

Name:

WEEK ONE: Arithmetic and Geometric Sequences

1. Determine if each sequence of numbers is arithmetic, geometric or neither.

- a. $2, -6, 18, -54, \dots$ geometric

- b. $12, 3, \frac{3}{4}, \frac{3}{16}, \frac{3}{64}, \dots$ geometric

- c. $5, 7, 9, 11, 13, \dots$ arithmetic

- d. $\frac{1}{2}, \frac{1}{6}, \frac{1}{10}, \frac{1}{14}, \dots$ neither

- e. $3, -3, 3, -3, 3, \dots$ geometric

- f. $\frac{1}{2}, 1, \frac{3}{2}, 2, \dots$ arithmetic

2. Find the recursive and explicit rules for the sequence.

- a. $5, 7, 9, 11, 13, \dots$ $f(n) = f(n - 1) + 2; f(1) = 5$
 $f(x) = 2x + 3$
- b. $2, -6, 18, -54, \dots$ $f(n) = f(n - 1) \cdot -3; f(1) = 2$
 $f(x) = 2(-3)^{x-1}$

3. Find the missing numbers in the arithmetic sequence.

5, 8, 11, 14, 17

4. Find the missing numbers in the geometric sequence.

2, $\frac{1}{3}$, 18, $\frac{1}{3}$, 162

Week Two - Expressions and Equations.

Simplify each of the following expressions. Using the distributive property.

1. $3(2x - 4)$ $6x - 12$

2. $3x(2x + 1)$ $6x^2 + 3x$

3. $5x(x - 4) + 2x$ $5x^2 - 18x$

4. $2x(3x - 4) - 5(3x - 4)$ $6x^2 - 23x + 20$

5. $x(7x + 2) - 3(7x + 2)$ $7x^2 - 19x - 6$

6. Find the **GCF** (greatest common factor) of the $4x$ and $12x^2$.

$$4x$$

7. Find the **GCF** (greatest common factor) of the $40x^2y$ and $15xy^2$.

$$5xy$$

Week Two - Expressions and Equations.

8. Solve each of the following equations for x.

a. $3x - 7 = -5x + 33$

$$x = 5$$

b. $2(x - 3) = 5x + 12$

$$x = -6$$

c. $4(x - 3) - 5x = 12 - x + 3$

no solution

d. $3x + 4(x - 7) = 6(x - 4) + x - 4$

x = any real number, infinitely many solutions

Week Three: Linear Equations

For questions 1 – 5, match each slope of the line with information given about the line.

 ^e 1. (0, 7) and (3, 9)

