ALGEBRA 1
TRIMESTER 1 FINAL EXAM REVIEW

Chapter 1 – Expressions, Equations and Functions

Evaluate the expression when y = 3 and x = 5

1. $5y + x^2$

$5(3) + (5)^2$
$15 + 25$
$\boxed{40}$

2. $2y + 9x - 7$

$2(3) + 9(5) - 7$
$6 + 45 - 7$
$\boxed{44}$

3. $\dfrac{24}{y} - x$

$\dfrac{24}{3} - 5$
$8 - 5 = \boxed{3}$

Evaluate the expression.

4. $5 + 8 - 3 + 7$

$13 - 3 + 7$
$10 + 7$
$\boxed{17}$

5. $16 \div 8 \cdot 2^2$

$16 \div 8 \cdot 4$
$2 \cdot 4 \quad \boxed{8}$

6. $\dfrac{1}{2} \cdot 26 - 3^2$

$13 - 9 \quad \boxed{4}$

7. $24 \div 3 \div 4 \cdot 2$

$8 \div 4 \cdot 2$
$2 \cdot 2 \quad \boxed{4}$

8. $\left[4 + \left(18 - 3^2 \right) \right]$

$4 + (18 - 9)$
$4 + 9 \quad \boxed{13}$

9. $\dfrac{1}{3} \cdot 24 \div 2^2$

$8 \div 4$
$\boxed{2}$

Make an input-output table for the following functions. Use 0, 1, 2, and 3 as the domain.

10. $y = 3x + 2$

X	0	1	2	3
y	2	5	8	11

+3 +3 +3

11. $y = x^2 + 1$

x	0	1	2	3
y	1	2	5	10

Chapter 2 – Properties of Real Numbers

Simplify using the distributive property.

12. $2(4a - 7b)$

$\boxed{8a - 14b}$

13. $(21 - 12x)(-5)$

$-105 + 60x$
$\boxed{60x - 105}$

14. $\dfrac{1}{5}(25 - 35y)$

$5 - 7y$
$\boxed{-7y + 5}$

Simplify by collecting similar terms.

15. $7x - 12x + 2x$

$-5x + 2x$
$\boxed{-3x}$

16. $12a + 15b - 20a + 13b$

$\boxed{-8a + 28b}$

17. $(12y^2 + 15y) - (64y + 11)$

$\boxed{12y^2 - 49y - 11}$

18. MATCHING. Match each statement with the property it illustrates.

A	1.	$5 + 0 = 5$
G	2.	$6 \times 4 = 4 \times 6$
C	3.	$6 + 4 = 4 + 6$
F	4.	$4\left(\dfrac{1}{4}\right) = 1$
E	5.	$1a = a$
I	6.	$3(a + b) = 3a + 3b$
B	7.	$5 + (-5) = 0$
D	8.	$8 + (3 + 5) = (8 + 3) + 5$
C	9.	$8 + (3 + 5) = 8 + (5 + 3)$
H	10.	$2 \times (3 \times 4) = (2 \times 3) \times 4$

> **A.** Identity Property of Addition
> **B.** Inverse Property of Addition
> **C.** Commutative Property of Addition
> **D.** Associative Property of Addition
> **E.** Identity Property of Multiplication
> **F.** Inverse Property of Multiplication
> **G.** Commutative Property of Multiplication
> **H.** Associative Property of Multiplication
> **I.** Distributive Property

Chapter 3 – Solving Linear Equations

Solve only. Write the **solution set** in the space provided. *Show all work for full credit.*

