Because these lessons are pre-requisites for Algebra 2 then I expect students to get master on them. Algebra 2 curriculum does not include these lessons.
- Students will find a list of videos in an attachment to help them to remember each lesson.
- Students **MUST** show their work for each problem of this review packet. Each problem should be worked through to its entirety, and correctly; not just attempted.
- The packet will be student's the first grade for the new school year.
- Each student should be prepared to have the summer packet completed and ready to checked during the first week of school.
- Over the course of the first two weeks of the beginning of the school year, the packet will be reviewed, and an assessment will be given as the first test grade of the new school year.
- Do not wait until last minute to do it, remember that you will be tested on these lessons.
- Organize your time wisely. For example, you can do a lesson per week. Then you will have plenty of time to finish before the new school year starts.

Have a blast and bless summer!



WEEK 1

Types of Numbers and Order of Operations

Name all of the sets to which the number belongs. You can use the letter(s)

1)  $\frac{2}{7}$

\_\_\_\_\_

A. Whole Numbers

2) 0.33

\_\_\_\_\_

B. Natural Numbers

3) -1

\_\_\_\_\_

C. Integers

4) 0

\_\_\_\_\_

D. Rational Numbers

5)  $\pi$

\_\_\_\_\_

E. Irrational Numbers

Simplify each expression. Show your work on other paper. No calculators.

6)  $4 \times 3 + 7$

7)  $(14 + 16) - 3 \times 7 + 2 \times 5$

8)  $3(2 + 2 \times 3) - 8 + 9$

9)  $\frac{5+3}{6-2}$

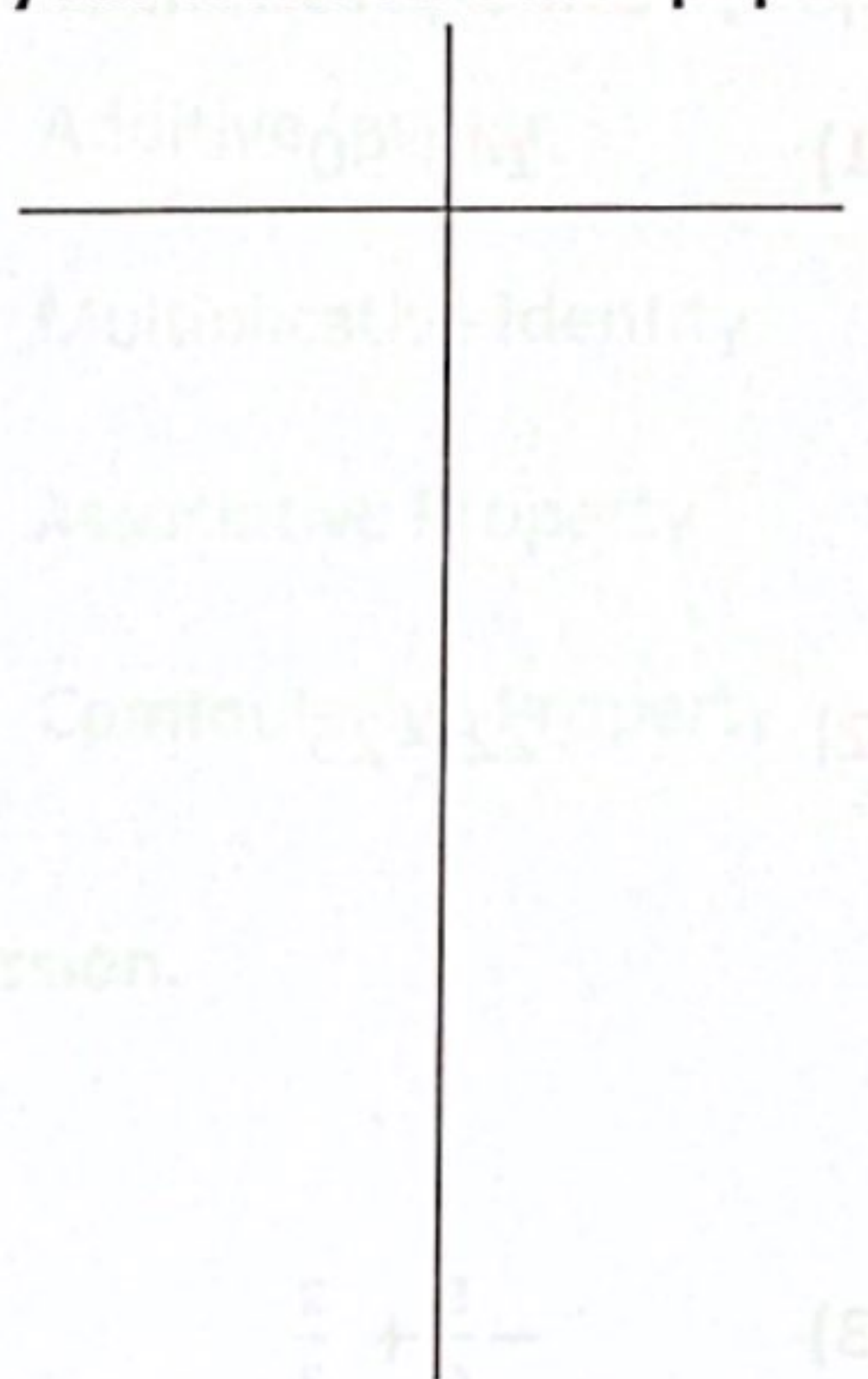
10)  $\frac{20 - 2 \cdot 4 + 12}{12 - 8}$

WEEK 2

Measures of Central Tendency and Function Rules

Use the data below to answer the following. Show your work on other paper.

25 26 14 29 31 52 25 24

- 1) Make a stem and leaf plot 
- 2) Find the Mean \_\_\_\_\_
- 3) Find the Median \_\_\_\_\_
- 4) Find the Mode \_\_\_\_\_
- 5) Find the Range \_\_\_\_\_
- 6) Are there any outliers? If yes, what is it? \_\_\_\_\_

Write a function rule for each table.

7)

X	Y
-3	15
-2	10
2	-10
3	-15

8)

X	Y
1	1
2	4
3	9
4	16

9)

X	Y
-4	-13
0	-5
1	-3
2	-1

10)

X	Y
0	6
1	9
2	12
3	15

# WEEK 3

## Operations with Real Numbers

Simplify each expression. Show work where you can. No Calculators.

1)  $-14 + 90$

6)  $-|-30|$

2)  $-22 - 25$

7)  $-9^2$

3)  $-\frac{5}{6} + \frac{2}{3}$

8)  $(-2)^4$

4)  $3\frac{1}{10} - 7\frac{3}{5}$

9)  $\left(\frac{6}{7}\right)\left(\frac{28}{3}\right)$

5)  $-81 \div 9$

10)  $\left(\frac{2}{5}\right) \div \left(\frac{9}{20}\right)$

## WEEK 4

### Properties of Real Numbers and Probability

#### Matching

- |          |                         |                            |
|----------|-------------------------|----------------------------|
| 1) _____ | $6 + 3 + 7 = 3 + 7 + 6$ | A. Additive Inverse        |
| 2) _____ | $4(1) = 4$              | B. Multiplicative Identity |
| 3) _____ | $2 + (-2)$              | C. Associative Property    |
| 4) _____ | $a(bc) = (ab)c$         | D. Commutative Property    |

Use the distributive property to simplify each expression.

- 5)  $3(x + 7)$
- 6)  $-2(5y - 9)$
- 7)  $-2(m - 9) + 7m + 10$

Find the probability of choosing the marble(s) at random. Your answer should be in lowest terms.

You have a bag of marbles. 4 marbles are blue, 5 marbles are red and 1 marble is yellow.

- 8) P(red then blue with replacement) \_\_\_\_\_
- 9) P(yellow then blue without replacement) \_\_\_\_\_
- 10) P(purple) \_\_\_\_\_

## WEEK 5

### Solving Equations and Proportions

Solve each equation. Show your work on other paper.

1)  $3x + 9 = 15$

2)  $\frac{2}{3}x + \frac{1}{2} = \frac{5}{6}$

3)  $-6m + 10 = -2(3m - 8)$

4)  $6(y - 6) + 2y = 4(2y - 3) - 24$

5)  $0.30w - 0.7 = 12.23$

Solve each proportion. Show your work on other paper.