a. 0

 ^c 2. $y = -\frac{2}{3}x - 5$

b. \emptyset

 ^a 3. $y = 5$

c. $-\frac{2}{3}$

 ^d 4. $3x + 2y = 12$

d. $-\frac{3}{2}$

 ^b 5. $x = 5$

e. $\frac{2}{3}$

6. Write the equation of the line with a slope of -2 and y-intercept of 4.

$$y = -2x + 4$$

7. Write the equation of the line with a slope of 3 through the point (-4, 2).

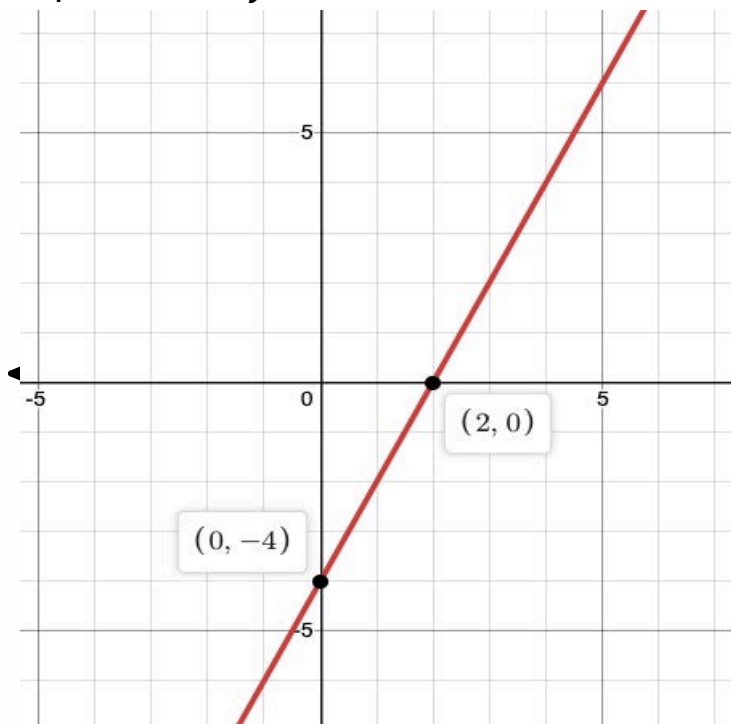
$$y = 3x + 14$$

8. Transform the equation $4x - 5y = -20$ into the slope intercept form.

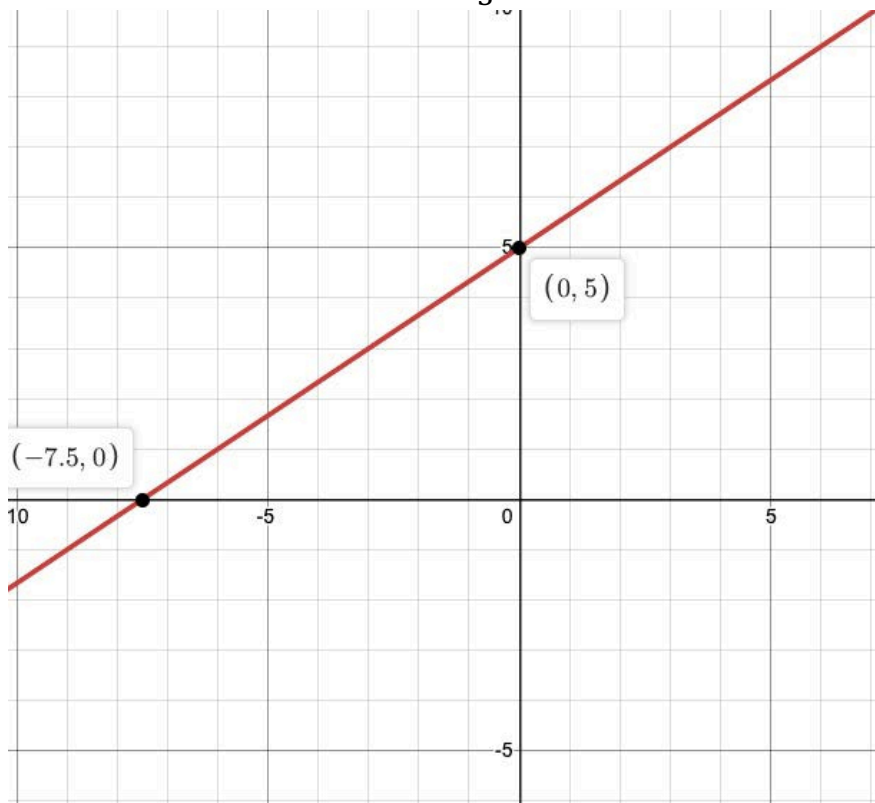
$$y = \frac{4x}{5} + 4$$

Week Three – Linear Equations

9. Graph the line $y = 2x - 4$



10. Graph the line $y = \frac{2}{3}x + 5$



Week Four – Functions

1. Given $f(x) = 4x - 7$, find each of the following.

a. $f(2) = \underline{\quad 1 \quad}$

b. $f(-3) = \underline{\quad -19 \quad}$

c. x , if $f(x) = 13$. $x = \underline{\quad 5 \quad}$.

d. x , if $f(x) = -5$. $x = \underline{\quad 0.5 \quad}$.

2. Juan has \$325 in the bank. He earns \$175 a week at his job.

a. Write a function to represent the amount of money Juan has for x weeks. $f(x) = 175x + 325$