{ 20 } 20. $3x - 15 = 45$

$+15 \quad +15$

$\dfrac{3x = 60}{3} \quad \dfrac{}{3}$

$x = 20$

{ -7 } 21. $-12 = 2m + 2$

$-2 \qquad -2$

$\dfrac{-14 = 2m}{2} \quad \dfrac{}{2}$ $m = -7$

{ 5.5 } 22. $2a + 6 = 17$

$-6 \quad -6$

$\dfrac{2a = 11}{2} \quad \dfrac{}{2}$ $a = 5.5$

{ 8 } 23. $4 = -2(6 - x)$

$4 = -12 + 2x$

$+12 \quad +12$

$\dfrac{16 = 2x}{2} \quad \dfrac{}{2}$ $x = 8$

{ 3 } 24. $\dfrac{4(5x - 2)}{4} = \dfrac{52}{4}$

$5x - 2 = 13$

$+2 \quad +2$

$\dfrac{5x = 15}{5} \quad \dfrac{}{5}$ $x = 3$

{ -4 } 25. $3y = 7y + 16$

$-7y \quad -7y$

$\dfrac{-4y = 16}{-4} \quad \dfrac{}{-4}$ $y = -4$

{ 0 } 26. $\dfrac{1}{2}(2x - 16) = 2(3x - 4)$

$x - 8 = 6x - 8$

$-6x \qquad -6x$

$-5x - 8 = -8$

$+8 \quad +8$

$\dfrac{-5x = 0}{-5} \quad \dfrac{}{-5}$ $x = 0$

{ 13 } 27. $\dfrac{1}{5}x + \dfrac{2}{5} = 3 \quad \dfrac{15}{5}$

$-\dfrac{2}{5} \qquad -\dfrac{2}{5}$

$\dfrac{5}{1} \cdot \dfrac{1}{5}x = \dfrac{13}{5} \cdot \dfrac{5}{1}$

$x = 13$

28. The Saline Varsity football team has 46 players. Two of the players are sophomores. There are four more juniors than seniors.

(a) Let x represent the number of seniors on the team. Write an expression for the number of juniors.

$$\boxed{x+4}$$

(b) Find the number of seniors on the team.

$$(x) + (x+4) + (2) = 46$$
$$2x + 6 = 46$$
$$\frac{-6 \quad -6}{}$$
$$\frac{2x}{2} = \frac{40}{2}$$
$$x = 20$$

20 SENIORS ON THE TEAM

(c) Find the number of juniors on the team.

$$x+4$$
$$20+4$$
$$24$$

24 JUNIORS ON THE TEAM

Chapter 4 – Graphing Linear Equations and Functions

Find the **slope** of the line containing the given points. Write your final answer in the space provided.

$\frac{2}{5}$ 29. (2,4) & (7,6)

$$M = \frac{6-4}{7-2} = \frac{2}{5}$$

0 30. (5,-10) & (-7,-10)

$$M = \frac{-10-(-10)}{-7-5} = \frac{0}{-12}$$

31. Find the x and y intercept and then graph.

a) $y = 4 + 2x$

x-int: $(-2,0)$

y-int: $(0,4)$

$$y = 4 + 2(0)$$
$$y = 4$$

$$0 = 4 + 2x$$
$$\frac{-4 \quad -4}{}$$
$$\frac{-4}{2} = \frac{2x}{2}$$
$$x = -2$$
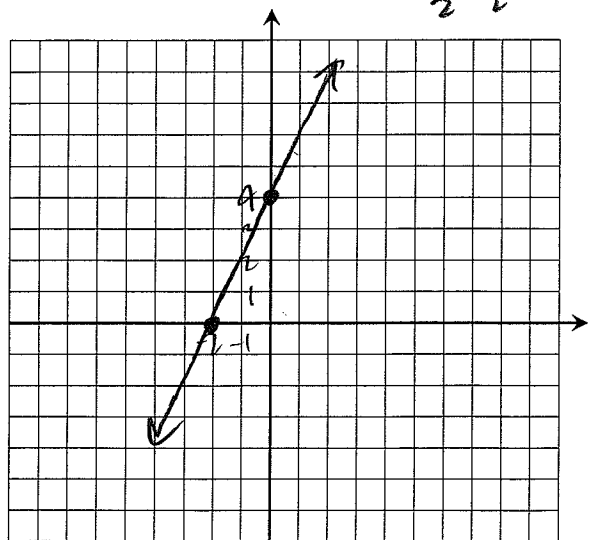
b) $3x + 6 = y$