6)  $\frac{9}{21} = \frac{6}{x}$

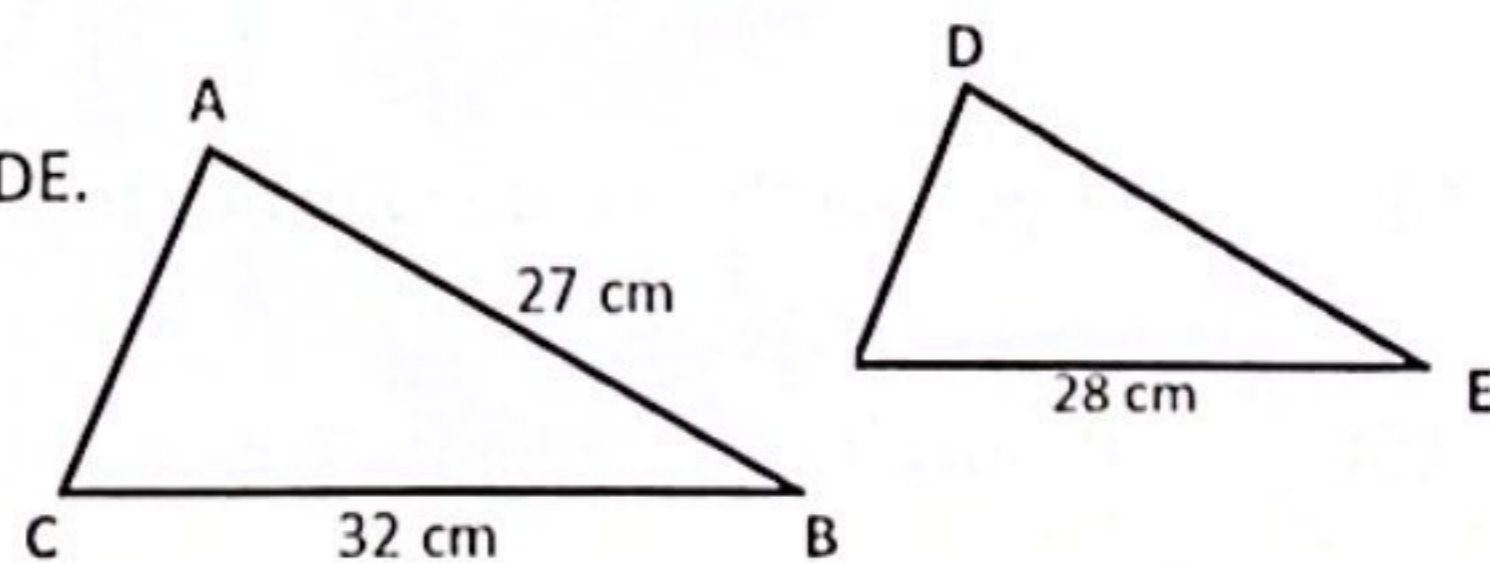
7)  $\frac{x+2}{3} = \frac{x-12}{2}$

Write a proportion and solve. Show your work on other paper.

8) Bob bought 4 dog bones for \$6.50. How many bones could he get for \$20?

9) Bob (who is 0.3 meters tall) has a shadow that is 0.2 meters long. If a tree nearby has a shadow that is 4.5 meters long, how tall is the tree?

10) These triangles are similar. Find side DE.



## WEEK 6

### Writing Equations, Percents and Pythagorean Theorem

**Write an equation and solve it. Show your work and tables on other paper.**

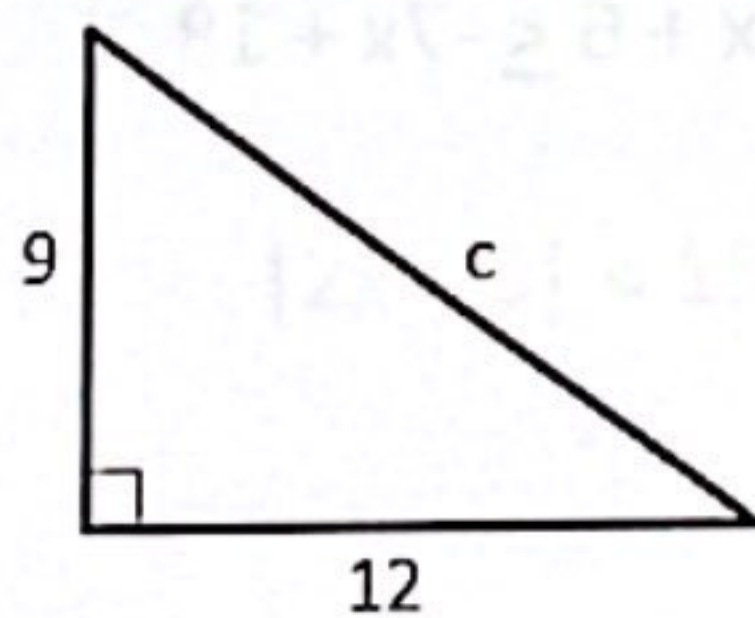
- 1) The length of a rectangle is 4 in. more than twice its width. The perimeter of the rectangle is 40 inches. What is the length of the rectangle?
- 2) A rectangular garden has a length that is three times its width. The perimeter is 66 ft. What are the dimensions of the garden?
- 3) The sum of three consecutive integers is 459. Find the integers.
- 4) The sum of four consecutive even integers is 108. Find the integers.
- 5) In the morning Bob walks 3.5 km/h for 20 minutes ( $\frac{1}{3}$  of an hour). In the afternoon, the same route takes him 45 minutes ( $\frac{3}{4}$  of an hour). How fast is he walking in the afternoon?
- 6) A car is traveling 30mph and a bus is traveling 25mph. The bus travels for 0.5 hours more than the car. How many hours did each travel?

**Find the percent increase or decrease. Round to the nearest percent.**

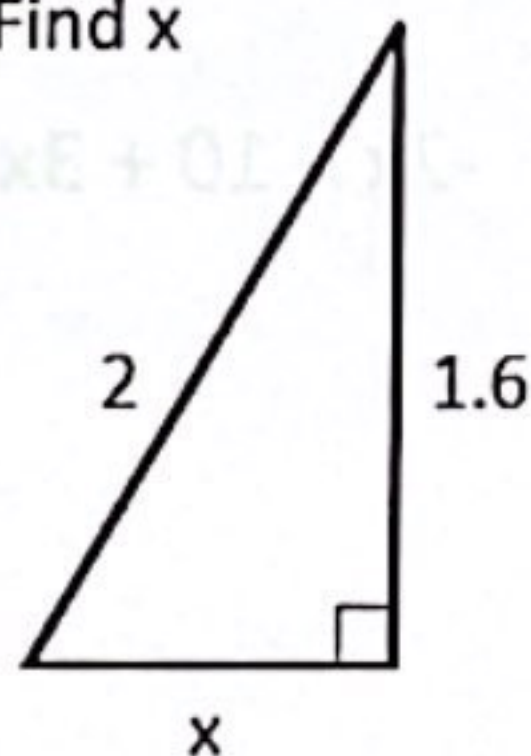
- 7) \$56 to \$34

**Use the pythagorean theorem to solve the following problems.**

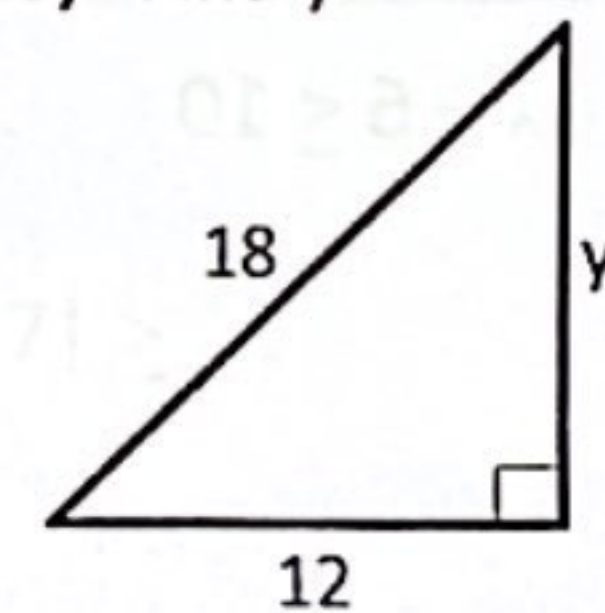
- 8) Find  $c$



- 9) Find  $x$



- 10) Find  $y$





WEEK 7

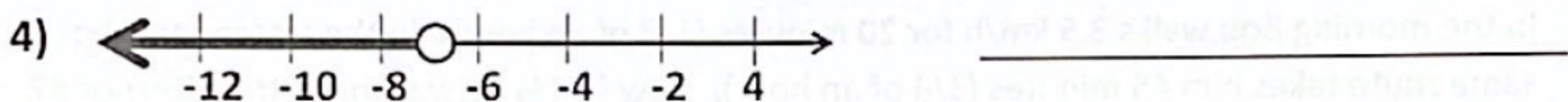
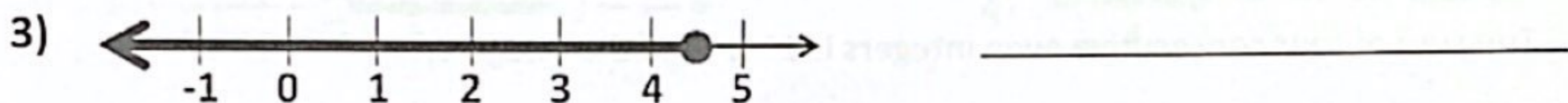
Solving and Graphing Inequalities

Define a variable and write an inequality to model each situation.

1) You must be over 18 to get into the club. \_\_\_\_\_

2) Your rubric score cannot be more than 8. \_\_\_\_\_

Write an inequality for each graph.



Solve each inequality and graph the solution.

