

MasterMath

Algebra 1, Quarter 3 Exam

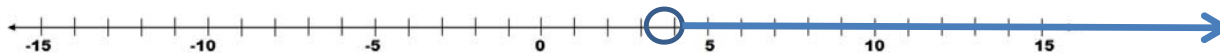
Name _____

Date _____

Closed Book; 45 minutes to complete
CUCC; You may use a calculator.

1. Solve and graph this inequality: $3x > 9$

$x > 3$



2. Solve and graph this inequality: $(-2)(x + 3) \leq 14$

$x \geq -10$



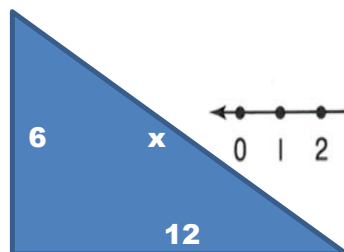
3. Translate into an Inequality, and then graph: All real numbers that are less than 8 and greater than -12.

$-12 < x < 8$



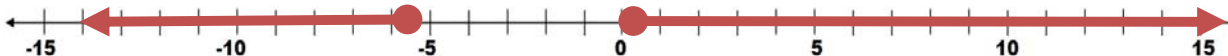
4. The sum of the lengths of any two sides of a triangle is greater than the length of the third side. The perimeter of this triangle is greater than 23. Write a Compound Inequality that describes x , and then graph:

$5 < x < 18$



5. Solve and graph: $2|x + 1| - 3 \geq 3$

$x \geq 2$ or $x \leq -4$

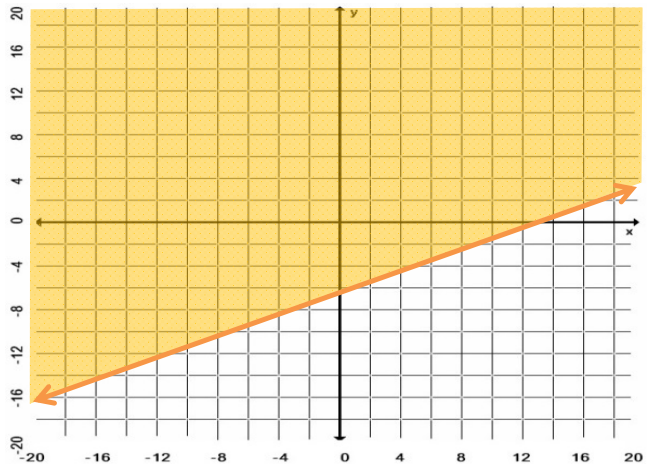


6. The average monthly temperature in a northern Canadian city is 1 degree Fahrenheit. The actual January temperature for that city (t = actual temperature) is never more than 5 degrees Fahrenheit warmer or colder. Solve $|t - 1| \leq 5$ to find the range of temperatures. Graph the solution.