x-int: $(-2,0)$

y-int: $(0,6)$

$$3(0) + 6 = y$$
$$y = 6$$

$$3x + 6 = 0$$
$$\frac{-6 \quad -6}{}$$
$$\frac{3x}{3} = \frac{-6}{3}$$
$$x = -2$$
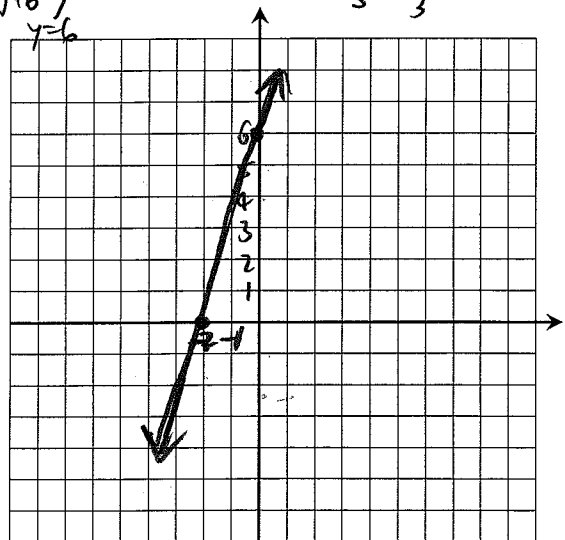
32. Find the slope, y-intercept and then graph.

$4x - y - 3 = 0$

$+y \quad +y$

$y = 4x - 3$

m = __4__

b = __-3__

$2x + 3y - 4 = x + 5$

$-2x \qquad -2x$

m = __$-\frac{1}{3}$__

b = __3__

$3y - 4 = -x + 5$

$+4 \qquad +4$

$\frac{3y}{3} = \frac{-x + 9}{3}$

$y = -\frac{1}{3}x + 3$
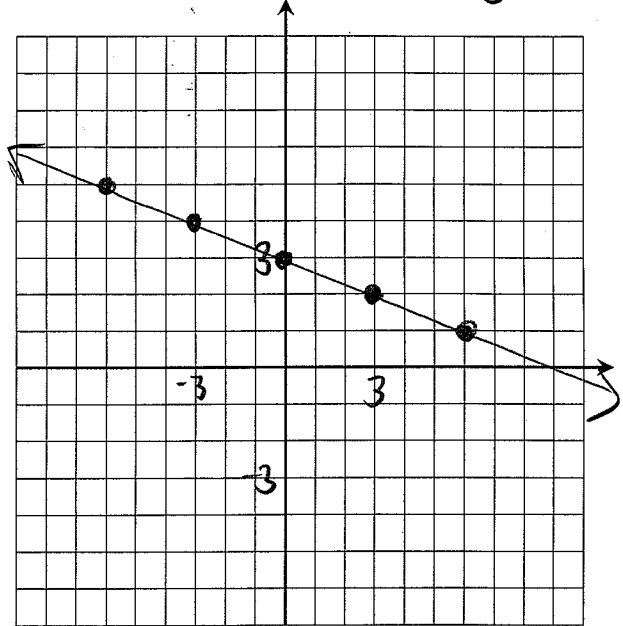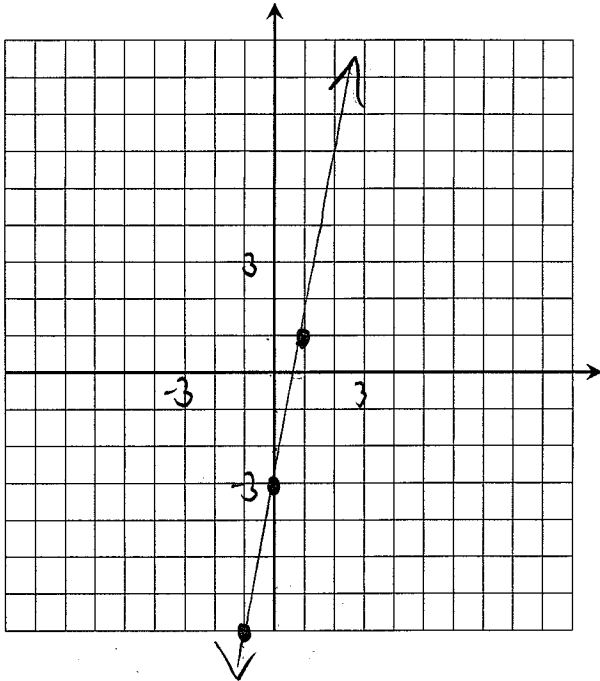
33. In 1990, the enrollment at Saline High School was 800 students. Since then, the enrollment has increased at a rate of 75 students per year. Let x represent the year with $x = 0$ representing the year 1990. Let y represent the enrollment of Saline High School.