5)  $2x - 4 < 10$

6)  $3y + 10 \geq 12$

7)  $-5x + 10 < 25$



8)  $4x - 6 \leq 10$

9)  $-2x > 10 + 3x$

10)  $-x + 6 \leq -7x + 18$



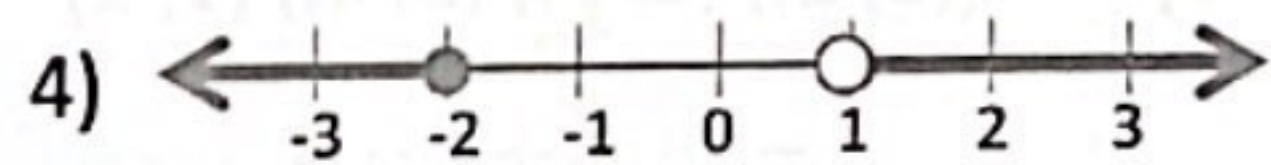
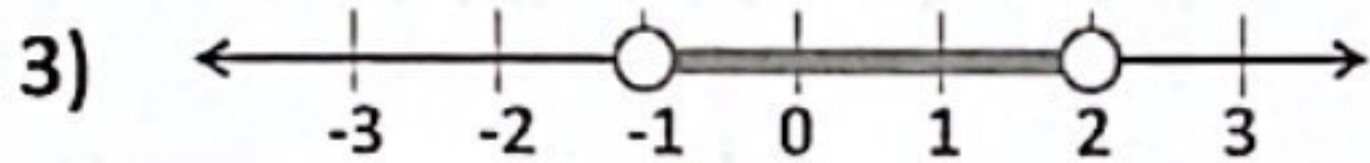
# WEEK 8

## Compound Inequalities

Write each of the following as compound inequalities.

1) You must be at least 6 years old and no more than 14 years old to join the club.

2) You need to have more than 5 players, but you cannot have more than 12.



Solve and graph the solutions. Show your work on other paper.

5)  $-3 < j + 2 < 7$



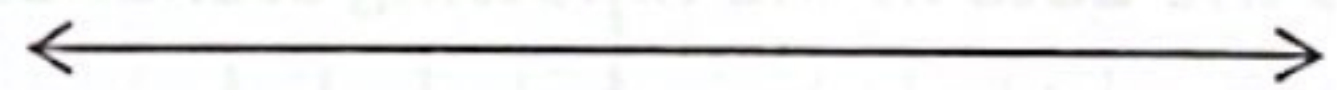
6)  $25r < 400$  or  $100 < 4r$



7)  $3 \geq 4r - 5 \geq -1$



8)  $1 \leq .25x \leq 3.5$



9)  $|2x - 5| < 15$



10)  $|4x + 7| \geq 21$



WEEK 9

Functions, Graphing Data and Arithmetic Sequences

Find the domain and range of the following ordered pairs. Be sure to use set notation.

1)  $\{(9, 1), (-2, 3), (4, 1), (7, 6)\}$

Use a mapping diagram to determine whether the relation is a function.

2)  $\{(2, 2), (8, 2), (3, 4), (1, 1)\}$

3)  $\{(4, 3), (5, 6), (4, 4), (2, 9)\}$

Find the range for the function given the domain. Show your work on other paper.

4)  $F(x) = -2x - 14$  D:  $\{-2, 0, 2, 13\}$

5)  $F(x) = \frac{2}{3}x + 2$  D:  $\{\frac{1}{3}, \frac{3}{2}, 6, 12\}$

Is the data in the following scenarios continuous or discrete?

6) The temperature as the day goes on. \_\_\_\_\_

7) The number of people on stage during a play \_\_\_\_\_

8) Your height throughout your life. \_\_\_\_\_

Find the 8<sup>th</sup> term of each arithmetic sequence. Show your work on other paper.

9) 12, 16, 20, 24, ...

10) -6, -3, 0, 3, ...

WEEK 10

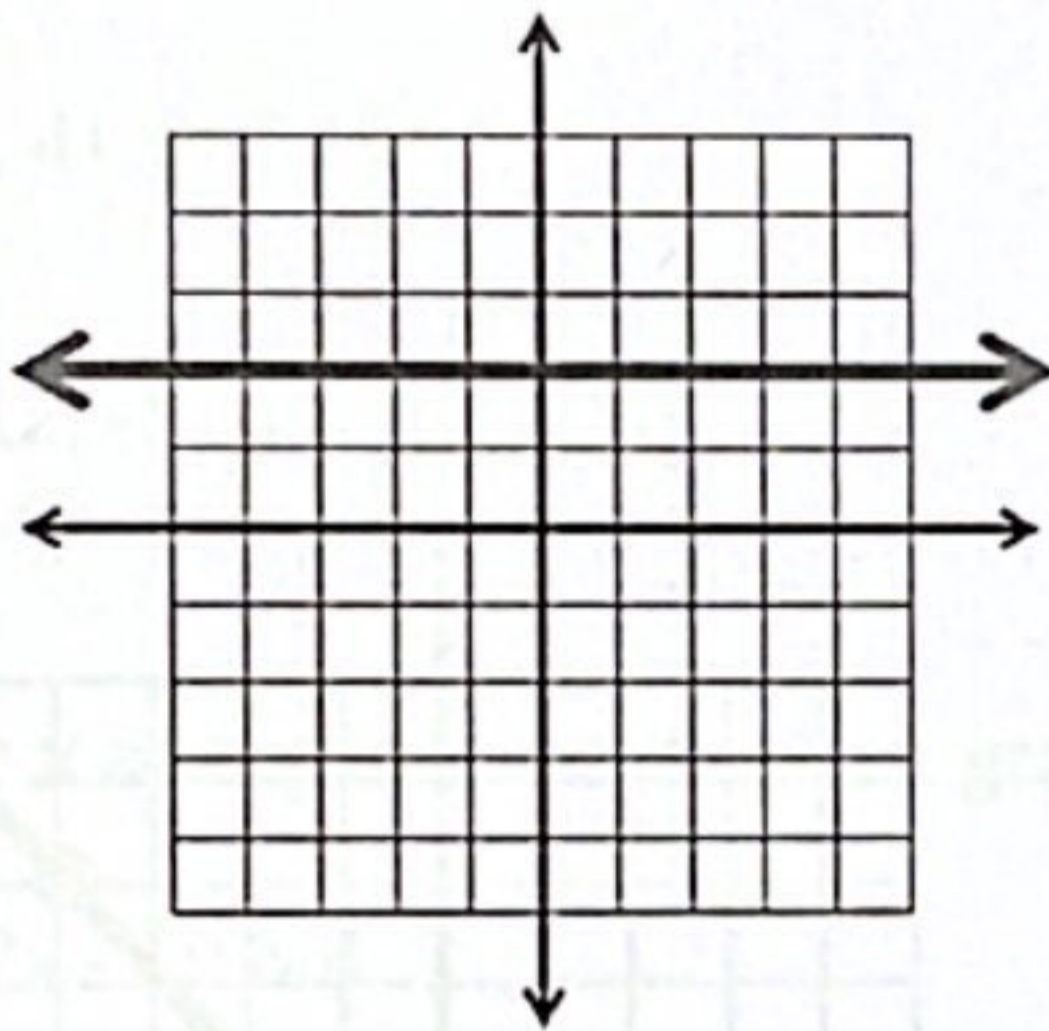
Slope and Slope Intercept Form

Find the slope.

