Ms. Groves Algebra 1 - 2020 Name_____ ID: 1

MidTerm Review Chapters 1-8

Date_____ Period____

CHAPTER1

Evaluate each expression. Clearly show work going DOWN! Circle final answer. (8points)

1) $5 \cdot 3 \div 3 + 5 \cdot 3$

20

2) $10 \div (4 - 2) + 2 + 5$

12

3) $(5 + 4) \cdot 3 - 5(4 + 1)$

2

4) $5 + 1 - (3 + 1 - (6 - 3))$

5

5) $(1 + 7 - 5) \div 3 + 2^3$

9

6) $\dfrac{(2 + 3) \cdot 3}{3 + 2 - 2}$

5

Evaluate each using the values given. Show work clearly. Circle final answer. (8points)

7) y^3; use $y = \frac{3}{5}$

27/125

8) $x - 5 + (x - 3)^2$; use $x = 6$

10

Write each as an algebraic expression, equation, or inequality. (6points)

9) the difference of n and 15

$n - 15$

10) the quotient of n and 15 is 100

$\frac{n}{15} = 100$

11) a number plus 10 is greater than or equal to 20

$n + 10 \geq 20$

Solve AND CHECK each equation. (8points)

12) $4 - 5x = -11$

$\{3\}$

13) $5x - 5 = 45$

$\{10\}$

BONUS: Solve(4pts) AND CHECK (2pts)

14) $5 + 4n - 9n - 1 = 24$

$\{-4\}$

Evaluate each function; and write using function notation.

For example ---> f(#)=##

15) $g(n) = 3n + 3$; Find $g(4)$, $g(-2)$

$g(4) = 15$

$g(-2) = 3$

16) $h(x) = 3x + 2$; Find $h(1)$, $h(-2)$

$h(1) = 15$

$h(-2) = -4$

17) $f(x) = 2x + 4$; Find $f(1)$, $f(-2)$, $f(0)$

$f(1) = 6$

$f(-2) = 0$

$f(0) = 4$

18) $p(x) = 3x$; Find $p(8)$, $g(-2)$

$p(8) = 24$

$g(-2) = -6$

19) $f(x) = x^2 + x$; Find $f(10)$ Find $f(-5)$

$f(10) = 110$

$f(-5) = 20$

CHAPTER 2

(1pt) Determine which numbers are integers. Circle the numbers that are integer.

20) $\sqrt{81}$

I

21) 4.5

no

22) $\frac{12}{5}$

no

23) –4

I

(1pts) Name the number eitheir rational or irrational. Abbreviate: R=rational; IRR=irrational

24) $\sqrt{25}$

Rat

25) $\sqrt{32}$

IRR

26) 2.5

Rat

27) π

IRR

28) (4pts) Arrange numbers 1/2, -1, 0, $\sqrt{25}$, -5 , 3, 5/2 in ascending order (least to greatest).

_____

-5, -1, 0, 1/2, 5/2, 3, $\sqrt{25}$

(8 pts) For the following expression, identify...

29) $-2x^2 + 3 + x^2 - 4x - 5 - x^3$

Terms_____

Like terms_____

Coefficients_____

Constant terms_____

terms: -2xx , 3, xx, - 4x, -5, -xxx
like terms: -2xx and xx ; 3 and -5
coefficients: -2, 1, -4,-1
constant terms: 3, -5

(3pts) Evaluate each expression. CLEARLY SHOW WORK AND CIRCLE ANSWER.

30) $\left|-6+2\right|$

4

31) $\left|2\cdot -3\right|$

6

(4pts) Find each sum. Show work! TIP: add negative numbers and add positive numbers

32) $(-5)+3+5+(-5)$

-2

33) $(-8)+8+4+(-2)$

2

Rewrite each expression as an Addition problems (2pts).
Then evaluate and circle your answer (1pts)

34) $(-8)-3-(-6)$

-5

35) $3-4-(-3)$

2

(2pts) Evaluate each expression

36) $(3)(-2)(-1)(-1)$

-6

37) $(2)(2)(-1)(-4)$

16

(3pts) Find each quotient. Clearly show work.

38) $-9\div\frac{-3}{4}$

12

39) $\frac{-6}{5}\div 2$

$-\frac{3}{5}$

(3pts) Evaluate each expression. Clearly show your steps.