(a) If $x = 0$ represents the year 1990, what year does $x = 10$ represent?

Year __2000__

(b) What would the slope of a graph of y vs. x be?

$m =$ __75__

(c) What would the y-intercept of a graph of y vs. x be?

$b =$ __800__

(d) Write the equation for enrollment (y) in slope-intercept form.

$y = 75x + 800$

(e) Use the equation from part (e) to find the enrollment of Saline High School in the year 2010.

$x = 20$

$y = 75(20) + 800$

$y = 1500 + 800$

$y = 2300$

The enrollment of Saline High School was 2300 in 2010.

Chapter 5 – Writing Linear Equations

34. $(2,6)$ $m = 2$ **35.** $(3, -8)$ $m = -5$ **36.** $(6, 2)$ $(8, -4)$ $m = \dfrac{-4-2}{8-6} = \dfrac{-6}{2} = -3$

PS $y - 6 = 2(x-2)$ PS $y + 8 = -5(x-3)$ PS $y + 4 = -3(x-8)$

SI $y = 2x + 2$ SI $y = -5x + 7$ SI $y = -3x + 20$

SF $2x - y = -2$ SF $5x + y = 7$ SF $3x + y = 20$

37. Write the equation of the line that has a slope of 3/2 containing the point (2,-1).
Put your final answer in **standard form**.

$y + 1 = \dfrac{3}{2}(x-2)$ $(-2)\left(-\dfrac{3}{2}x + y\right) = (-4)(-2)$

$y + 1 = \dfrac{3}{2}x - 3$

$y = \dfrac{3}{2}x - 4$

$\dfrac{y}{2}x \quad -\dfrac{3}{2}x$ $\boxed{3x - 2y = 8}$

38. Write the equation of the line parallel to the line $y = \dfrac{1}{2}x - 3$ and containing the point (-3,0). Put your final answer

in **standard form**.

$y - 0 = \dfrac{1}{2}(x+3)$ $(-2)\left(-\dfrac{1}{2}x + y\right) = \left(\dfrac{3}{2}\right)(-2)$

$y = \dfrac{1}{2}x + \dfrac{3}{2}$

$-\dfrac{1}{2}x \quad -\dfrac{1}{2}x$ $\boxed{x - 2y = -3}$

39. Consider the data given in the table below.

x	2	4	5	6	8
y	6	5	4	3	2

(a) Plot the scatter plot on the axes provided.

(b) Draw a line of best fit.

$m = \dfrac{2-6}{8-2} = \dfrac{-4}{6} = -\dfrac{2}{3}$

$y - 6 = -\dfrac{2}{3}(x-2)$

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

$+6 \qquad +\dfrac{18}{3}$

(c) Write the equation for the line of best fit.

