1st Semester Final Exam Pretest

Integrated Math I

Unit 1: Expressions

For the following expression, identify the:

a) Terms
b) Coefficients
c) Variables
d) Exponents
e) Constants

IF you cannot identify any of these, write NONE.

1. $8z^8 - 3z^3 - 15z - 121$

a) Terms $8z^8$; $-3z^3$; $-15z$; -121

b) Coefficients 8; -3; -15

c) Variables z

d) Exponents 8; 3; 1

e) Constant -121

12 pts

Simply each of the following expressions using the order of operations and showing all of your steps along the way:

2. $(4 - 1 - (6 - 3) + 4) \times 4 \div 4$

$(4 - 1 - (3) + 4) \times 4 \div 4$

$(3 - 3 + 4) \times 4 \div 4$

$(0 + 4) \times 4 \div 4$

$4 \times 4 \div 4$

$16 \div 4$

$\boxed{4}$

3. $j + k(h + h) - j(k - k)$

Using h = 4, j = 3, and k = 2

$3 + 2(4+4) - 3(2-2)$

$3 + 2(8) - 3(2-2)$

$3 + 2(8) - 3(0)$

$3 + 16 - 3(0)$

$3 + 16 - 0$

$19 - 0$

$\boxed{19}$

4 pts (2 each)

Simplify using the distributive property and combining like terms when possible:

4. $1 + 9(v - 5)$

$1 + 9v - 45$

$\boxed{9v - 44}$

5. $-8(-4r - 5) - (-8r - 7)$

$32r + 40 + 8r + 7$

$\boxed{40r + 47}$

4 pts (2 each)

+20 pts

Translate into an algebraic expression using numbers, variables, and operation signs:

6. p less than 19

$19 - p$

Write a verbal expression for each algebraic expression:

7. $u^3 + 5$

5 more than u cubed

Other verbal expressions are possible.

Unit 2: Equations and Inequalities

Solve each of the following One Step Linear Equations:

8. $-13 = -7 + n$

$+7 \quad +7$

$-6 = n$ OR $n = -6$

9. $p + 8 = 28$

$-8 \quad -8$

$p = 20$

10. $\frac{x}{8} \cdot 8 = -2 \cdot 8$

$-16 = x$

11. $42 = -7x$

$\frac{}{-7} \quad \frac{}{-7}$

$-6 = x$ OR $x = -6$

Solve each of the following Two-Step Linear Equations:

12. $78 = -2 + 10n$

$+2 \quad +2$

$\frac{80}{10} = \frac{10n}{10}$

$8 = n$ OR $n = 8$

13. $\frac{-3+x}{2} = 0 \cdot 2$

$-3 + x = 0$

$+3 \quad +3$

$x = 3$

Solve the following Multi-Step Linear Equation:

14. $-6x - 6x = -8(3 + 2x) - (2 - 4x)$

$-6x - 6x = -24 - 16x - 2 + 4x$

$-12x = -26 - 12x$

$+12x \quad +12x$

$0 = -26$

since this ends in a false statement the answer is

NO SOLUTION

+18 pts (1 each)

Solve each of the following Absolute Value Linear Equations:

15. $-2|7b+6| = -44$

$\div -2 \quad \div -2$

$|7b+6| = 22$

$7b+6 = 22$ or $7b+6 = -22$

$-6 \quad -6 \qquad -6 \quad -6$

$7b = 16 \qquad 7b = -28$

$\div 7 \quad \div 7 \qquad \div 7 \quad \div 7$

$b = \frac{16}{7} \qquad b = -4$

16. $-3+4|10-7x| = 93$

$+3 \quad +3$

$4|10-7x| = 96$

$\div 4 \quad \div 4$

$|10-7x| = 24$

$10-7x = 24$ or $10-7x = -24$

$-10 \quad -10 \qquad -10 \quad -10$

$-7x = 14 \qquad -7x = -34$

$\div -7 \quad \div -7 \qquad \div -7 \quad \div -7$

$x = -2 \qquad x = \frac{34}{7}$

6 pts (3 each)

Solve each of the following Literal Equations for the variable indicated:

17. $P = 2L + 2W$, solve for W.

$-2L \quad -2L$

$P - 2L = 2W$

$\div 2 \quad \div 2$

$\frac{P}{2} - L = W \qquad \frac{1}{2}P - L = W$

18. $A = \frac{bh}{2}$, solve for b.