40) $-3 \cdot 4 - 2 + 4$

-10

41) $5(-6 + 2) + 5$

-15

(4pts) Simplify each expression. Write in standard form (variable term first and constant last)

42) $2(2x - 4)$

$4x - 8$

43) $-2(3x - 2)$

$-6x + 4$

44) $n + 10 + 5n + 6$

$6n + 16$

45) $-2n + 10 + 12n - 15$

$10n - 5$

46) $\frac{20x - 80}{10}$

$2x - 8$

47) $\frac{10x - 20}{-5}$

$-2x + 4$

48) $-(-3x + 10) + 40$

$3x + 30$

49) $-2(x - 3) - 3x$

$-5x + 6$

Evaluate each using the values given. Show the substitution (2pts) then evaluate (1pt).

50) $(r)(q^2)$; use $q = 2$, and $r = -4$

-16

51) $4x - z$; use $x = -2$, and $z = -6$

-2

CHAPTER 3

Solve and Check! Show work clearly. Circle solution. (6 points each)

52) $10 - 5x = 3x - 3 - 3$

$\{2\}$

53) $7(7 - 3x) = -x - 31$

$\{4\}$

54) $-6 - 2(-2 - x) = 5 + 3x$

$\{-7\}$

55) $2(x + 7) = 2(4 - 2x) + 6$

$\{0\}$

56) $2(4+3x)+x=6x-(x+4)$

$\{-6\}$

57) $-4(x+4)+6(x-7)=2x+8$

No solution.

58) $\frac{5}{3}x+50=-100$

$\{-90\}$

Solve each proportion and Check! Show work clearly. Circle solution. (6 points each)

59) $\frac{3}{6}=\frac{9}{-x}$

$\{-18\}$

60) $\frac{n}{9}=\frac{n+8}{3}$

$\{-12\}$

61) Write the equation in function form:
10x - 2y = 20

y=5x-10

Write a proportion. Solve and Check! Show work clearly. Circle solution. (6 points each)

62) What percent of 20 yards is 120 yards?

600%

63) 400% of what is 8 miles?

2 miles

64) 6 is what percent of 120?

5%

65) What is 40% of 80 days?

32 days

Solve each word problem. Write a proportion. Clearly show your work used to answer the question. (5 points each)

66) A recipe for oatmeal raisin cookies calls for 2 cups of flour to make 3 dozen cookies. How manycups of flour are needed to make 12 dozen cookies?

8 cups

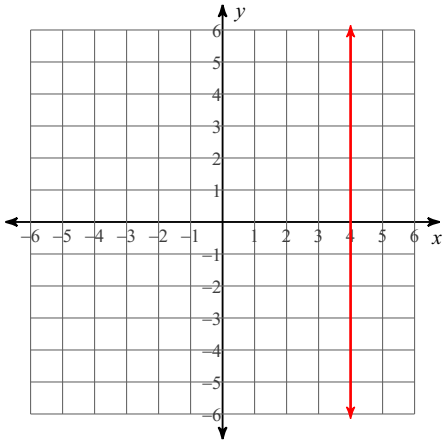
67) The ratio of weight on the moon to weight on Earth is 1 : 6. How many pounds would a 144-pound person weigh on the moon?

24 lbs

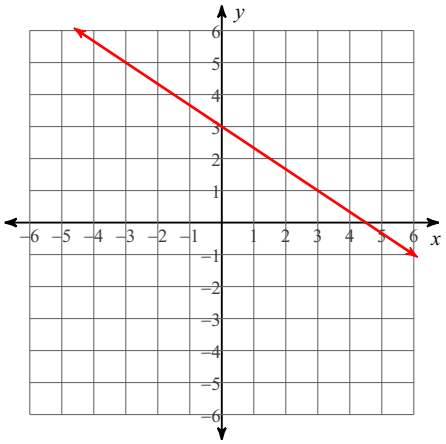
CHAPTER4

TABLE METHOD: Graph the linear function using table method Create a table with 3 points. Points must be integers.

