

Name: Key Date: _____ Period: _____

Midterm Review Possible Test Questions

Unit 1

1. Simplify the expression $10.7 - 11.2$

- A 1.5
- B 0.5
- C 21.9
- D -1.5

2. Simplify the expression $2k + 5k$

- A $7k$
- B $7k^2$
- C $10k$
- D $10k^2$

3. Simplify the expression

$4(-7n - 3) + 2$ $-28n - 12 + 2$
 $-28n - 10$

- A $-28n + 10$
- B $-28n - 10$
- C $-28n + 14$
- D $28n - 14$

4. Simplify the expression $\left(\frac{1}{12}\right) \div \left(\frac{6}{5}\right)$

- A $\frac{7}{17}$
- B $\frac{1}{10}$
- C $-\frac{5}{7}$
- D $\frac{5}{72}$

5. Write *the sum of x squared and 15 is less than 25* as an algebraic expression

- A $x^2 + 15 - 25$
- B $x^2 + 15 < 25$
- C $(2x) \times 25 < 25$
- D $25 < x^2 + 15$

6. Write *half of a number, decreased by 10* as an algebraic expression

- A $n - \frac{1}{2} - 10$
- B $\frac{n}{2} - 10$
- C $2n + 10$
- D $\frac{1}{2}(n - 10)$

7. James has \$75 for lunch this week. He spends \$5.99 on his first meal. Pick the best equation to represent how much money he has left over.

- A. $x + 75 = 5.99$
- B. $x + 5.99 = 75$
- C. $5.99 - 75 = x$
- D. $5.99 + 75 = x$

Unit 1 Solving

Solve the following equations. If there is no solution, write *no solution*. If the answer is all real number, write *all real numbers*.

$$8. \quad \frac{22}{-11} = \frac{-11k}{-11}$$

$$\boxed{-2 = k}$$

$$9. \quad -10 = x + 20$$

$$\frac{-20}{-20} \quad \frac{-20}{-20}$$

$$\boxed{-30 = x}$$

$$10. \quad -2 = \frac{2}{-2} + \frac{v}{4}$$

$$(4) \quad -4 = \frac{v}{4} (4)$$

$$\boxed{-16 = v}$$

$$11. \quad \frac{8}{-8} + \frac{b}{-4} = \frac{5}{-8}$$

$$(4) \quad \frac{b}{-4} = -3 (-4)$$

$$\boxed{b = 12}$$

$$12. \quad 2(n+5) = -2$$

$$2n + 10 = -2$$

$$\frac{-10}{-10} \quad \frac{-10}{-10}$$

$$\frac{2n}{2} = \frac{-12}{2}$$

$$\boxed{n = -6}$$

$$13. \quad 2(4x-3) - 8 = 4 + 2x$$

$$8x - 6 - 8 = 4 + 2x$$

$$8x - 14 = 4 + 2x$$

$$\frac{+14}{+14} \quad \frac{+14}{+14}$$

$$\frac{8x}{-2x} = \frac{18}{-2x}$$

$$\frac{6x}{6} = \frac{18}{6} \quad \boxed{x = 3}$$

Solve and Graph the following Inequalities.