$-4 \leq t \leq 6$

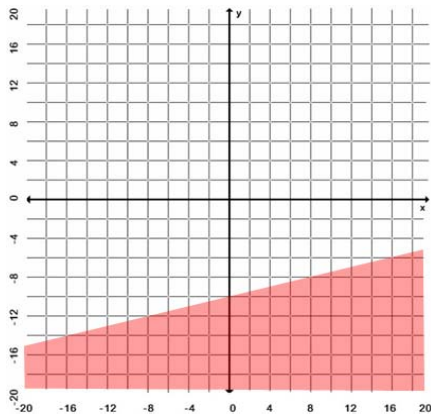


7. Graph this Inequality: $2y - x \geq -12$

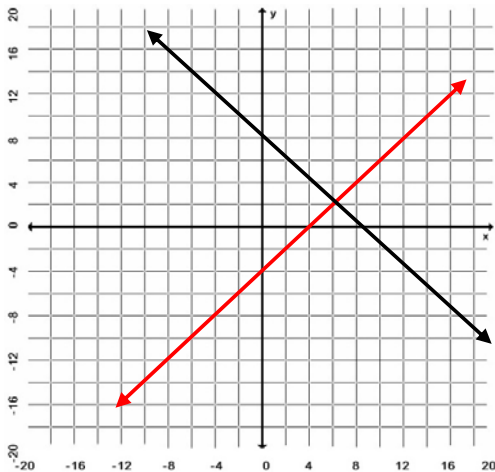


8. What Inequality is graphed here?

$y \leq \frac{1}{4}x - 10$



9. Write and graph 2 equations to determine the 2 numbers that satisfies this statement: the sum of two numbers is 8 and their difference is 4.



	Equation 1	Equation 2	Ordered Pair
Any form	$x + y = 8$	$x - y = 4$	(6, 2)
Slope-Intercept form	$y = -x + 8$	$y = x - 4$	

10. I have six coins in my pocket. They are all either pennies or nickels. The change in my pocket totals 18¢. How many pennies and how many nickels do I have?

Hint: let x = number of nickels and y = number of pennies.

	Equation 1	Equation 2	nickels
Any form	$x + y = 6$	$5x + y = 18$	3
Slope-Intercept form	$y = -x + 6$	$y = -5x + 18$	pennies
			3

11. Solve using substitution: $2x - 8y = 4$ and $-2x + y = 17$

(-10, -3)

12. Solve using Addition or Subtraction: $2x - 2y = -16$ and $x - 2y = -7$

(-9, -1)

- 13.

	length of sitcoms	length of dramas
	25	26

Write a system of equations to describe the situation below, solve using any method. A TV station executive is planning the new lineup for next season's shows. On Monday nights, there will be 6 sitcoms and 1 drama, for a total of 176 minutes of programming, not counting commercials. On Tuesday nights, she has scheduled 2 sitcoms and 2 dramas, for a total of 102 minutes of non-commercial programming. All sitcoms have the same length and all dramas have the same length. How long is each type of show?

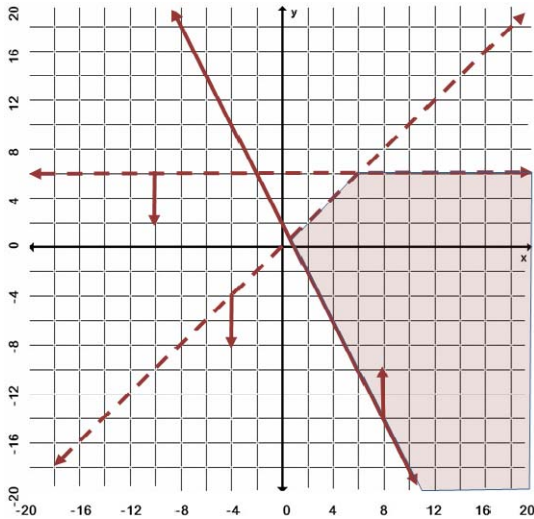
14. Is (3, 1) a solution to this system of equations?

$$x + 2y = 4 \qquad 15x + 18y = 14$$

no

The shaded area shown here describes the solution set to what 3 linear

15. inequalities?