68) $x = 4$

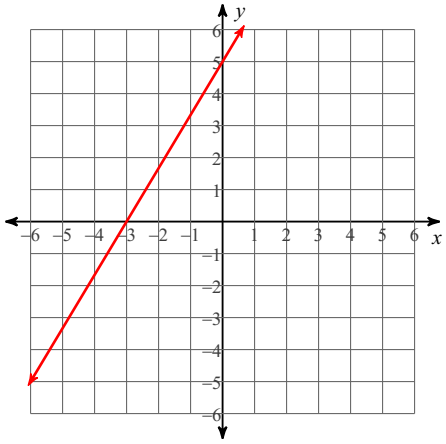


69) $y = -\frac{2}{3}x + 3$

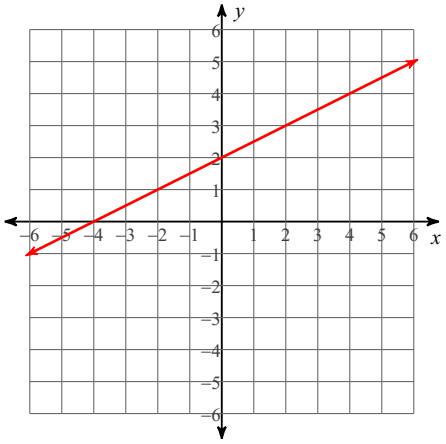


INTERCEPT METHOD: Graph linear function with intercept. (1) Identify x & y intercepts - x:____; y:_____ (2) Label intercepts on the graph with the x and y.

70) $5x - 3y = -15$

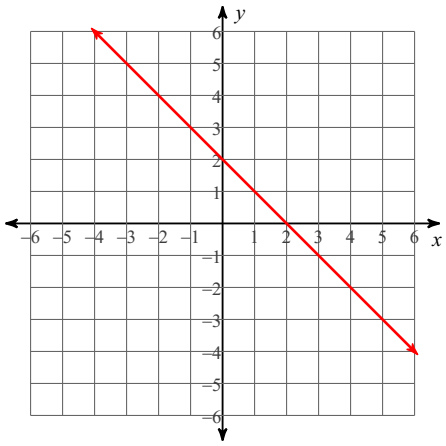


71) $x - 2y = -4$

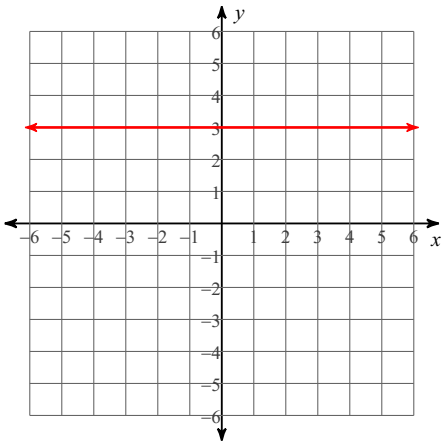


SLOPE-INTERCEPT METHOD: Graph the linear function using slope and y-intercept. (1) Identify the slope & y-intercept with the correct variable names. (2) Clearly mark 3 points with a Y for the y-intercept.