$$14. \quad -2x < 10$$

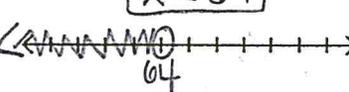
$$\frac{-2x}{-2} < \frac{10}{-2}$$

$$\boxed{x > -5}$$


$$15. \quad \frac{x-4}{6} < 10$$

$$x-4 < 60$$

$$\frac{+4}{+4} \quad \frac{+4}{+4}$$

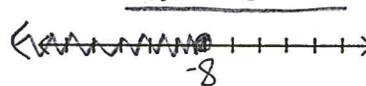
$$\boxed{x < 64}$$


$$16. \quad 2x - 3 \geq 3x + 5$$

$$\frac{-3}{-3} \geq \frac{3x+5}{-3}$$

$$\frac{-2x}{-3x} \geq \frac{3x+8}{-3x}$$

$$\frac{-x}{-1} \geq \frac{8}{-1}$$

$$\boxed{x \leq -8}$$


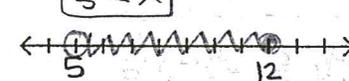
$$17. \quad 3 < x - 2 \leq 10$$

$$\frac{+2}{+2} \quad \frac{+2}{+2}$$

$$\boxed{5 < x}$$

$$x - \frac{1}{2} \leq 10$$

$$\frac{+2}{+2} \quad \frac{+2}{+2}$$

$$\boxed{x \leq 12}$$


$$18. \quad 5 \leq \frac{x-2}{2} \text{ or } -2x \geq 10$$

$$\frac{+2}{+2} \quad \frac{+2}{+2}$$

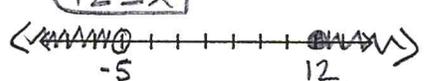
$$\frac{10}{+2} \leq \frac{x-2}{+2}$$

$$\frac{+2}{+2} \quad \frac{+2}{+2}$$

$$\boxed{12 \leq x}$$

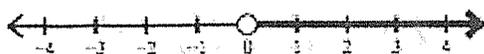
$$\frac{-2x}{-2} \geq \frac{10}{-2}$$

$$\frac{-2x}{-2} \geq -5$$

$$\boxed{x \leq -5}$$


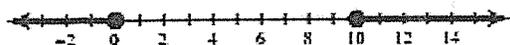
Write the inequality for the following graphs.

19.



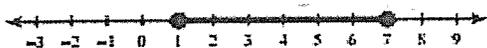
$$x > 0$$

20.



$$x \leq 0 \text{ OR } x \geq 10$$

21.



$$1 \leq x \leq 7$$

22.



$$x \leq 0$$

23. A student had \$45 when she went to the mall. She spent \$9 on a pair of earrings. Then she wants to buy some CDs that cost \$12 each. Write and solve an inequality to determine how many CDs she can buy. $x = \# \text{ of CDs}$

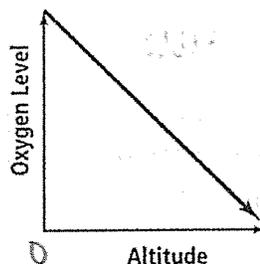
$$12x - 9 \leq 45$$

Slope Domain and Range

24. Fill in the following Table

x-value	y-value
input	output
domain	range
left/right	Up & down
independent	dependent

25. Pick the best answer choice to describe the relation



- A. As the altitude increases, the oxygen level increases
- B. As the altitude increases, the oxygen level decreases
- C. As the altitude decreases, the oxygen level decreases

26. Consider the relation (x, y)
 $\{(4, 10), (5, 17), (7, 31), (14, 10)\}$.

a. What is the domain the of the relation?

$$\{4, 5, 7, 14\}$$

Domain = x

b. What is the range of the relation?

$$\{10, 17, 31, 10\}$$

Range = y

c. Is the relation a function? Explain.

yes. No repeating x-values

27. Consider the relation $\{(-2, 5), (0, 10), (0, 15), (2, 20)\}$.

a. What is the domain of the relation?

$$\{-2, 0, 2\}$$

b. What is the range of the relation?

$$\{5, 10, 15, 20\}$$

c. Is the relation a function? Explain.

No. X-value 0 repeats

28. The domain of $t(x) = 2x + 10$ is $\{-2, -1, 0, 5, 10\}$. Pick the answer choice that represents the range?

Domain = X-values
Range = y-values

A. $\{-2, -1, 0, 5, 10\}$

B. $\{-1, 10\}$

C. $\{-4, -2, 0, 10, 20\}$

D. $\{6, 8, 10, 20, 30\}$

29. The range of $t(x) = 3x - 1$ is $\{-4, 2, 8\}$. Pick the answer choice that represents the domain?

A. $\{-2, 0, 5\}$

B. $\{2, 4, 6\}$

C. $\{-4, 2, 8\}$

D. $\{-22, -4, 14\}$

30. Using the function

$$f(x) = 2x - 4.$$

Evaluate $f(-2)$.