$\cdot 2 \quad \cdot 2$

$2A = bh$

$\div h \quad \div h$

$\frac{2A}{h} = b$ OR $b = \frac{2A}{h}$

4 pts (2 each)

Solve each of the following One-Step Linear Inequalities and graph its solution:

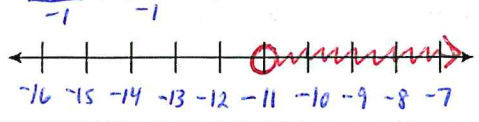
19. $16 - m < 27$

$-16 \quad -16$

$-m < 11$

$\div -1 \quad \div -1$ (flip the symbol)

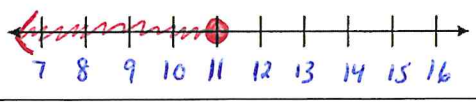
$m > -11$



20. $17 \geq x + 6$

$-6 \quad -6$

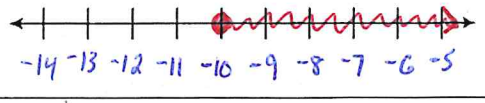
$11 \geq x$



21. $-3n \leq 30$

$\div -3 \quad \div -3$ (flip the symbol)

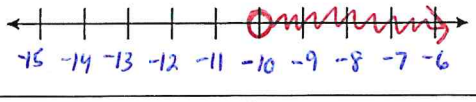
$n \geq -10$



22. $\frac{b}{5} > -2$

$\cdot 5 \quad \cdot 5$

$b > -10$



Variable on the left? Follow the arrow!

Variable on the right? Behind the arrow!

÷ or × by a negative number then flip the symbol

16 pts (4 each)

26 pts

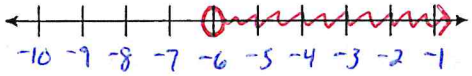
Solve each of the following Two-Step Linear Inequalities and graph its solution:

23. $-9+\frac{k}{2}>-12$

$+9 \quad +9$

$2 \cdot \frac{k}{2} > -3 \cdot 2$

$k > -6$



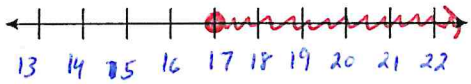
24. $\frac{m+8}{25} \geq 1 \cdot 25$

25

$m + 8 \geq 25$

$-8 \quad -8$

$m \geq 17$



8 pts (4 each)

Solve each of the following Multi-Step Linear Inequalities and graph its solution:

25. $5(1-7x)+7x \leq -135$

$5 - 35x + 7x \leq -135$

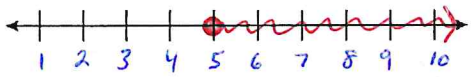
$5 - 28x \leq -135$

$-5 \quad -5$

$-28x \leq -140$

$\frac{-28x}{-28} \leq \frac{-140}{-28}$

$x \geq 5$



26. $-3(4-4b)-8 > 2(6b+2)+8b$

$-12 + 12b - 8 > 12b + 4 + 8b$

$-20 + 12b > 20b + 4$

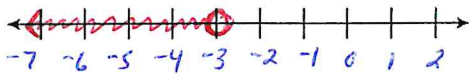
$-12b \quad -12b$

$-20 > 8b + 4$

$-4 \quad -4$

$\frac{-24}{8} > \frac{8b}{8}$

$-3 > b$



8 pts (4 each)

Unit 3: Intro to Functions

Find the slope of the line through each pair of points:

27. $(-20,7)$ & $(-7,12)$

$x_1, y_1 \quad x_2, y_2$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{12-(7)}{-7-(-20)} = \frac{5}{-7+20} = \frac{5}{13}$

28. $(16,2)$ & $(10,-17)$

$x_1, y_1 \quad x_2, y_2$

$m = \frac{-17-(2)}{10-(16)} = \frac{-19}{-6} = \frac{19}{6}$

4 pts (2 each)

Write the slope-intercept form of the equation given the slope and y-intercept:

29. Slope = $\frac{4}{5}$ and y-intercept = 3 $\quad y = mx + b \quad y = \frac{4}{5}x + 3$

2 pts

Write the point-slope form of the equation of the line through the given point with the given slope:

30. Through (-5,-3) with slope = 7 $\quad y - y_1 = m(x - x_1) \quad y + 3 = 7(x + 5)$

2 pts.

24 pts

Write the slope-intercept form of the equation of the line through the given points:

31. Through (-2,-2) and (0,-3)

$x_1\ y_1 \qquad x_2\ y_2$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3-(-2)}{0-(-2)} = \frac{-3+2}{0+2} = \frac{-1}{2}$