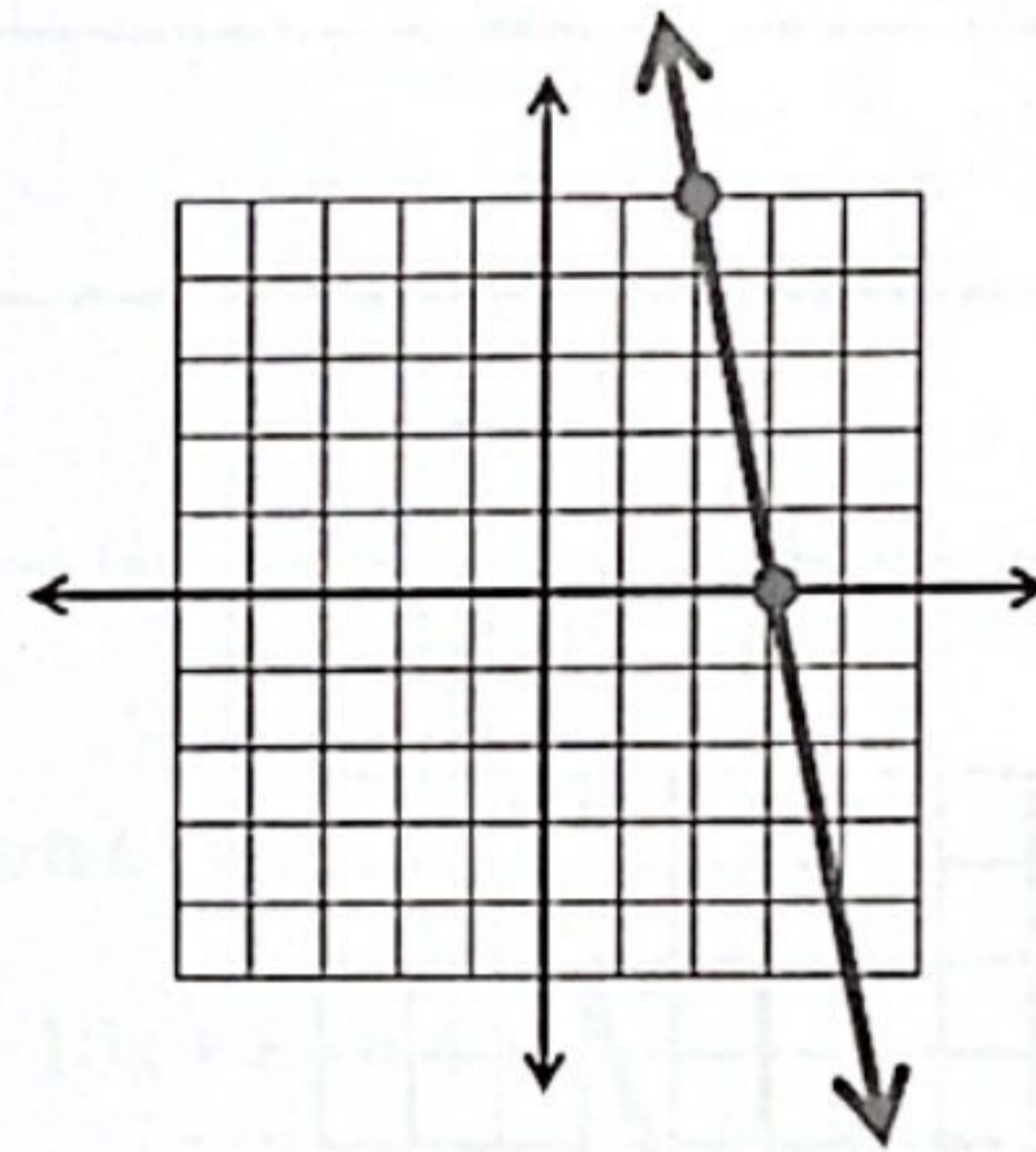
1)  $(4, 2)$  and  $(-14, 10)$

2)  $(-2, -4)$  and  $(-8, -10)$

3)

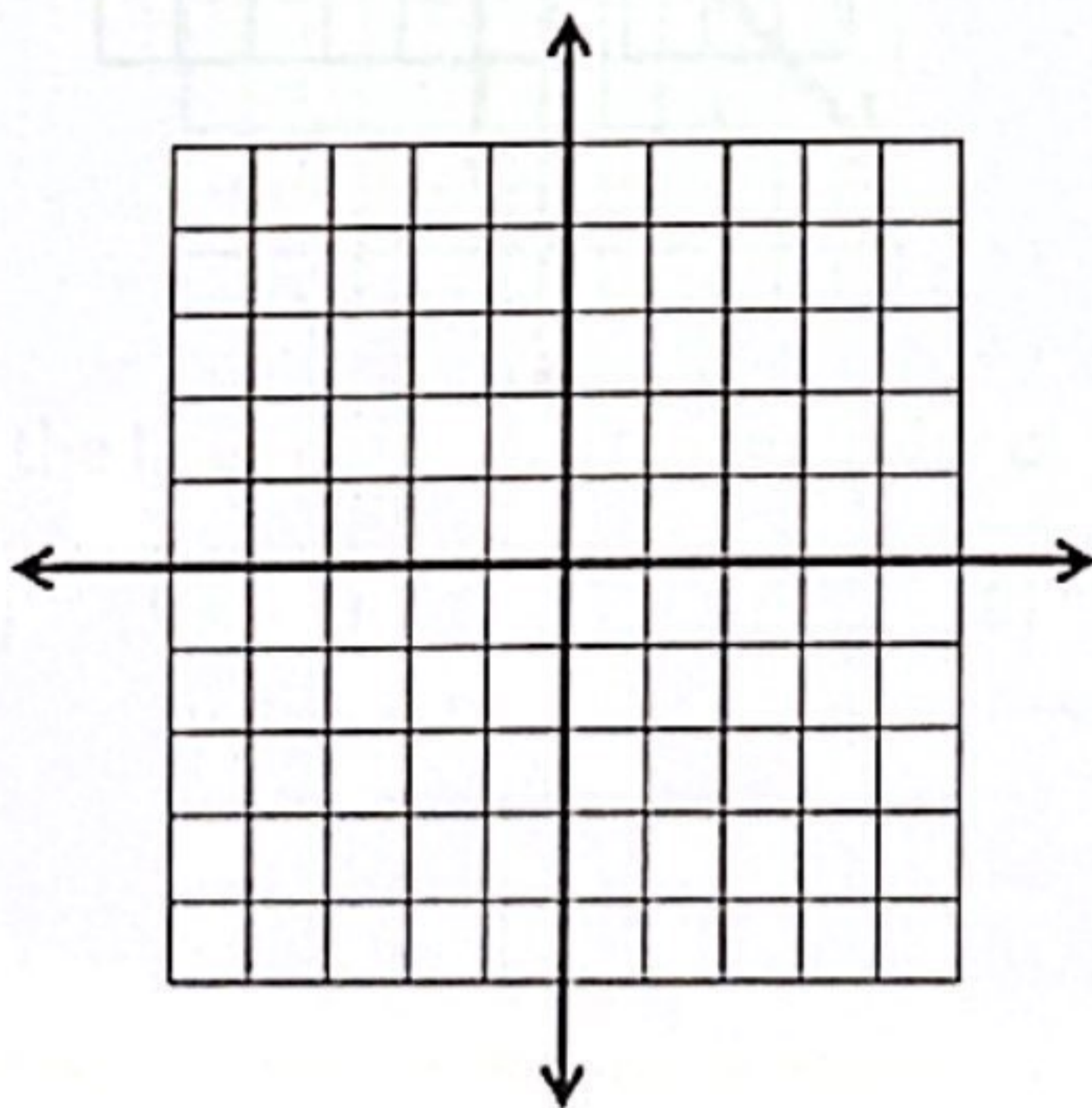


4)

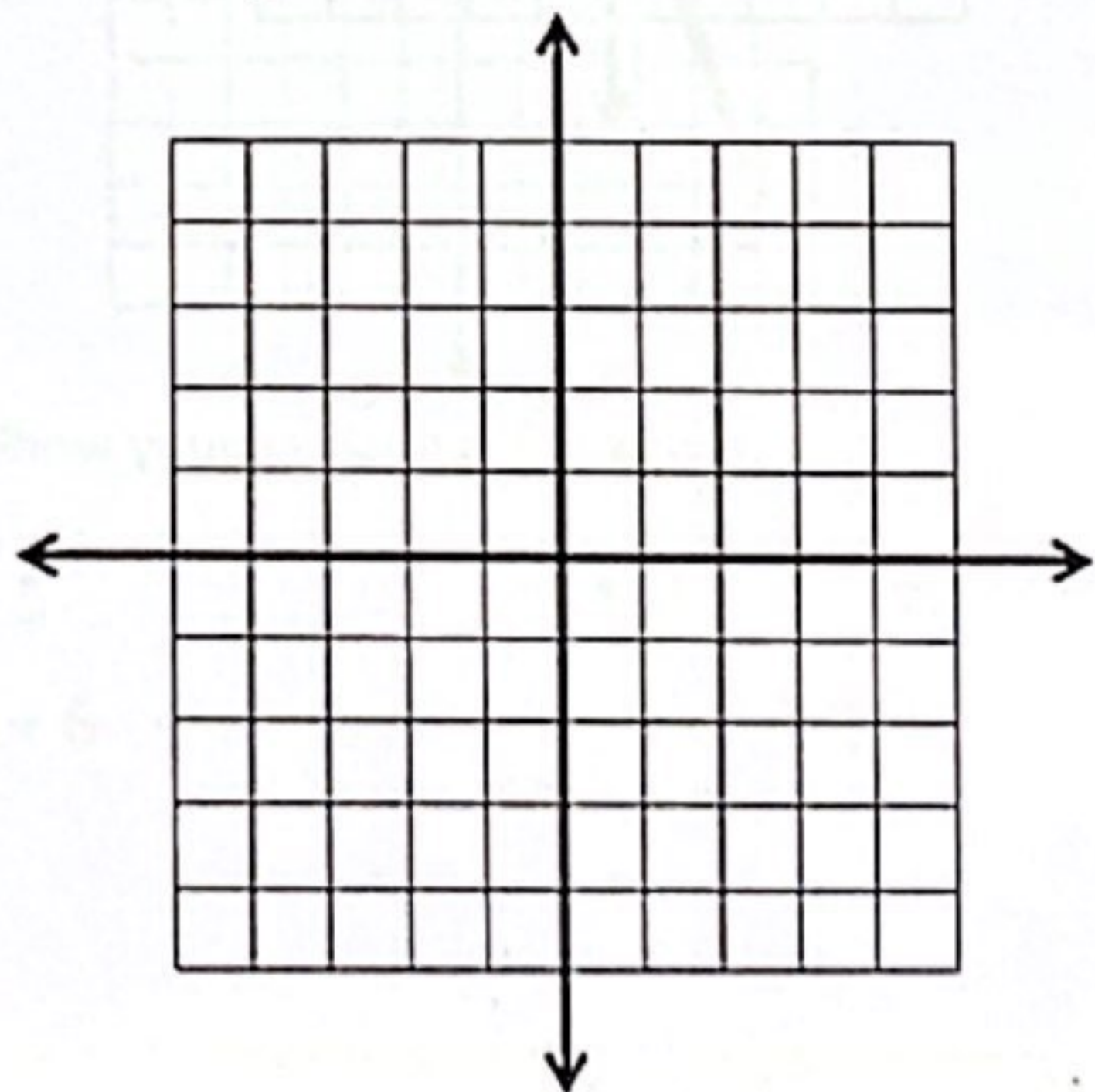


Use slope intercept form to graph the equation of each line.