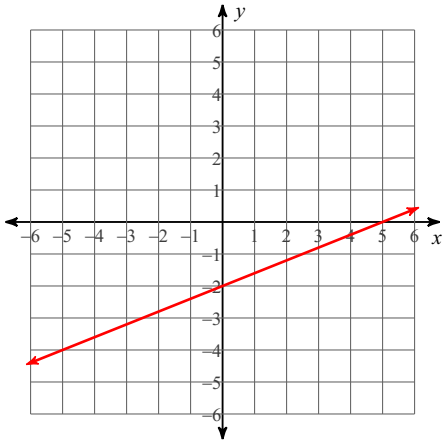
72) $y = -x + 2$



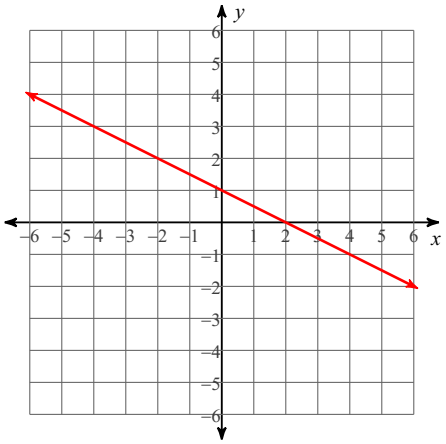
73) $y = 3$



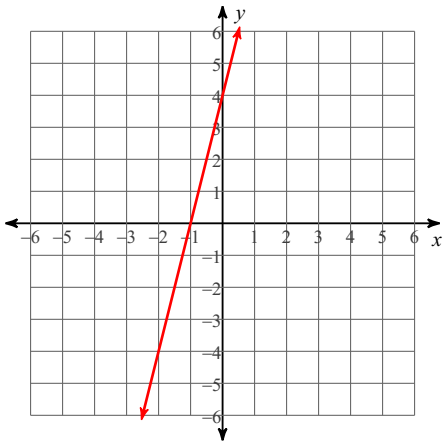
74) $y = \frac{2}{5}x - 2$



75) $x + 2y = 2$



76) $4x - y = -4$



CHAPTER 5

INSTRUCTIONS: CLEARLY SHOW WORK FOR FULL CREDIT. (8pts each)

Write slope-intercept form of the equation of line given the slope & y-intercept.

77) Slope = –4, y-intercept = $\frac{1}{4}$

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

78) Slope = $-\frac{6}{5}$, y-intercept = –2

$y = -\frac{6}{5}x - 2$

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

79) through: $(1, -5)$, slope = 2

$y + 5 = 2(x - 1)$

80) through: $(-3, 2)$, slope = –4

$y - 2 = -4(x + 3)$

Write the SLOPE-INTERCEPT form of the equation of the line through the given points.

81) through: $(-5, -2)$ and $(-2, 4)$

$m = \frac{-6}{-3}$

$y = 2x + 8$

Write the SLOPE-INTERCEPT form of the equation of the line through the given point with the given slope.

82) through: $(4, -3)$, slope = $-\frac{5}{4}$

$y = -\frac{5}{4}x + 2$

Write the SLOPE-INTERCEPT form of the equation of the line through the given points.

83) through: $(4, 4)$ and $(0, 2)$

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

Write the SLOPE-INTERCEPT form of the equation of the line through the given point with the given slope.

84) through: $(0, -3)$, slope $= -\frac{3}{2}$

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

Write the POINT-SLOPE form of the equation of the line described.

85) through: $(-1, -4)$, parallel to $y = 2x - 1$

$y + 4 = 2(x + 1)$

86) through: $(3, 1)$, perp. to $y = \frac{3}{5}x - 3$

$y - 1 = -\frac{5}{3}(x - 3)$

Write the SLOPE-INTERCEPT form of the equation of the line described.

87) through: $(-4, -2)$, parallel to $y = \frac{3}{2}x + 1$

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

88) through: $(2, 5)$, perp. to $y = -\frac{1}{5}x - 5$

$y = 5x - 5$

Write the standard form of the equation of the line through the given points.

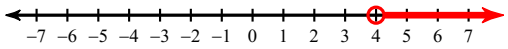
89) through: $(5, 3)$ and $(-3, -3)$

$3x - 4y = 3$

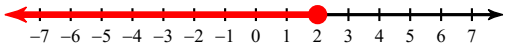
CHAPTER 6

Draw a graph for each inequality.

90) $4 < n$

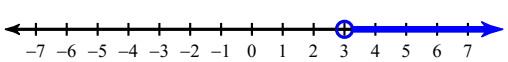


91) $2 \geq p$



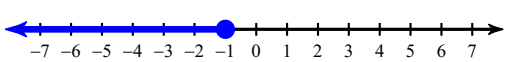
Write an inequality for each graph. Use the variable "X"

92)



$x > 3$

93)



$x \leq -1$

SOLVE each inequality. Circle the solution. Then GRAPH its solution.

94) $9 + 4x - 8x < -5x - 1 + 4$

$x < -6$:

95) $-13 - 2x \geq x + 4 + 7$

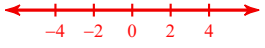
$x \leq -8$:

96) $-12 + 3x \geq 3x - 6(4x + 6)$

$x \geq -1$:

97) $7x + 16 < 4x + 3(x + 4)$

No solution. :



Solve and graph its solution. THEN write as a "SINGLE" inequalities (i.e. #<x<#)

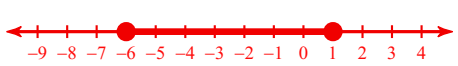
98) $10 - 5n \leq 4n - 8$ and $-4n + 9 > -6 - n$

$2 \leq n < 5$:

SOLVE each COMPOUND inequality. Circle the solution. Then GRAPH its solution.