$y = mx + b$

Using $(0, -3)$

$-3 = -\frac{1}{2}(0) + b$

$-3 = 0 + b$

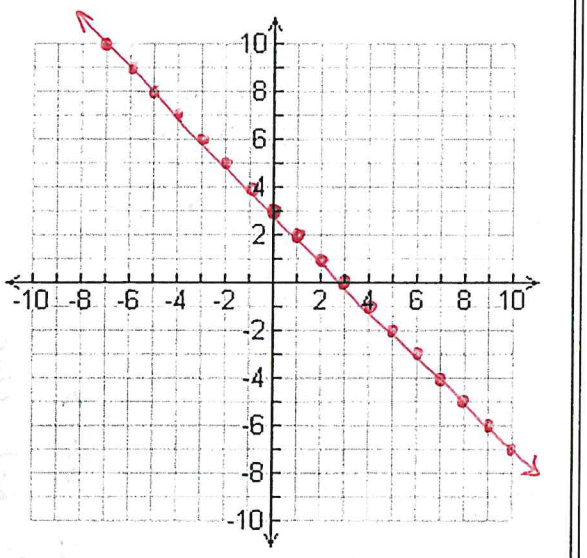
$-3 = b$

$y = -\frac{1}{2}x - 3$

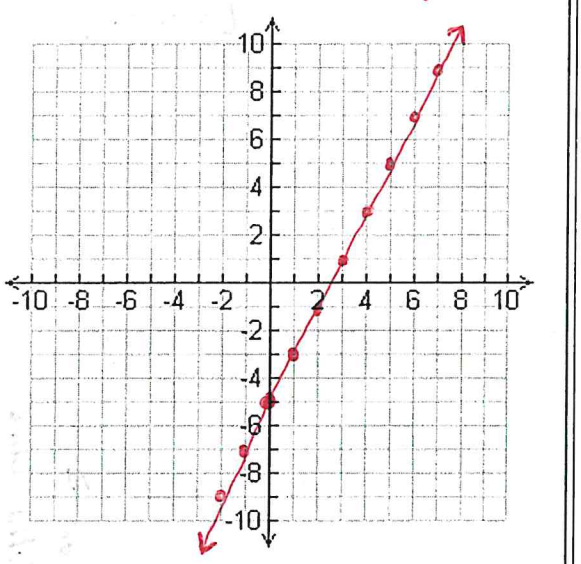
3 pts.

Sketch the graph of each line:

32. $y = -x + 3$ slope $= -\frac{1}{1}$ y-int $= 3$



33. $y = 2x - 5$ slope $= \frac{2}{1}$ y-int $= -5$



Identify the slope & y-int. (4 pts each)

You ONLY NEED 2 pts more is ok, less is pts off

Unit 4: Systems

Solve each system by graphing:

34. $y = 2$

$x - y = -4$

$x - y = -4$

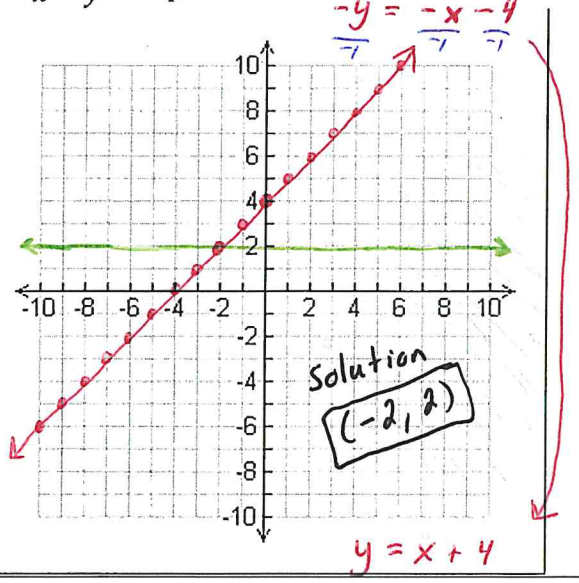
$-x \quad -x$

$-y = -x - 4$

$y = x + 4$

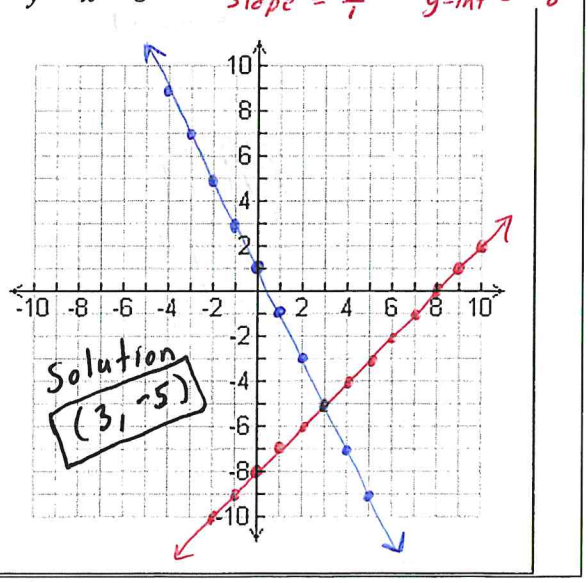
slope $= 1$

y-int $= 4$



35. $y = -2x + 1$ slope $= \frac{-2}{1}$ y-int $= 1$

$y = x - 8$ slope $= \frac{1}{1}$ y-int $= -8$



12 pts (6 pts each)