$$f(-2) = 2(-2) - 4$$

$$= -4 - 4$$

$$f(-2) = -8$$

31. Using the function

$$h(x) = -4x + 10.$$

Find x when $h(x) = -10$

$$-10 = -4x + 10$$

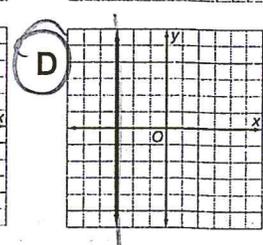
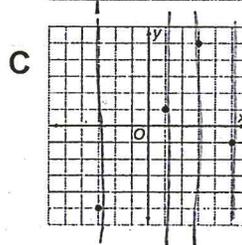
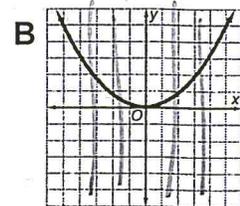
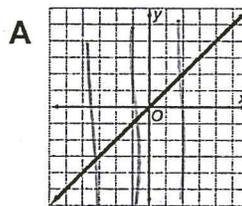
$$-10 - 10 = -4x$$

$$-20 = -4x$$

$$x = 5$$

32. Which of the following is NOT a function?

Vertical Line Test



33. Jane's job earns her \$9.25 an hour. Pick the function rule that represents the number of hours she works h to the total earnings t .

A. $t = 9.25h$

B. $t = h + 9.25$

C. $h = 9.25t$

D. $h = t + 9.25$

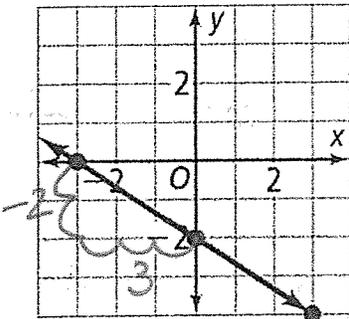
Unit 2 Graphing and Slope

34. Find the slope between the points

$(-3, -2)$ and $(5, 4)$

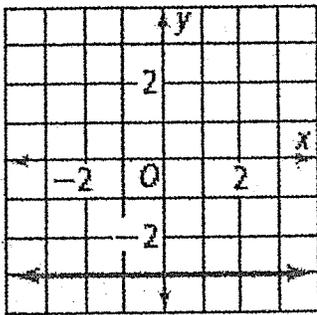
$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-2)}{5 - (-3)} = \frac{6}{8} = \frac{3}{4}$$

35. What is the slope of the line?



$$m = -\frac{2}{3}$$

36. What is the slope of the line?



- A 0
- B undefined
- C -3
- D 1

37. Which linear function rule models the table below?

x	y
0	4
4	6
8	8
12	10

Handwritten notes: y -int = 4, $+4 <$, $+4 <$, $+4 <$, $> +2$, $> +2$, $> +2$

$$m = \frac{y}{x} = \frac{2}{4} = \frac{1}{2}$$

$$b = 4$$

A $y = 2x - 4$

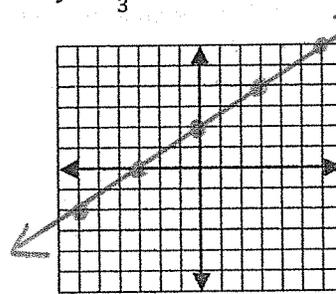
B $y = \frac{1}{2}x$

C $y = 8$

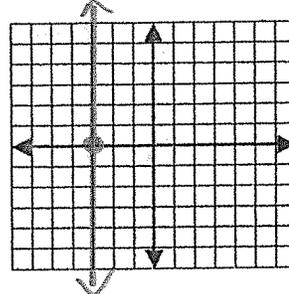
D $y = \frac{1}{2}x + 4$

38. $y = \frac{2}{3}x + 2$

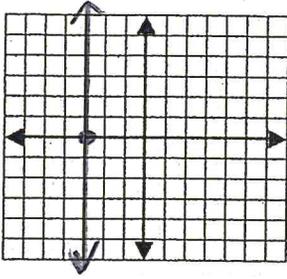
$$m = \frac{2}{3} \quad b = 2$$



39. $x = -3$



40. $x = -3$



41. What is the equation of the line that has a y-intercept of 4 and a slope of -5?

F $y = 4x - 5$

G $y = -4x + 5$

H $y = -5x + 4$

J $y = 5x - 4$

$y = mx + b$

$b = 4$ $m = -5$

42. A line passes through $(-2, -3)$ and has a slope of $-\frac{3}{4}$. Which is an equation of the line?

F $y - 3 = -\frac{3}{4}(x - 2)$

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

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

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

x_1, y_1
 $m = -\frac{3}{4}$
 $y - y_1 = m(x - x_1)$
 $y - (-3) = -\frac{3}{4}(x - (-2))$
 $y + 3 = -\frac{3}{4}(x + 2)$