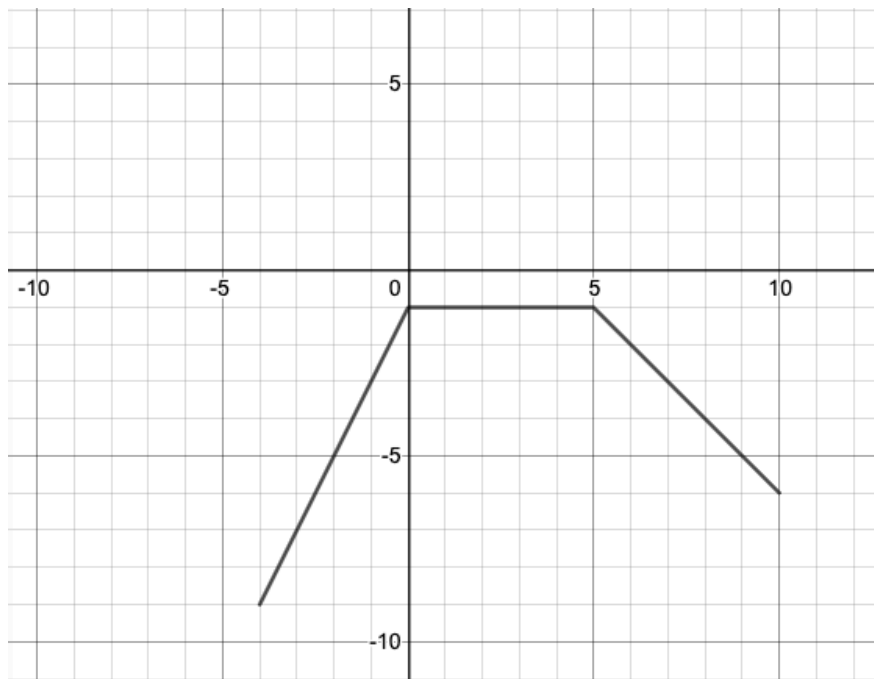
b. Evaluate $f(7) = \underline{\quad \$1550 \quad}$

c. What does $f(7)$ represent in the context?

He will have \$1550 in the bank after 7 weeks.

Week Four – Functions

For the graph of the given function identify the required items below.



3. Which of the following correctly describes the domain?
A. $(-\infty, \infty)$ B. $[-4, 10]$ C. $[-9, -1]$ D. $[-4, \infty)$
4. Which of the following is the coordinate of the minimum?
A. $(-4, -9)$ B. $(10, -6)$ C. $(-9, -4)$ D. $(0, -1)$
5. Which of the following correctly describes the range?
A. $[-4, \infty)$ B. $[-9, -1]$ C. $[-4, 10]$ D. $(-\infty, \infty)$
6. Which of the following shows an interval where the function is increasing?
A. $(-\infty, \infty)$ B. $[0, 5]$ C. $[-4, 0]$ D. $[5, 10]$
6. Which of the following is the coordinate of the y-intercept?
A. $(-4, -9)$ B. $(10, -6)$ C. $(0, -1)$ D. $(-9, -4)$
7. Which of the following is the coordinate of an x-intercept?
A. $(9, 0)$ B. $(0, 2)$ C. $(0, 7)$ D. None

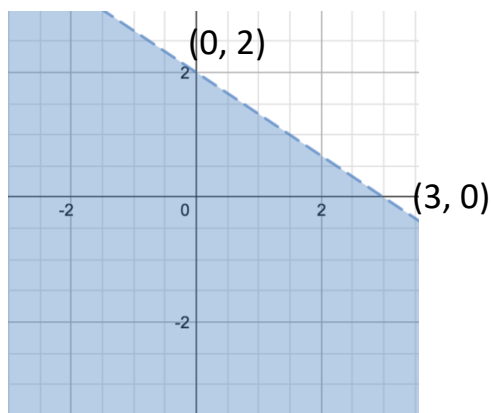
WEEK FIVE – Systems of Equations and Inequalities