99) $-27 \leq 3 + 5n \leq 8$

$-6 \leq n \leq 1$:

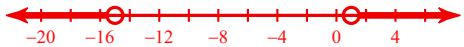


100) $-55 < -8x + 1 < 1$

$0 < x < 7$:

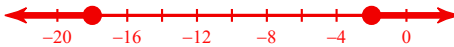
101) $-5x + 9 < 10x - 6$ or $-4x - 8 > 7 - 3x$

$x > 1$ or $x < -15$:



102) $9x + 10 \geq 6x + 4$ or $-2x - 8 \geq -x + 10$

$x \geq -2$ or $x \leq -18$:



BONUS (4pts) Solve the compound inequality

103) $4x + 7 < 7 - 3x$ and $-4 - 3x > -3x + 10$

No solution. :

104) $-8 + 3m > -1 + 10m$ or $8m + 4 \geq 7m - 4$

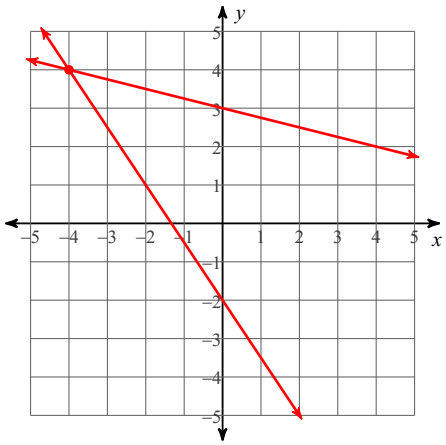
{ All real numbers. } :

CHAPTER 7 - GRAPHING SYSTEMS

Solve each system by graphing (recommend checking)

