



NORTH HAVEN HIGH SCHOOL
221 ELM STREET
NORTH HAVEN, CT 06473

Algebra 2 (L3)

Summer Assignment

June 2016

Dear Parent(s) or Guardian(s):

Your child is currently scheduled to take Algebra 2 next year. Algebra 2 is an extremely important, and at times, challenging course. Additionally, SAT includes Algebra 2 topics.

A solid algebra foundation is needed to be successful in this class. Because it has been two years since your child took Algebra One, we feel it is vital for them to review these key topics before beginning Algebra 2.

Please be sure that your child returns the completed packet on the first day of school. Their teacher will check this assignment and review the answers with them. It is expected that students will complete all problems in the packet. Completion of this packet will be counted as a grade and there will be a quiz on the material in the packet. It covers concepts that your child learned while successfully completing Algebra One as well as some Geometry.

It is important to note that if your child is struggling with any of these concepts, you should address this over the summer, prior to the start of school.

The mathematics department thanks you for your cooperation and wishes you and your family a happy, restful summer.

Thank you,

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Remember the course just before Geometry? Yeah, that's right, Algebra One! In Algebra Two we learn concepts that expand upon those you learned in Algebra One. This means you have to be skilled in Algebra 1 topics to be successful in Algebra 2. This Summer Review packet will remind you of basic and essential topics. You are expected to be able to do these problems with ease, so get some help this summer if you don't remember!

ORDER OF OPERATIONS

1) **EVALUATE USING ORDER OF OPERATIONS** – show work! No calculators

a) -3^2 b) $(-3)^2$ c) $4 - 3(8 + 12 \div 4)$

d) $6(3 + 4^2) - 12 \div 2$ e) $-3 - 6 \div 2 - 12$

SIMPLIFYING EXPRESSIONS

2) **SIMPLIFY THE FOLLOWING EXPRESSIONS BY COMBINING LIKE TERMS**

a) $8m + m + m$ b) $5x - 2x$ c) $8m - m - 9 + 3m + 5$

d) $3x^2 - 5x + 8x - 3 + x^2 - 6x^2 + 12$ e) $4x^2y + xy - 3xy^2$

3) **SIMPLIFY THE FOLLOWING EXPRESSIONS BY USING THE DISTRIBUTIVE PROPERTY**

a) $4(3x + 7)$ b) $7(1 - 6w)$ c) $-6(4a + 3)$ d) $-(6m - 5)$

4) **SIMPLIFY THESE USING DISTRIBUTIVE PROPERTY & COMBINING LIKE TERMS**

a) $3(m + 2) - 4m$ b) $9x - 4(2x - 1)$ c) $5(x + 1) + 2(4 - x)$

SOLVING BASIC EQUATIONS

5) **SOLVE ONE STEP EQUATIONS** (show work on both sides)

a) $-2x = -36$ b) $x - 7 = -12$ c) $\frac{m}{-4} = -8$ d) $\frac{-2}{5}x = -12$

6) SOLVE TWO STEP EQUATIONS (show work on both sides)

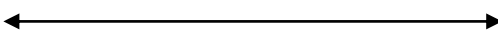
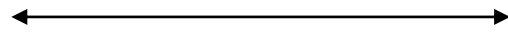
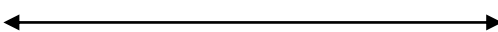

- a) $-3n - 5 = 16$ b) $5x + 2 = -18$ c) $\frac{h}{3} - 7 = -4$
- d) $\frac{-2}{3}h + 18 = 98$ e) $\frac{2}{5}y + 1 = -11$ f) $\frac{2}{3}x - \frac{1}{2} = \frac{5}{6}$

7) SOLVING MULTI STEP EQUATIONS

- a) $4n + 8n = 48$ b) $3x + 4 + 8x = 15$
- c) $2(r - 8) = -12$ d) $-6(12 - b) = 36$
- e) $2x - 9 = -x$ f) $-6 + 5x = 8x - 9$

SOLVING INEQUALITIES

8) SOLVE EACH INEQUALITY (like equation solving but with a twist)
Graph your solution on a number line.

- a) $x + 5 < 8$ b) $2x - 7 \geq -13$
-  
- c) $9 - 3x \geq 24$ d) $56 < \frac{x}{-2} + 32$
-  

PROPERTIES OF EXPONENTS

9) SIMPLIFY EACH EXPRESSION:

1) $x^5 \cdot x^2$

2) $(3ab)^2$

3) $(m^2n^3)^4$

4) $(5x^2)^3 \cdot (x^3)^2$

5) b^0

6) $\frac{a^{10}}{a^4}$

7) $\left(\frac{m^3}{n^5}\right)^2$

8) $\frac{x^3 \cdot x^5}{x^2}$

9) 5^{-2}

SIMPLIFYING RADICALS

10) Simplify each radical (NO DECIMAL ANSWER)

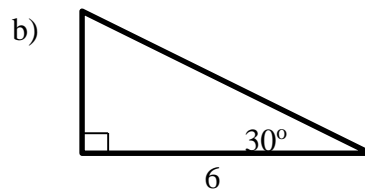
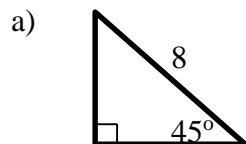
1) $\sqrt{20}$

2) $\sqrt{72}$

3) $5\sqrt{12}$

SPECIAL RIGHT TRIANGLES

11) Find the lengths of the missing sides of the triangles. Exact answers only. No decimals.