1. What is the inequality of the graph below?

a. $y \geq \frac{-5x + 20}{4}$



b. $y < \frac{-2x + 2}{3}$



2. Solve the system $\begin{cases} y = -2x - 5 \\ 5x - 2y = 19 \end{cases}$.

A. (8, 0)

B. (1, -7)

C. (-7, 1)

D. (-18, 2)

WEEK FIVE – Systems of Equations and Inequalities

3. Solve the system $\begin{cases} 8x - 6y = -20 \\ -16x + 7y = 30 \end{cases}$.

A. $(-2.5, 0)$

B. $(-2, -2.75)$

C. $(2, -1)$

D. $(-1, 2)$

4. Solve each system of equations below.

a. $\begin{cases} 2x - 5y = 26 \\ 6x + 4y = -74 \end{cases}$

$(-7, -8)$

b. $\begin{cases} y = -2x + 10 \\ -4x + 7y = 142 \end{cases}$

$(-4, 18)$

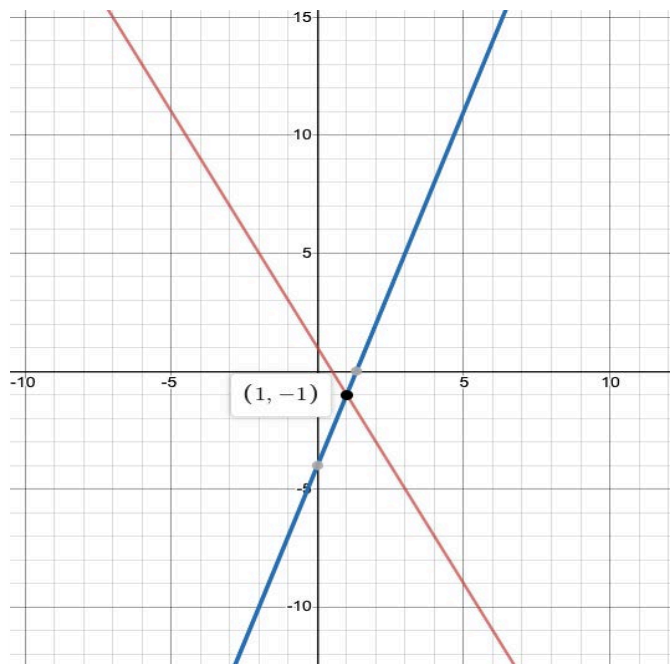
c. $\begin{cases} -4x + 10y = -60 \\ 2x - 5y = 30 \end{cases}$

Infinitely Many Solutions
Same Line

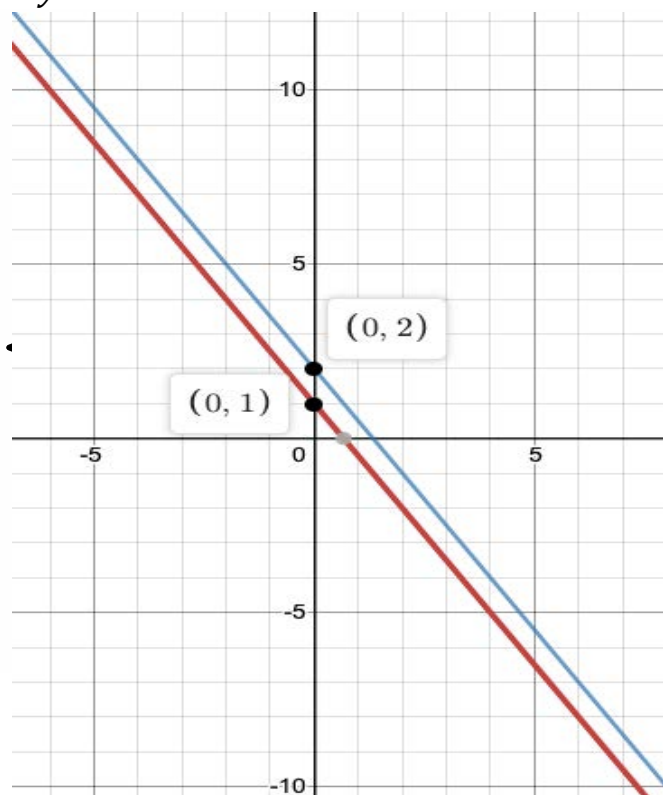
WEEK FIVE – Systems of Equations and Inequalities

5. Solve each system below by graphing.

a. $\begin{cases} y = -2x + 1 \\ y = 3x - 4 \end{cases}$ (1, -1)



b. $\begin{cases} y = -\frac{3}{2}x + 1 \\ 3x + 2y = 4 \end{cases}$ no solution, parallel lines



Week Six: Exponents and Scientific Notation

1. Match the rules.

a. $x^a \cdot x^b$	<u> </u> ^c	x^{a-b}
b. $(x^a)^b$	<u> </u> ^d	$\frac{1}{x^a}$
c. $\frac{x^a}{x^b}$	<u> </u> ^b	x^{ab}
d. x^{-a}	<u> </u> ^a	x^{a+b}