5)  $y = 3x - 5$

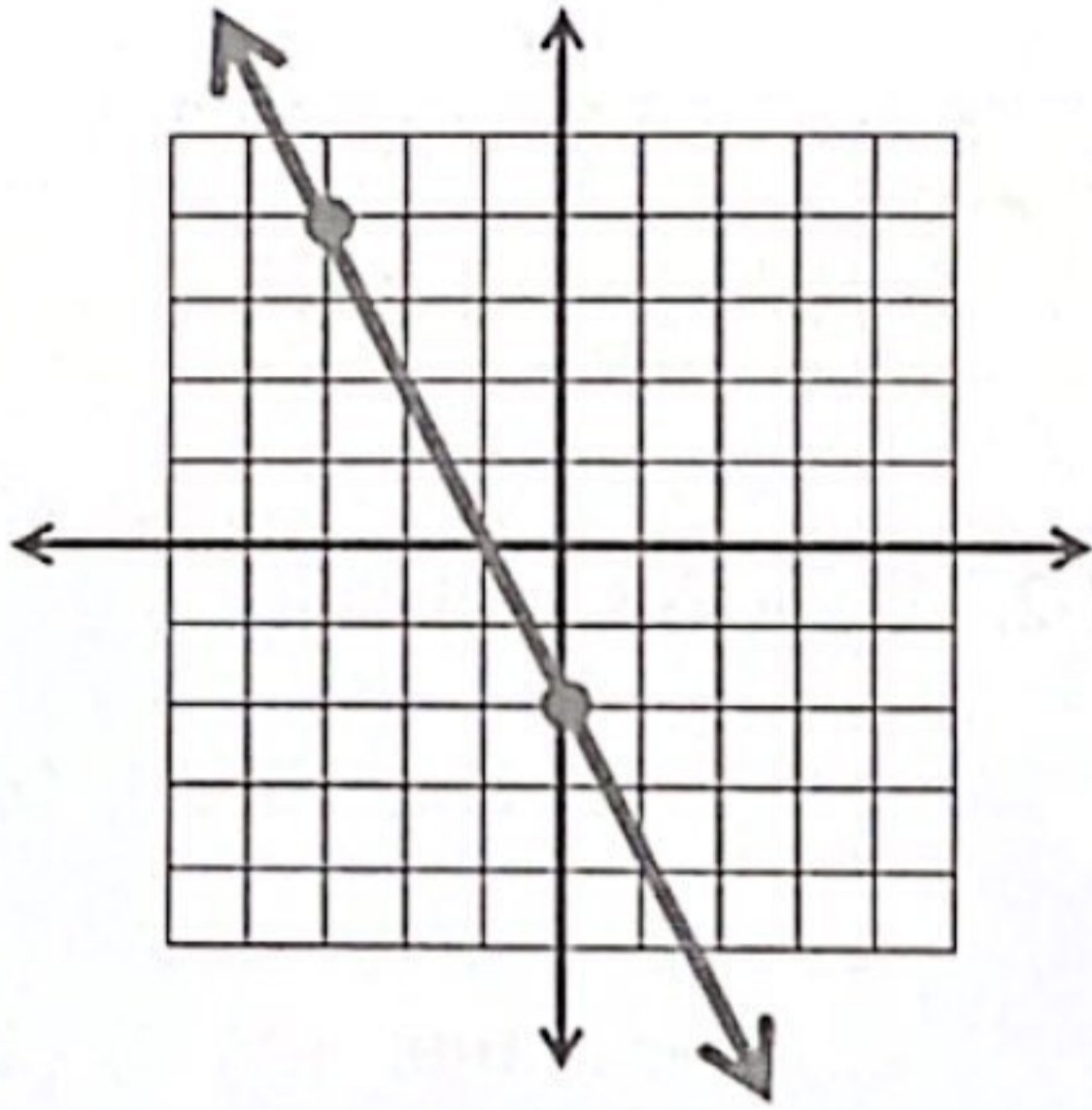


6)  $y = -\frac{2}{3}x + 4$

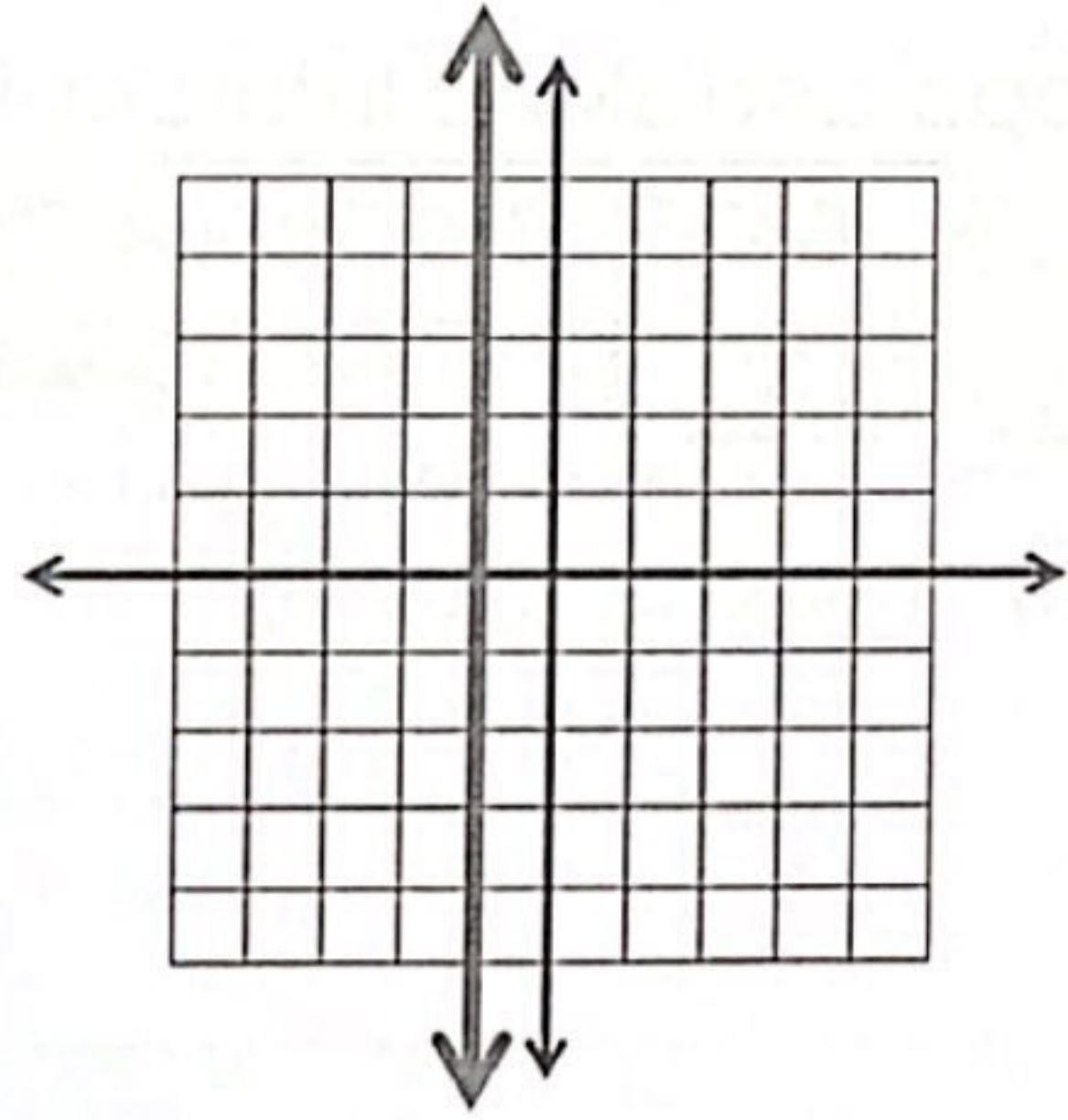


Use the graph to write the equation of each line.