43. What is the type of rate of change?

$y = \frac{5}{17}x - 12$

A undefined

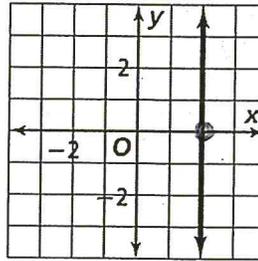
B positive

C negative

D 0

rate of change = slope

44. Which equation represents the graph below?



F $x = 2y$

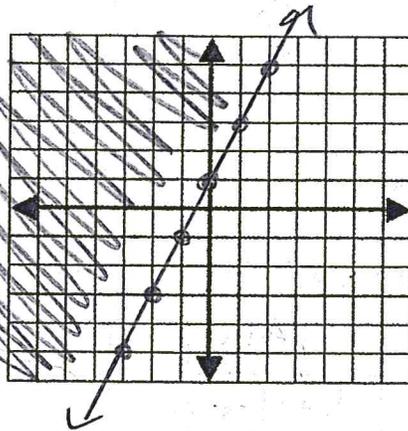
G $x = 2$

H $y = 2x$

J $y = 2$

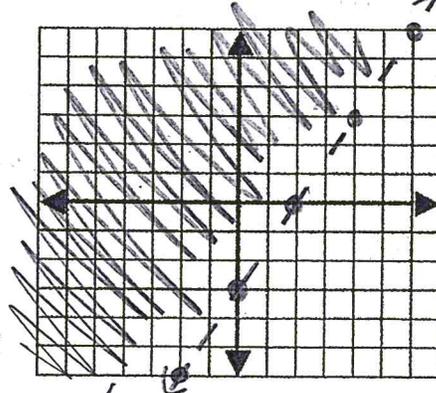
45. $y \geq 2x + 1$

$m = 2$ solid above
 $b = 1$



46. $3x - 2y < 6$

$y > \frac{3}{2}x - 3$
 $m = \frac{3}{2}$
 $b = -3$
 above dotted



$3x - 2y < 6$
 $-3x$ $-3x$

 $-2y < -3x + 6$
 $-\frac{2y}{-2} < \frac{-3x + 6}{-2}$

Identify the slope of each line. Then determine if the following lines are **Parallel**, **Perpendicular**, or **Neither**.

47. $y = 2x + 3$ & $y = -\frac{1}{2}x - 2$

$m = 2$ $m = -\frac{1}{2}$

Perpendicular

48. $y = 0$ & $x = 3$

$m = 0$ $m = \text{undefined}$

perpendicular

49. $y = \frac{1}{2}$ & $y = -2$

$m = 0$ $m = 0$

Parallel

50. $y = 2x + 3$ & $y = -\frac{4}{3}$

$m = 2$ $m = 0$

Neither

51. What is the equation of the line that is perpendicular to $2y = -x - 8$ and passes through the point $(2, -3)$?

F $y = 2x + 1$

G $y = -\frac{1}{2}x - 2$

H $y = -\frac{1}{2}x - 1$

J $y = 2x - 7$

$\frac{2y}{2} = \frac{-x-8}{2}$

$y = -\frac{1}{2}x - 4$

$m = -\frac{1}{2}$

perpendicular $m = 2$

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

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

Unit 2 Systems of Equations

52. What is the solution to the following system?

(2, 2)

x	y
-2	-10
-1	-7
0	-4
1	-1
2	2
3	5

x	y
-2	4
0	3
2	2
4	1
6	0
8	-1

Solve using Substitution. If there is no solution, write no solution. If there is infinitely many solutions, write infinitely many solutions.