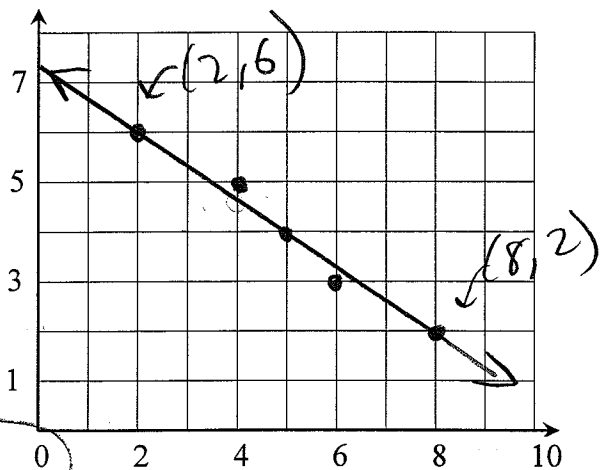(d) What do you predict would be the value of y if x = 7.

$y = -\dfrac{2}{3}(7) + \dfrac{22}{3}$

$y = -\dfrac{14}{3} + \dfrac{22}{3}$

$\boxed{y = \dfrac{8}{3} = 2\dfrac{2}{3}}$
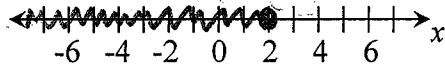
$\boxed{y = -\dfrac{2}{3}x + \dfrac{22}{3}}$

$\boxed{y = -\dfrac{2}{3}x + 7\dfrac{1}{3}}$

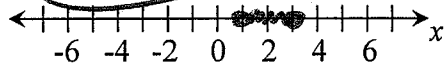## Chapter 6 – Solving and Graphing Linear Inequalities
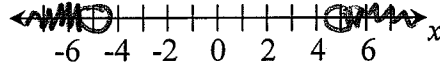
Solve.

40. $x - 5 \le -3$

$+5 \quad +5$

$\boxed{x \le 2}$

-6 -4 -2 0 2 4 6

41. $-6x \ge -30$

$\dfrac{}{-6} \quad \dfrac{}{-6}$

$\boxed{x \le 5}$

-6 -4 -2 0 2 4 6

42. $6 \le 2x + 4 \le 10$

$-4 \quad -4 - 4$

$\dfrac{2}{2} \le \dfrac{2x}{2} \le \dfrac{6}{2}$

$\boxed{1 \le x \le 3}$

-6 -4 -2 0 2 4 6
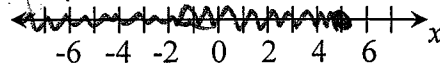
43. $2x - 4 > 6$ or $-2x - 4 > 6$

$+4 +4 \qquad +4 +4$

$\dfrac{2x}{2} > \dfrac{10}{2} \qquad \dfrac{-2x}{-2} > \dfrac{10}{-2}$

$\boxed{x > 5 \text{ or } x < -5}$

-6 -4 -2 0 2 4 6

44. $|5 + x| \le 2$ **AND**

$-2 \le 5 + x \le 2$

$-5 \quad -5 \quad -5$

$\boxed{-7 \le x \le -3}$

-6 -4 -2 0 2 4 6
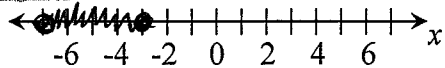
45. $|2x - 4| > 6$ **OR**

$2x - 4 > 6$ or $2x - 4 < -6$

$+4 +4 \qquad\qquad +4 +4$

$\dfrac{2x}{2} > \dfrac{10}{2} \qquad \dfrac{2x}{2} < \dfrac{2}{2}$

$\boxed{x > 5 \text{ or } x < -1}$

-6 -4 -2 0 2 4 6
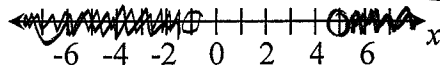
Graph the inequality on the coordinate plane.

46. $-2x + y > 4$

$+2x \qquad +2x$

$y > 2x + 4$

$0 > 4$ FALSE

$(0,0)$ IS NOT A SOLUTION

47. $3y - 6x \ge -12$

$+6x \quad +6x$

$\dfrac{3y}{3} \ge \dfrac{6x - 12}{3}$

$y \ge 2x - 4$

$0 \ge -4$

TRUE

$(0,0)$ is A SOLUTION