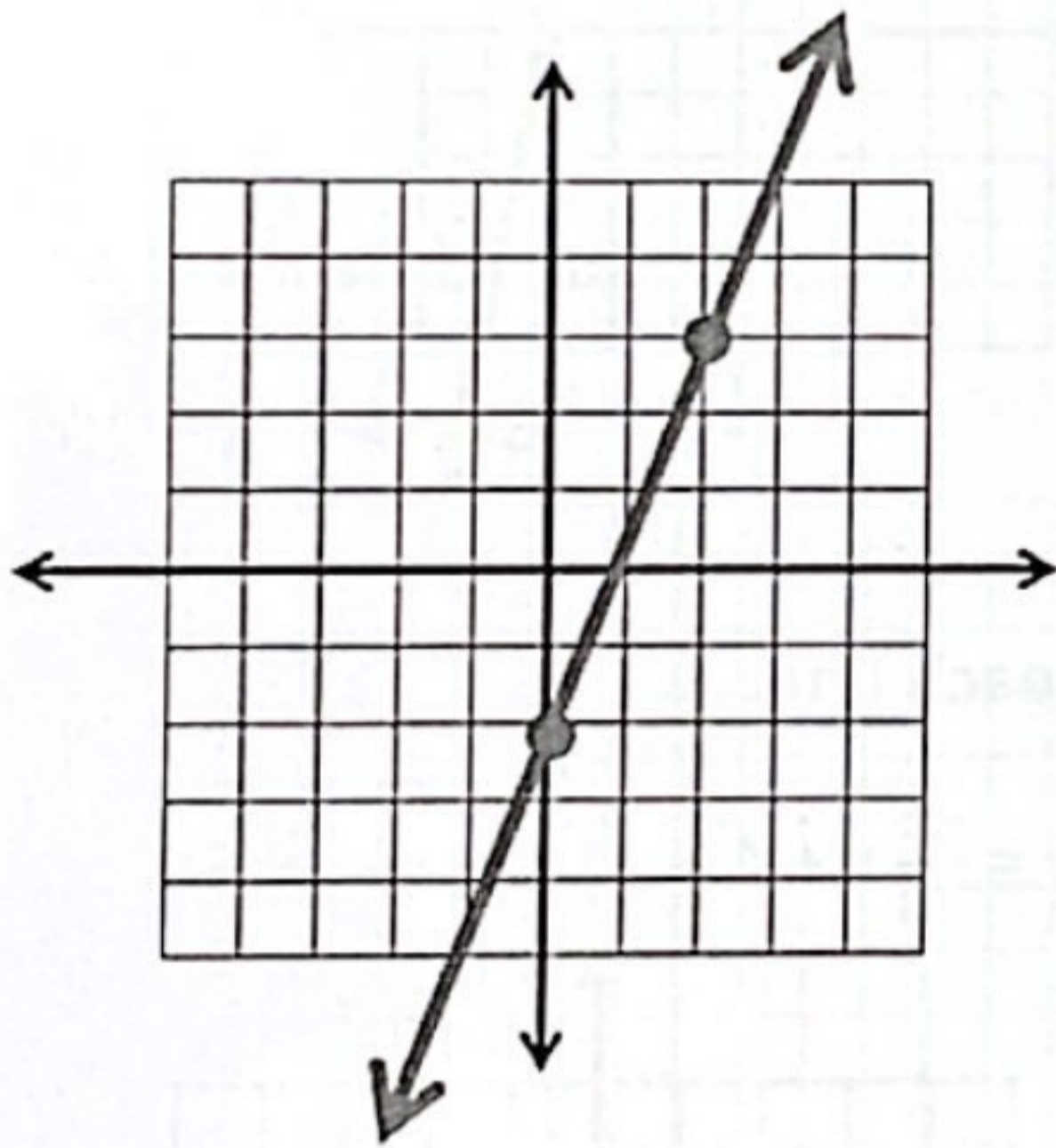
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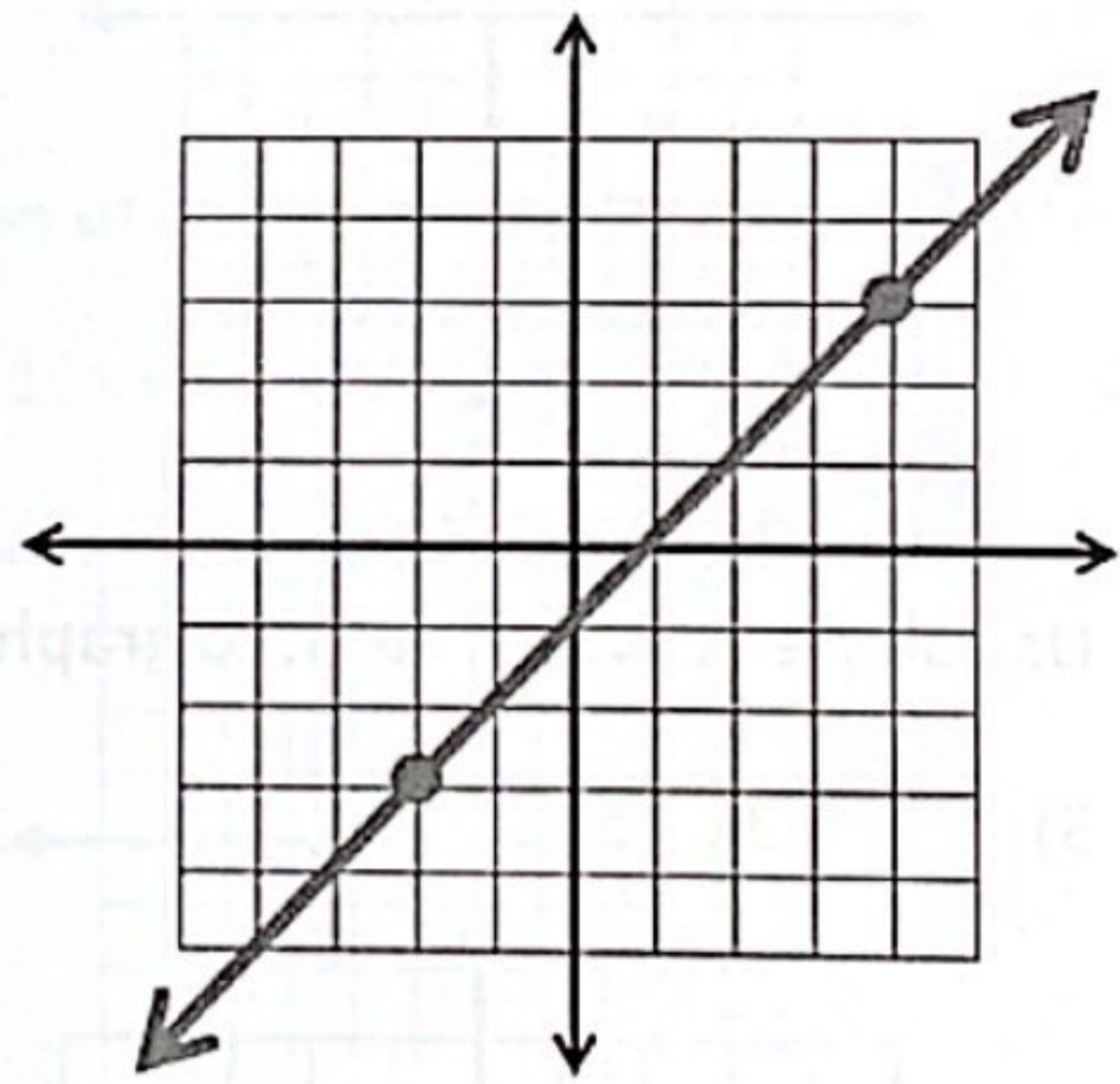
8)



9)



10)



WEEK 11

Point Slope Form, Standard Form, and Parallel/Perpendicular

Write an equation in point slope form. Then put it into slope intercept form.

Show your work on other paper.