105) $y = -\frac{3}{2}x - 2$

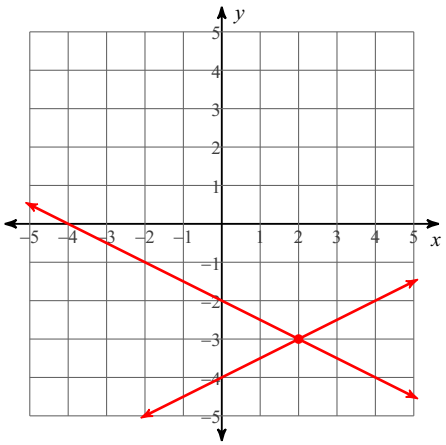
$y = -\frac{1}{4}x + 3$



$(-4, 4)$

106) $x + 2y = -4$

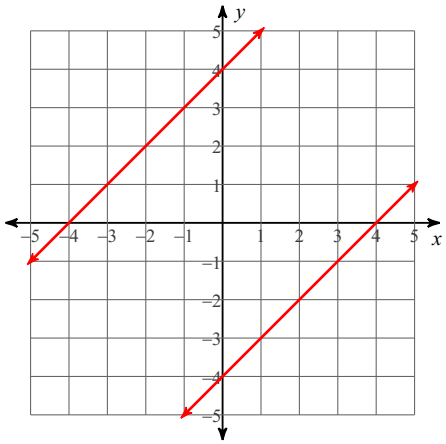
$x - 2y = 8$



$(2, -3)$

107) $x - y = -4$

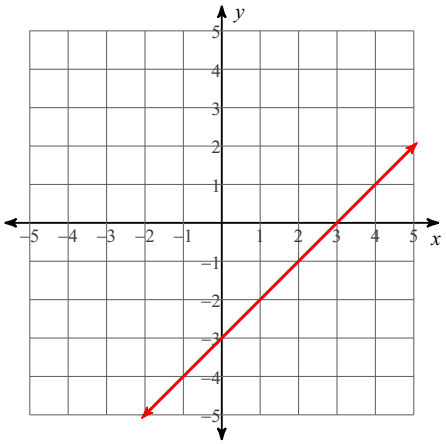
$x - y = 4$



No solution

108) $-y = 3 - x$

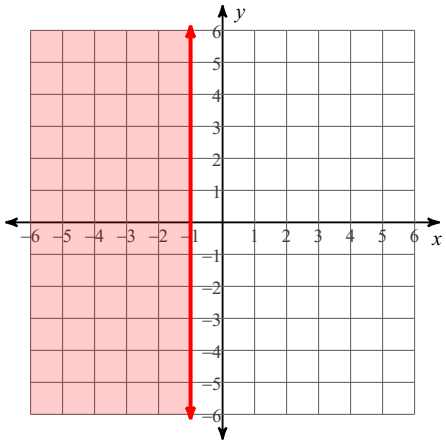
$-y + x = 3$



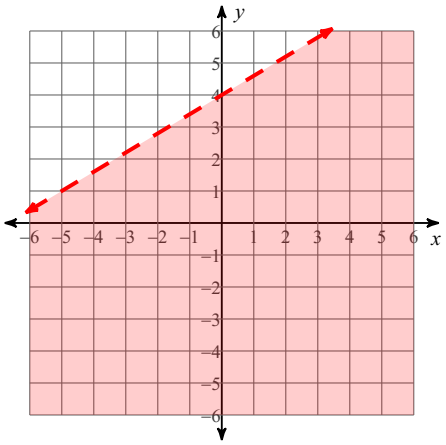
Infinite number of solutions

Sketch the graph of each linear inequality. Show a test point

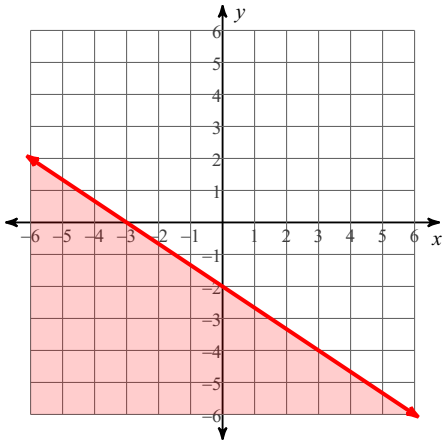
109) $x \leq -1$



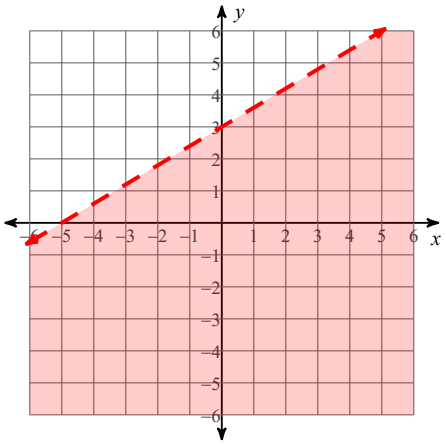
110) $y < \frac{3}{5}x + 4$



111) $y \leq -\frac{2}{3}x - 2$



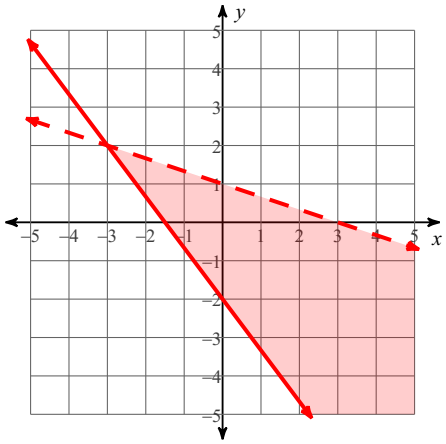
112) $3x - 5y > -15$



Sketch the solution to each system of inequalities. Show a test point for each equation.