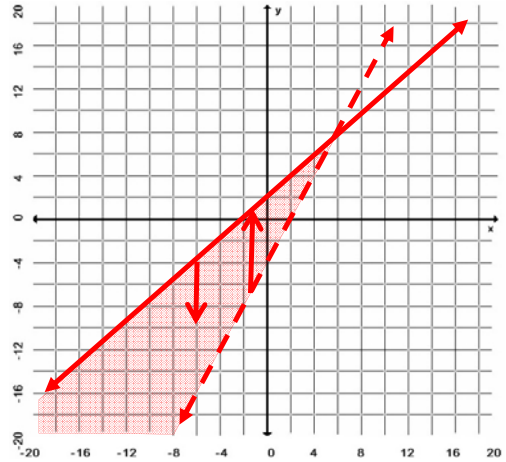


Inequality 1	Inequality 2	Inequality 3
$y < 6$	$y < x$	$y \geq 2x + 2$

16. Graph these Inequalities and shade in the solution:

$$y > 2x - 4$$

$$y \leq x + 2$$



17. Simplify these expressions

Expression	Simplified
$g^4 * g^3$	g^7
$(a^2)^3$	a^6
$a^2 * a^3$	a^5
$x^3 * (x^4)^2$	x^{11}
$(ab)^2 * a$	a^3b^2
$(x^3y^2)^2$	x^6y^4
$(2x)^2 * 2x$	$8x^3$
expression	simplified
6^{-2}	$1/36$
z^0	1
$(x^4y)^0$	x^0y^0
$x^0 * x^0$	x^0
$(2y^0)^2$	$4y^0$
$(3x^0) \div (3x)$	x^{-1}

18. Simplify:

19. Simplify if necessary, and then rewrite each number to fill in the blank:

longhand	Scientific Notation
.0000000000042	4.2×10^{-12}
265,300,000,000,000	2.653×10^{14}
$800 * 465,000,000$	3.72×10^{11}

20. Simplify these expressions:

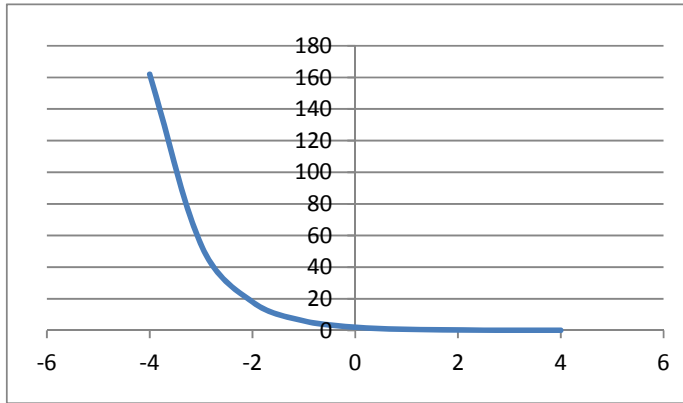
Expression	Simplified
$9^{-1/2}$	$1/3$
$66 - 64^{1/3}$	62

21. A mouse population is 25,000 and is decreasing in size at a rate of 20% per year. What is the mouse population after 3 years?



Equation
$y = 25,000 * .8^x$
Number of Mice
12,800

22. Graph $y = 2 * \frac{1}{3}^x$



x	y
-2	18.00
-1	6.00
0	2.00
1	0.67
2	0.22

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

$2x^2 - x + 8$

24. $3c(2a + 8)$

$6ac + 24c$

- 25.

Find the product of these binomials		
$(3x + 4)$	$(3x + 4)$	$9x^2 + 24x + 16$
$(3x + 4)$	$(3x - 4)$	$9x^2 - 16$
$(3x - 4)$	$(3x - 4)$	$9x^2 - 24x + 16$
$(z - 5)$	$(z - 5)$	$z^2 - 10z + 25$
$(z - 6)$	$(z + 6)$	$z^2 - 36$

26. Factor these polynomials completely:

Polynomial	Factor	Factor	Factor
$3x^3 + 3x^2 - 90x^2$	$3x^2$	$x + 6$	$x - 5$
$3z^3 - 48z^3$	$3z^3$	$z + 4$	$z - 4$
$12k - 3k^3$	$3k$	$2 + k$	$2 - k$
$80x^3 - 45x^3$	$5x^3$	$4x + 3$	$4x - 3$
$s^4 - s^2$	s^2	$s + 1$	$s - 1$
$7a^3b^3 - 63ab^3$	$7ab$	$ab - 3b$	$ab + 3b$
$75c^3 - 3c^3$	$3c^3$	$5c + 1$	$5c - 1$