2. Simplify: $\frac{12x^4}{-3x^2}$.

a. $\frac{x^2}{4}$ b. $-4x^2$ c. $15x^2$ d. $-36x^6$

3. Simplify: $(2x^2y)^3$.

a. $6x^5y^3$ b. $8x^6y^3$ c. $6x^6y^3$ d. $8x^5y^3$

4. Simplify: $3x^2y^{-3} \cdot 2xy^{-4}$.

a. $\frac{6x^3}{y^{-7}}$ b. $6x^3y^7$ c. $\frac{6x^2}{y^7}$ d. $\frac{6x^3}{y^7}$

5. Simplify: $-7x^0$.

a. $-7x$ b. -7 c. $\frac{1}{7}$ d. $\frac{x}{7}$

Week Six: Exponents and Scientific Notation

6. Write 2,340,000 in scientific notation.

$$2.34 \cdot 10^6$$

7. Write 0.000000564 in scientific notation.

$$5.6 \cdot 10^{-7}$$

8. Write 3.25×10^{-5} in standard notation.

$$0.0000325$$

9. Write 5.6×10^9 in standard notation.

$$5,600,000,000$$

Simplify each of the following. Write all of your answers in scientific notation.

10. $(5.6 \times 10^9) + (2.1 \times 10^8)$ 5.81×10^9

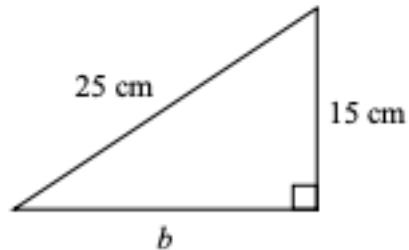
11. $(3.4 \times 10^{-3}) - (4.7 \times 10^{-4})$ 2.93×10^{-3}

12. $(1.6 \times 10^{-5})(-2.6 \times 10^4)$ -4.1×10^{-1}

13. $\frac{7.2 \times 10^6}{9.0 \times 10^{-9}}$ 8.0×10^{14}

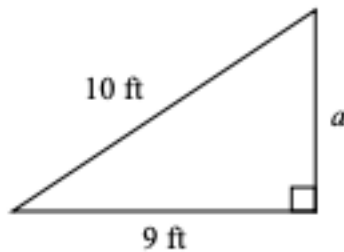
WEEK SEVEN - Geometry

1. Find the length of the missing side of the triangle.



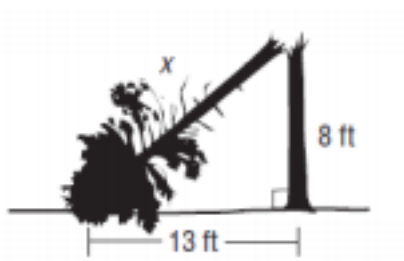
$$b = 20 \text{ cm}$$

2. Find the length of the missing side of the triangle.



$$a = 4.4 \text{ cm}$$

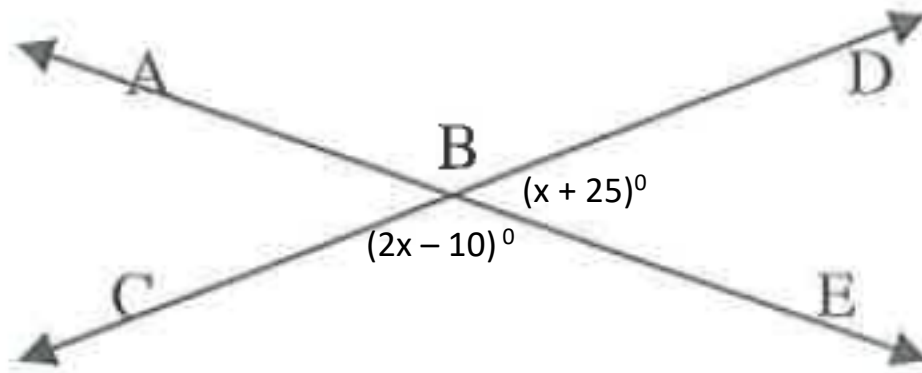
3. A large pine tree fell was struck by lightning and fell as shown by the diagram below. Write an equation that could be used to find the length of the fallen part of the tree?



$$8^2 + 13^2 = x^2$$

WEEK SEVEN - Geometry

4. Solve for x . Show your work. $x = 55^\circ$



5. Solve for y . Show all of your work. $x = 15^\circ$