23 pts

x's already opp. coefficients so perfect for elimination

Solve one of the System of Linear Equations by substitution and the other by elimination:

36. $-x + 7y = 7$
$x + y = 9$

$8y = 16$ → $y = 2$

Plug into an equation of your choice

$x + y = 9$
$x + 2 = 9$
$-2 \quad -2$
$x = 7$

Solution
$(7, 2)$

37. $x - 5y = 9$
$-7x - y = 9$

$x - 5y = 9$
$+5y \quad +5y$
$x = 9 + 5y$

$-7(9 + 5y) - y = 9$
$-63 - 35y - y = 9$
$+63 \quad +63$
$-36y = 72$
$-36 \quad -36$
$y = -2$

Substitute

Replace x with this
$x = 9 + 5(-2)$
$x = 9 - 10$
$x = -1$

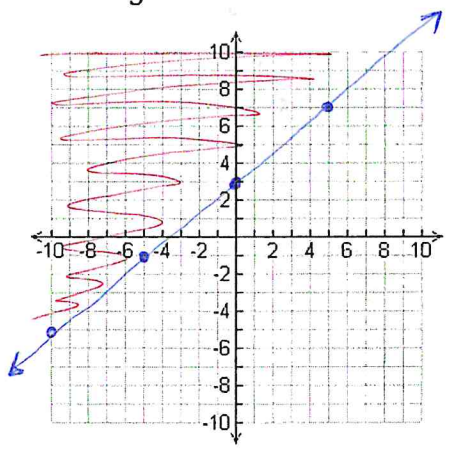
Solution
$(-1, -2)$

6 pts (3 each)

Sketch the graph of the Linear Inequalities:

38. $y \geq \frac{4}{5}x + 3$

slope $= \frac{4}{5}$ y-int $= 3$

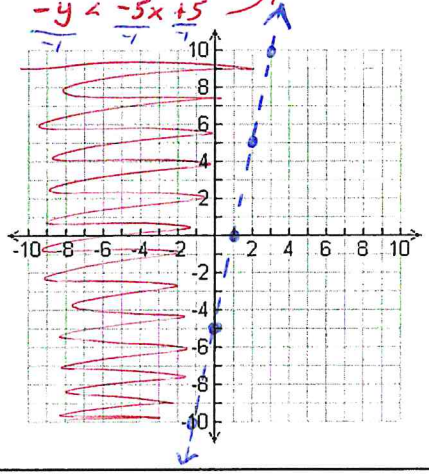


If $\leq$ or $\geq$ Solid Line

39. $5x - y < 5$

$-5x \quad -5x$
$-y < -5x + 5$
$-1 \quad -1 \quad -1$
$y > 5x - 5$

slope $= \frac{5}{1}$
y-int $= -5$



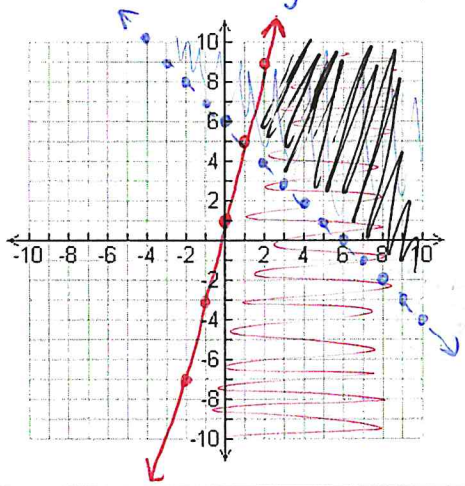
If $<$ or $>$ Dashed Line

Variable on left > shade above line
< shade below

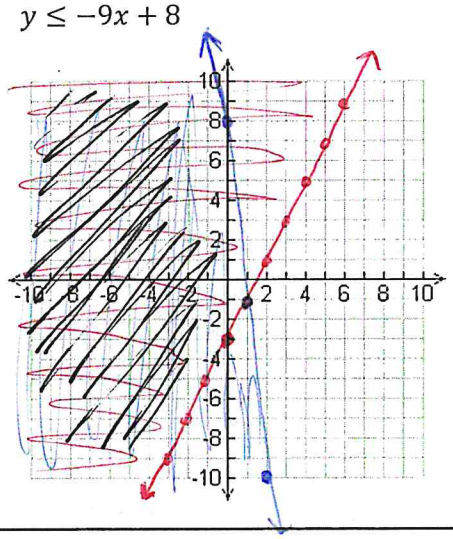
8 pts (3 each)

Sketch the solution to the system of Inequalities:

40. $4x - y \geq -1$ → $y \leq 4x + 1$
$x + y > 6$ → $y > -x + 6$



41. $y \geq 2x - 3$
$y \leq -9x + 8$



10 pts. (5 each)

22 pts