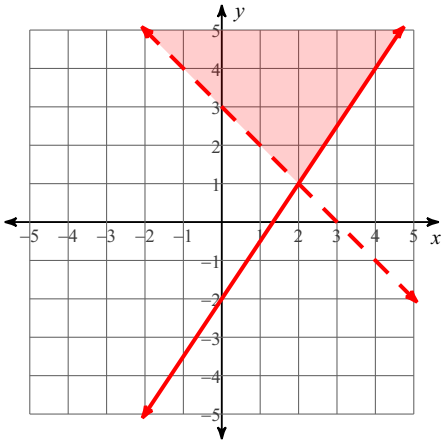
113) $y \geq -\frac{4}{3}x - 2$

$y < -\frac{1}{3}x + 1$



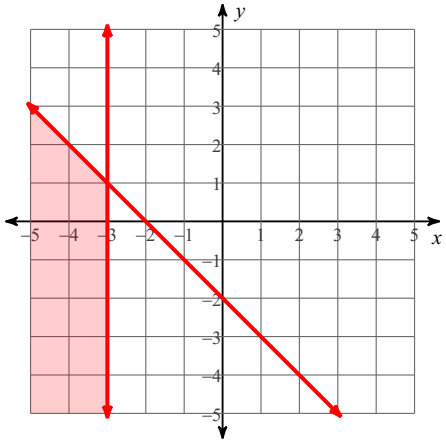
114) $y \geq \frac{3}{2}x - 2$

$y > -x + 3$



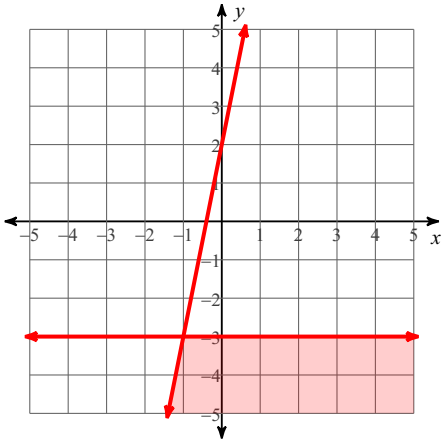
115) $x \leq -3$

$x + y \leq -2$



116) $y \leq -3$

$5x - y \geq -2$



Tell whether the given point is a solution to the system of equation. Explain your decision.

117) $-x - 2y = 7$ Point (-5,-1)
$2x - y = -11$

eq1: 7=7
eq2: -9=-11 (false)

Not a solution because
it does not check in the 2nd equation.

118) $2x + 3y > -9$ Point (3,3)
$2x - 3y > -3$

eq1: 15>-9
eq2: -3>-3 (false)

Not a solution because
it does not check in the 2nd equation.

119) $2x + 3y > 9$ Point (3,5)
$2x - 3y < 3$

eq1: 21>9
eq2: -9<3
Solution

CHAPTER 8 - NO CALC

Evaluate a numeric exponential power.
---> Clearly show work. SHOW how to expand the expression;
---> THEN EVALUATE. Circle your answer.

120) $(-3)^3$

-27

121) $(-2)^6$

64

Evaluate numeric expressions with positive integer exponents, using the product, quotient, and power properties.
---> Clearly show work by SHOWing how you +,-,* to SIMPLIFY EXPONENTS.
---> Provide the answer in BOTH exponential form and then evaluate

122) $\frac{10^8}{10^4}$

$10^4 = 10{,}000$

123) $\frac{2^6}{2^2}$

$2^4 = 16$

124) $2^3 \cdot 2^4$

$2^7 = 128$

125) $2 \cdot 2^2 \cdot 2^2$

$2^5 = 32$

126) $(2^2)^3$

$2^6 = 64$

127) $(10^2)^3$

$10^6 = 1{,}000{,}000$

Evaluate complex numeric expressions with whole number exponents demonstrating the ability to use the product, power, and quotient properties
---> Clearly show work by SHOWing how you +,-,* to SIMPLIFY EXPONENTS.
---> Provide the answer in BOTH exponential form and then evaluate

128) $(10^2 \cdot 10^3)^2$

$10^{10} = 10{,}000{,}000{,}000$

129) $\left(\frac{2^6}{2^3}\right)^2$

$2^6 = 64$

Simplify. Clearly show work.

130) $-5x^3 \cdot 8x^4$

$-40x^7$

131) $-2x^3 \cdot -6x$

$12x^4$

132) $4xy^2 \cdot -xy^3 \cdot 3xy^4$

$-12x^3y^9$

133) $3yx^4 \cdot 7x^2y^0 \cdot x$

$21x^7y$

134) $\dfrac{20x^4y^4}{4x^2y^4}$

$5x^2$

135) $\dfrac{12x^2y^4}{18xy^2}$

$\dfrac{2xy^2}{3}$

136) $(3xy^4)^4$

$81x^4y^{16}$

137) $(4x^0y^4)^3$

$64y^{12}$

138) $(-2x^4y^3)^3$

$-8x^{12}y^9$

139) $(-6x^2y^3)^2$

$36x^4y^6$

BONUS: Simplify. Your answesr can contain only positive exponents. (3pts each)

140) $\dfrac{24x^{-3}}{36y^{-5}}$ $\dfrac{2y^5}{3x^3}$

141) $\dfrac{6xy^{-4}}{2x^{-4}y^4}$ $\dfrac{3x^5}{y^8}$