1)  $(2, -6)$  and  $m = -\frac{1}{2}$

\_\_\_\_\_

2)  $(0, 10)$  and  $m = 3$

\_\_\_\_\_

3)  $(-3, 7)$  and  $m = -2$

\_\_\_\_\_

4)  $(2, 4)$  and  $(6, 6)$

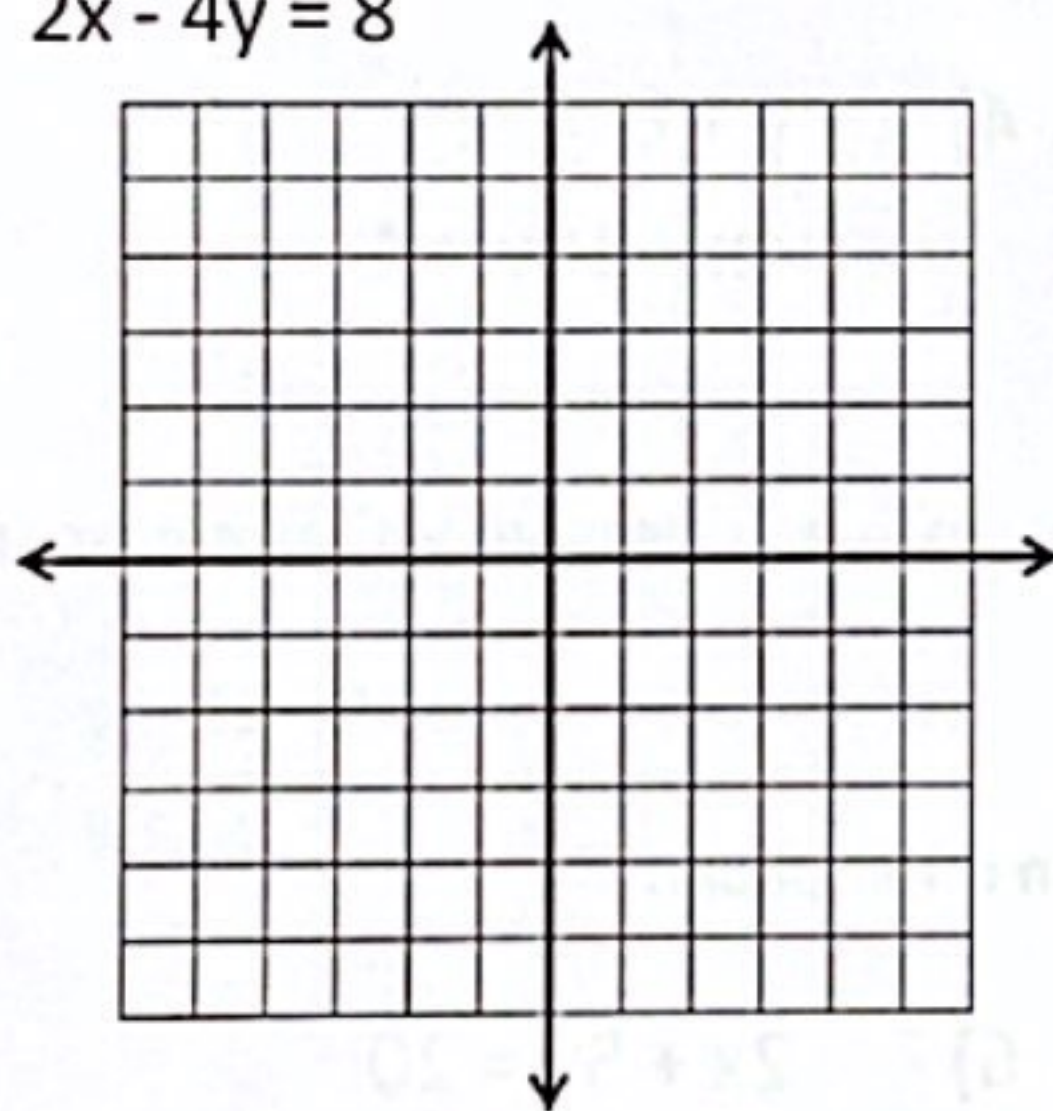
\_\_\_\_\_

5)  $(-12, -6)$  and  $(-10, 8)$

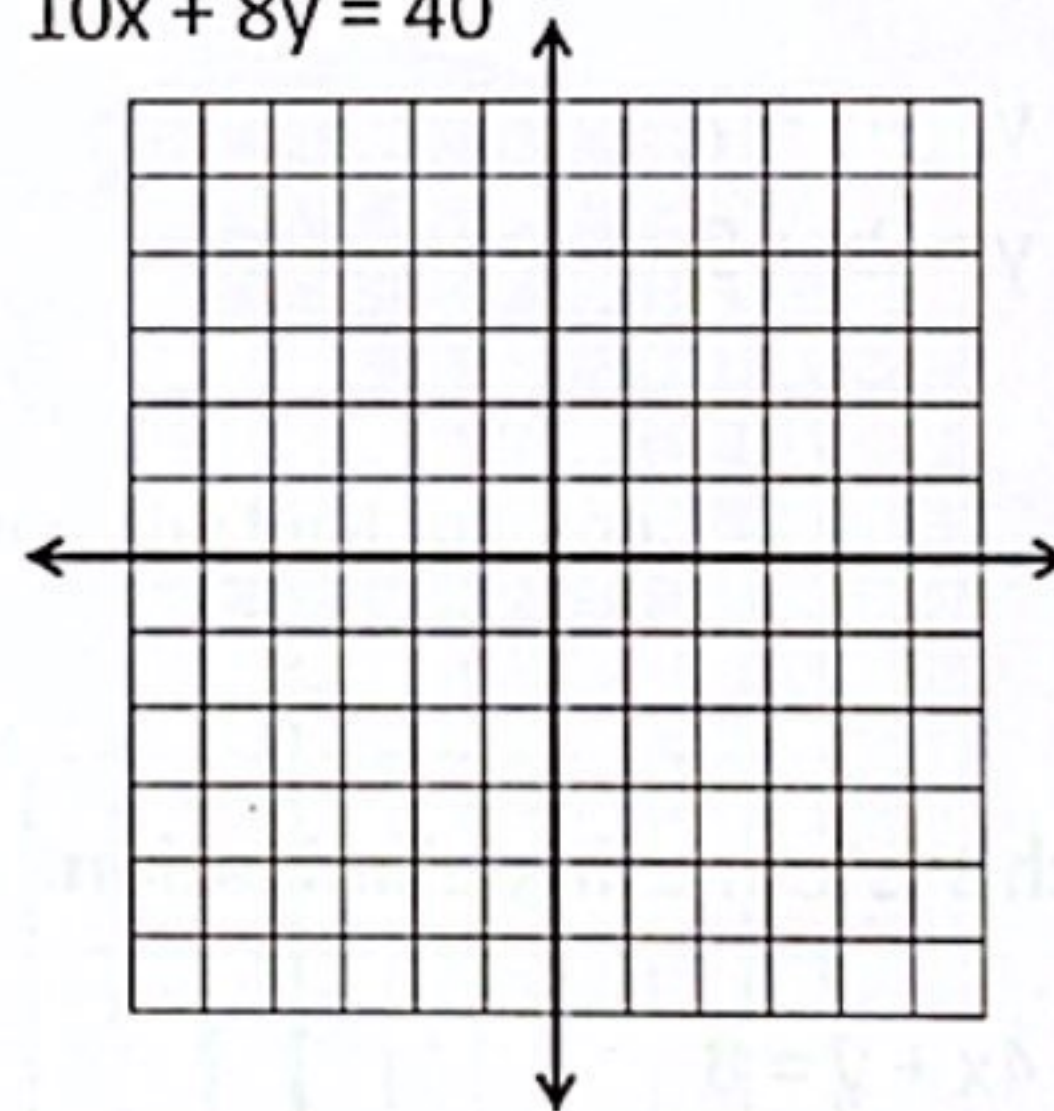
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Find the x and y intercepts then graph the equation of each line.

6)  $2x - 4y = 8$



7)  $10x + 8y = 40$



Are the lines parallel, perpendicular or neither? Show your work on other paper.