12) The area of a square measures 25 cm^2 . Find the length of its diameter.

13) An equilateral triangle has a perimeter of 24 in. Find the area of the triangle.

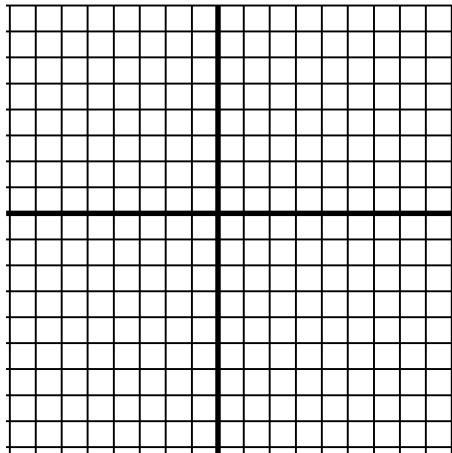
LINEAR EQUATIONS & GRAPHING

14) GIVEN THE LINEAR EQUATION $y = 3x + 4$

a) What is the slope? _____

b) What is the y-intercept? _____

c) graph it:



15) GRAPH THIS LINEAR EQUATION:

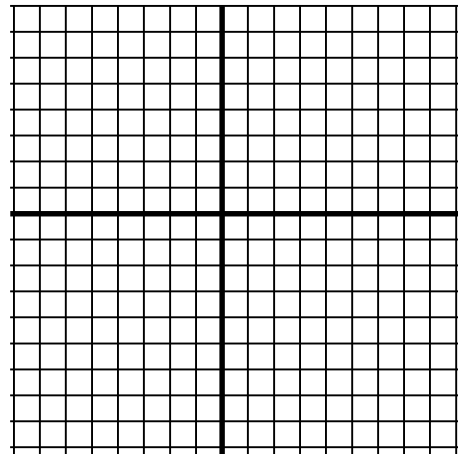
$$x + 2y = 8$$

What is the x-intercept? _____

What is the y-intercept? _____

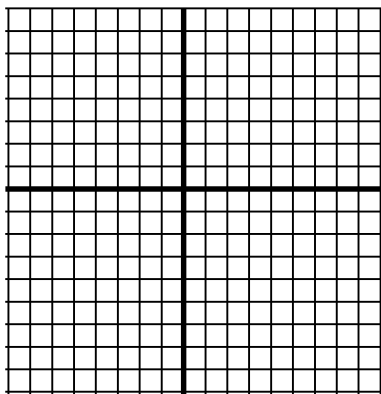
What is the slope of this line? _____

Graph the line.

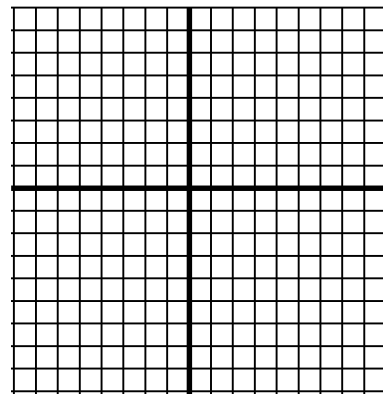


16) GRAPH THESE TWO EQUATIONS

a) $y = 5$



b) $x = -3$



17) FIND THE LINEAR EQUATION WITH THE FOLLOWING CHARACTERISTICS:

- a) has a y-intercept of (0,3) and a slope of -2
- b) contains points (4,2) and (12,-8)
- c) contains the point (3,-2) and is perpendicular to the line $y = 3x - 7$

OPERATIONS WITH POLYNOMIALS

18) SIMPLIFY EACH EXPRESSION USING THE INDICATED OPERATIONS

- a) Add $(2x^2 + 5x - 9) + (3x^2 - 11x + 2)$
- b) Subtract $(3x^3 + x^2 + 1) - (x^3 - 5x^2 + 7x + 3)$

19) MULTIPLY

- a) $-3(x^2 - 5x + 4)$
- b) $2x(6x^2 - 8x + 7)$
- c) $(x - 6)(x + 6)$
- d) $(x - 3)(x - 5)$
- e) $(2x + 1)(x - 4)$
- f) $(x + 7)^2$

20) FACTOR - that is “work backwards” to find the factors of the polynomials

- a) $x^2 + 8x + 15$
- b) $x^2 - 7x + 10$
- c) $x^2 + 6x + 9$
- d) $x^2 + 5x - 14$
- e) $x^2 - x - 6$
- f) $x^2 - 25$

SYSTEMS OF EQUATIONS

21) Solve each system.

a) $x = y - 1$
 $3x + y = 13$

b) $y + 2x = 15$
 $2y - 6x = 10$

c) $3x + 7y = 6$
 $2x + 9y = 4$

d) $7x + 3y = 2$
 $14x + 6y = 4$

e) At the beginning of the year Ms. McClatchey asks her students to bring in 3 tissue boxes and 2 bottles of liquid soap. Susie's parents spent \$15.05 on her items. Johnny accidentally switched the numbers and his parents purchased 2 tissue boxes and 3 bottles of soap and spent \$16.35. How much does a box of tissues cost?