53. $y = 3x$
 $-3x - y = -24$

$-3x - (3x) = -24$

$-3x - 3x = -24$

$-\cancel{6}x = -24$
 $-\cancel{6}$

x = 4

$y = 3(4)$

y = 12

(4, 12)

54. $-2x + 6y = 6$
 $-7x + 8y = -5$

$-7(3y-3) + 8y = -5$

$-21y + 21 + 8y = -5$

$-13y + 21 = -5$
 $-13y = -26$

$y = 2$

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

$-\cancel{2}x = \frac{-6y+6}{-\cancel{2}}$

$x = 3y - 3$

$x = 3(2) - 3$
 $= 6 - 3$

x = 3

(3, 2)

Solve the following Systems using Elimination. If there is no solution, write no solution. If there is infinitely many solutions, write infinitely many solutions.

55.
$$\begin{array}{r} -6x + 6y = 6 \\ + 6x - 3y = 12 \\ \hline \end{array}$$

$$\begin{array}{r} 6x - 3(6) = 12 \\ 6x - 18 = 12 \\ +18 \quad +18 \\ \hline 6x = 30 \\ \div 6 \\ \hline x = 5 \end{array}$$

$$\begin{array}{r} 3y = 18 \\ \div 3 \\ \hline y = 6 \end{array}$$

$$(5, 6)$$

56.
$$\begin{array}{r} -4x - 15y = -17 \\ 3(-x + 5y = -13) \\ \hline -3x + 15y = -39 \\ -4x - 15y = -17 \\ \hline -7x = -56 \\ \div -7 \\ \hline x = 8 \end{array}$$

$$(8, -1)$$

57. Is $(-2, -4)$ a solution to the system below?

$$\begin{array}{r} 3(-2) - 2(-4) = 2 \\ -6 + 8 = 2 \\ 2 = 2 \\ \checkmark \end{array}$$

$$\begin{array}{r} 5(-2) - 5(-4) = 10 \\ -10 + 20 = 10 \\ 10 = 10 \\ \checkmark \end{array}$$

$$3x - 2y = 2$$

$$5x - 5y = 10$$

$$\boxed{\text{yes}}$$

58. Student tickets to the school football game cost \$5.80 each and general admission tickets cost \$7.40 each. The school sells 380 tickets for a total of \$2372. Which system of equations models this situation?

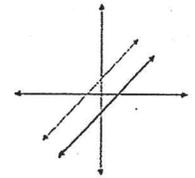
- F $\begin{cases} x + y = 2372 \\ 5.8x + 7.4y = 380 \end{cases}$
- G $\begin{cases} x + y = 380 \\ 5.8x + 7.4y = 2372 \end{cases}$
- H $\begin{cases} x + 7.4y = 2372 \\ 5.8x + y = 380 \end{cases}$
- J $\begin{cases} 5.8x + y = 2372 \\ x + 7.4y = 380 \end{cases}$

$x = \text{Student tickets}$
 $y = \text{general admission}$

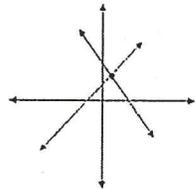
$$5.8x + 7.4y = 2372$$

$$x + y = 380$$

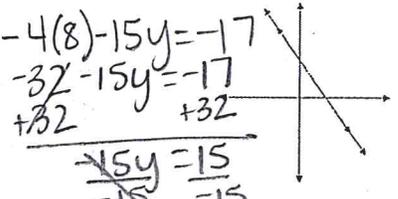
59 Determine the number of solutions for each system of equations.



NO Solution



one solution



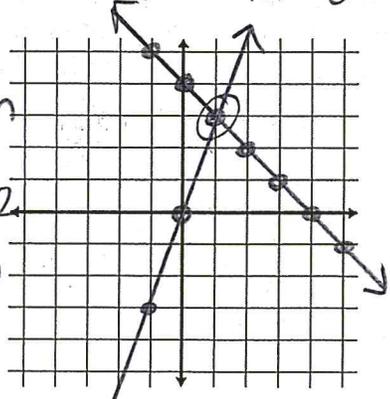
Infinitely many solutions

60. Is $(-2, -4)$ a solution to the system below?

$$\begin{array}{r} -3x - 2y = 2 \\ 5x - 5y = 10 \end{array}$$

61. Solve the following system by graphing.

$$\begin{array}{l} y = -x + 4 \quad m = -1 \quad b = 4 \\ y = 3x \quad m = 3 \quad b = 0 \end{array}$$



$$(1, 3)$$