8)  $y = 2x + 4$

$2y = 4x - 12$

9)  $y = 3x - 5$

$y = -\frac{1}{3}x + 6$

10)  $y = 7$

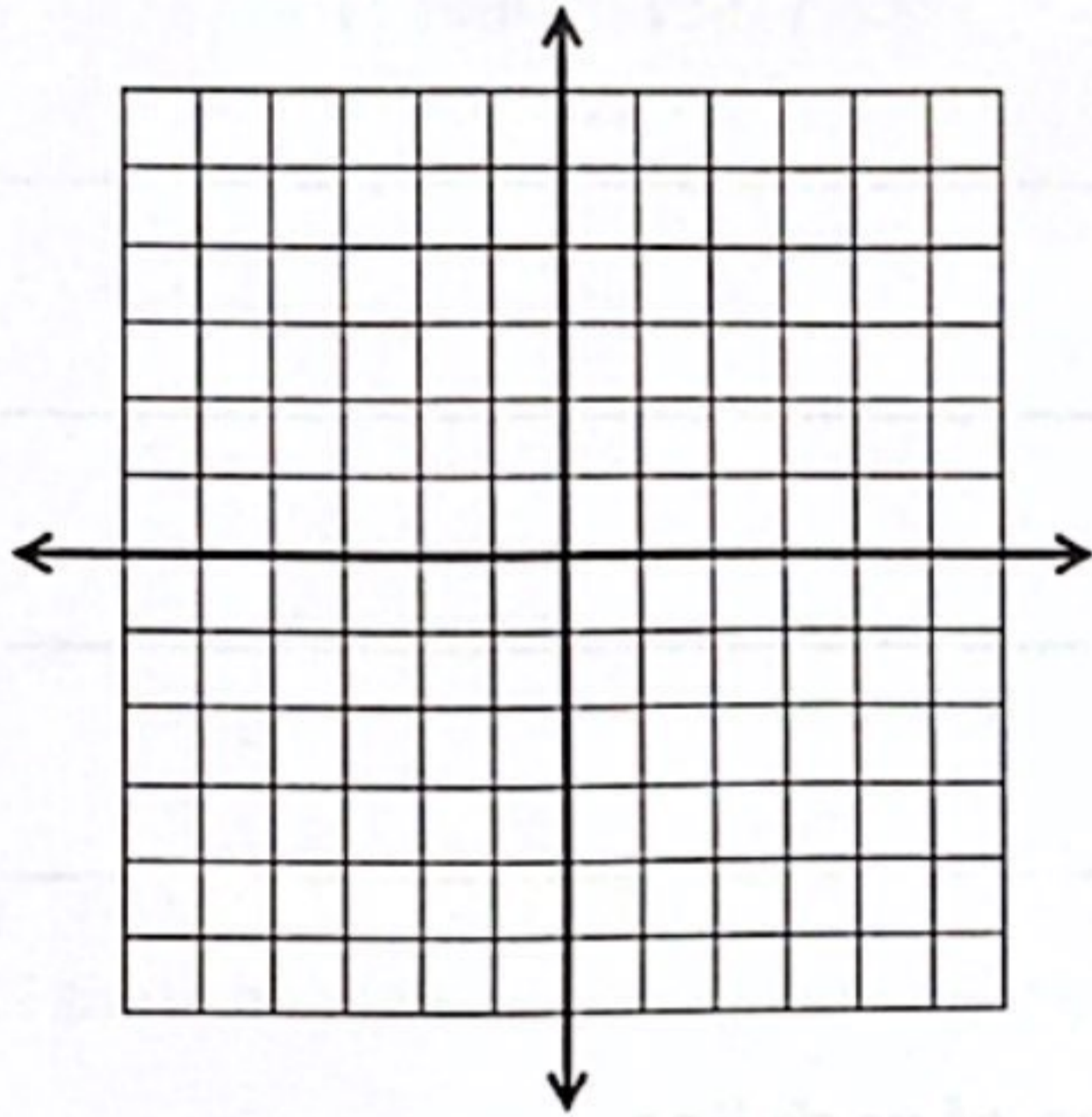
$x = 3$

WEEK 12

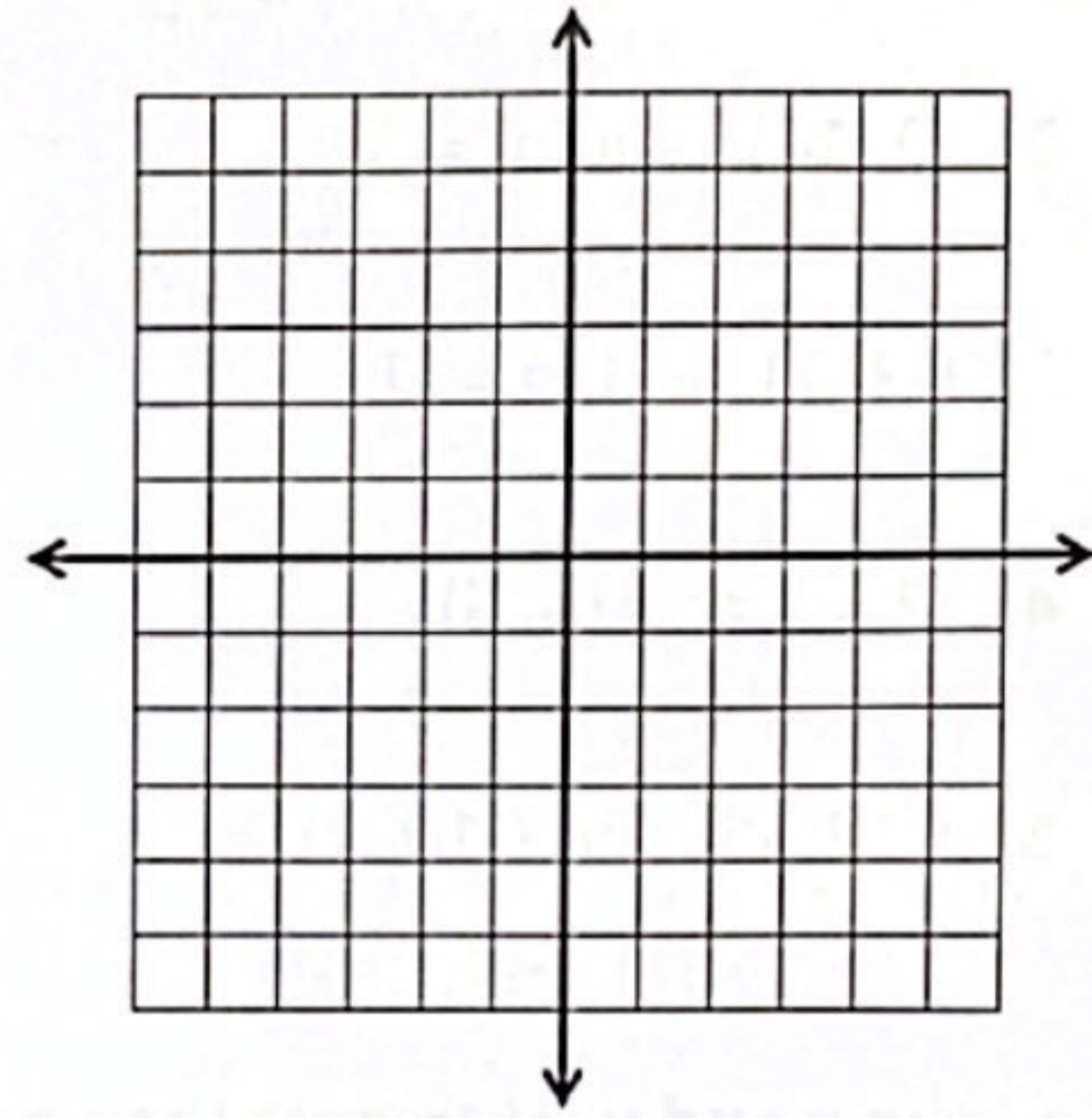
Systems of Linear Equations and Inequalities

Solve each system by graphing.

1)  $y = 3x - 6$   
 $y = -3$



2)  $x + y = -3$   
 $2x - y = -6$



Solve each system using substitution. Show your work on other paper.

3)  $y = 4x - 7$   
 $y = 2x + 9$

4)  $y + 6 = 2x$   
 $4x - 10y = 4$

Solve each system using elimination. Show your work on other paper.

5)  $4x + y = 8$   
 $-3x - y = 0$

6)  $2x + 5y = 20$   
 $3x - 10y = 37$

Write a system of equations and solve using any method.

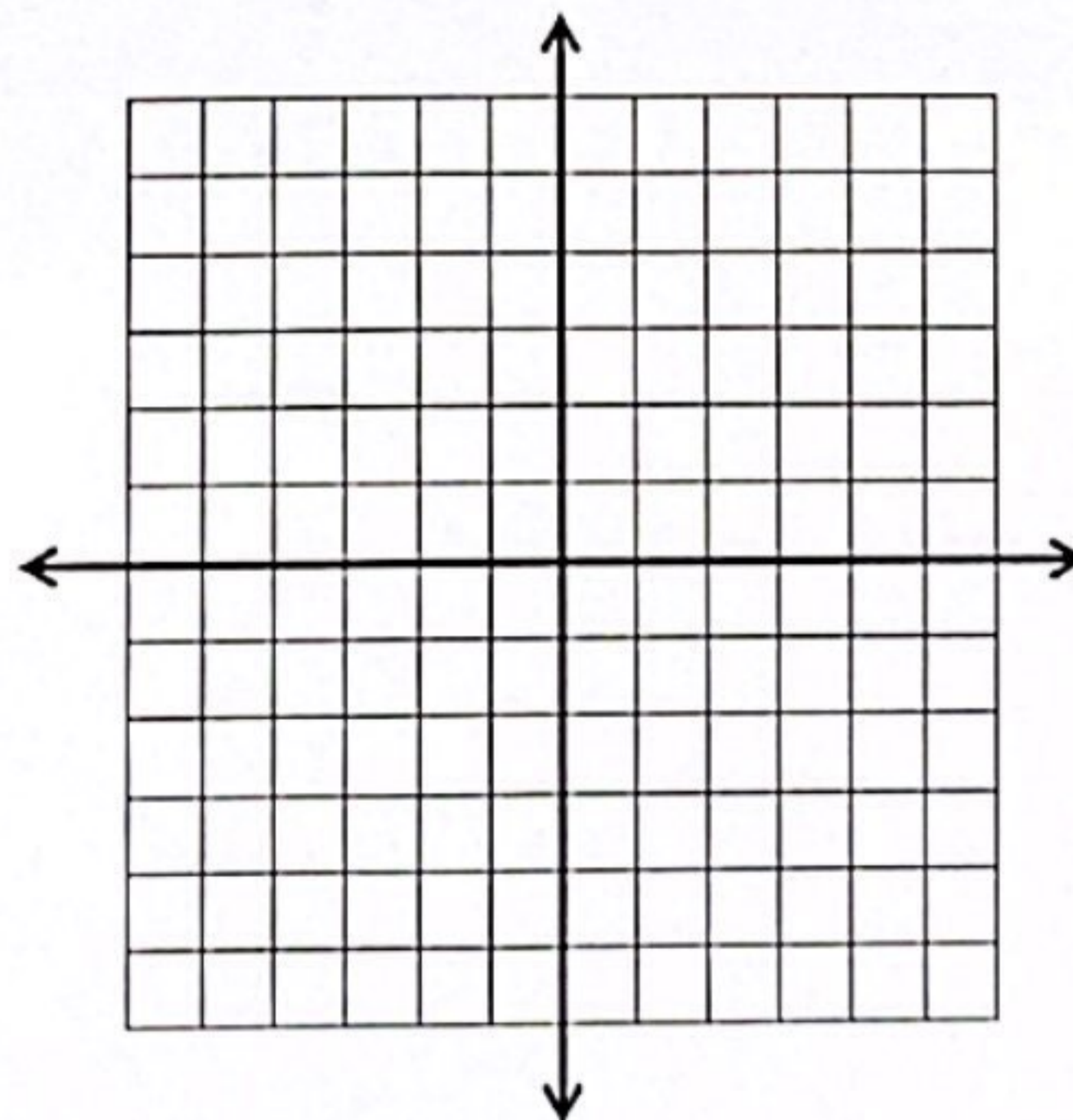
7) You need to fence in a rectangular piece of land for your dog to run and play. The length is 3 times the width. If the perimeter is 120 ft, what are the dimensions of your very own dog park?

8) You have 15 coins in your pocket that are either quarters or nickels. They total \$2.75. How many of each coin do you have?

9) A farmer raises chickens and cows. There are 34 animals in all. The farmer counts 110 legs on these animals. Write a system of equations to find the number of each type of animal.

Solve the linear inequality by graphing. Use a third color to show the final solution.

10)  $y \geq 4x - 2$   
 $y < -2x + 5$



Week 12 Continued