



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

Algebra One (Level 2) Summer Assignment

June 2017

Dear Parents, Guardians, and Students:

The Algebra I curriculum builds on concepts that were introduced in eighth grade. It is an extremely important course since it is the foundation for all of the other mathematics courses students will take throughout high school and college. Students will also see many of the algebra concepts and skills they learn this year when they take the SAT.

This packet reviews key concepts from 8th grade. Please be sure that the completed packet is brought to school on the first day of class. Teachers will check this assignment and review the answers with students. Completion of the packet will be counted as a grade and there will be a quiz on some of the material. It is important that each student attempt each problem and show their work. Calculators may be used when needed, unless otherwise noted, but cannot serve as a replacement for showing work. By attempting to solve each problem, and communicating their thinking in writing, students provide a way for teachers to identify and remedy any misconceptions more efficiently. Since the concepts and skills that are taught in all mathematics courses follow a progression, identifying each student's strengths and weaknesses is essential in order to develop new learning in the subsequent course. If students find that they are struggling with any of these concepts, they should make an attempt to start the problem and communicate their thinking. They can also log on to my.hrw.com (This is the website they used in 8th grade to access their Math In Focus textbook online. Students should use the username and password that they used throughout 8th grade.) Another resource to use is www.khanacademy.org.

Write your username and password for my.hrw.com here so you don't forget it over the summer!

Username: _____ Password: _____

A Note About Graphing Calculators

Students will be using graphing calculators in mathematics courses such as Algebra I, Algebra II, Pre-calculus, Calculus, and Statistics. Each teacher has enough graphing calculators for every student to use in class, so students are not required to purchase graphing calculators. However, if a student would like to make the investment to use throughout high school and most likely college, we recommend the TI-84 Plus, which is the calculator used in class. (Please note that the TI-84 Plus CE is not necessary.) There are many sales over the summer so if you wish to purchase one it is a good time to do so. These calculators can be found at Amazon, Walmart, Staples, Target, and other stores that sell school supplies.

The mathematics department thanks you for your support and wishes you and your family a happy and restful summer!

Sincerely,
Jacqueline Daur, Kathy Johnson, Kevin Liftig, Lisa Porcelli, and John Snow
Algebra I Teachers

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Name: _____

- 1) List all the factors of each number. Name the greatest common factor and the least common multiple of the two numbers.

48 and 52

Factors of 48: _____

Factors of 52: _____

GCF: _____

LCM: _____

- 2) Solve each proportion for x.

a) $\frac{m}{40} = \frac{14}{16}$

b) $\frac{2}{12} = \frac{15}{x}$

- 3) Convert each percent into decimal form.

a) $66.\overline{6}\%$

b) 0.2%

c) 150%

- 4) Solving Percent Equations – set up an equation or proportion and solve.

a) What is 75% of 832?

f) 9.75% of 1200 is what number?

- 5) Find the opposite of each integer.

a) 16

b) -8

c) 0

- 6) Find the reciprocal of the number.

a) -16

b) $6\frac{3}{7}$

c) $\frac{-3}{4}$

- 7) Find the absolute value of each number

a) $|7|$

b) $|-12|$

c) $|0|$

d) $-|-3|$

The problems in #s 8 & 9 need to be computed WITHOUT a calculator!

8) Find the sum or difference.

a) $-12 + 15$

b) $-6 - (-6)$

c) $-8 + 3$

d) $-9 - (-3)$

9) Find the product or quotient.

(We will see parentheses for multiplication and the fraction bar for division in high school)

a) $8(-5)$

b) $(-12)(-3)$

c) $\frac{-48}{-6}$

d) $\frac{-28}{4}$

e) $(-3)(-7)(-2)$

f) $\frac{0}{-4}$

g) $\frac{15}{0}$

h) $(-2)(3)(0)$

10) Evaluate or simplify the expression. The final answer should have no negative exponents.

a) 2^5

b) -3^4

c) $(-3)^4$

d) 8^0

e) x^{-4}

f) $(4x^2y^4z)^3$

g) $\left(\frac{4}{x^2}\right)^2$

h) $12b^8c^2 * 5b^3c$

i) $\frac{4x^2y^5}{8x^4y^2}$

11) Evaluate using order of operations. Show each step.

a) $7[(18-6)-6]$

b) $[(7-4)^2+3]+15$

c) $\frac{24 \cdot 3}{5+3^2-2}$

d) $3 + 2 (5 + 2 \cdot 6)$

12) Simplify by combining like terms.

a) $5m + 6m$

b) $3x - 7x$

c) $8a - a$

d) $4w + 2 + 3w - 5$

13) Simplify by using the Distributive Property

a) $3(x + 8)$

b) $4(2x - 3)$

c) $-2(x - 7)$

d) $-5(3x + 4)$

e) $-(4m + 3)$

f) $-(5x - 6)$

14) Factor each expression

a) $5x + 35$

b) $-18x - 6y$

15) Solve each one step equation

a) $w + 4 = 13$

b) $x - 7 = -12$

c) $-2x = -36$

d) $-3 = x + 9$

e) $-39 = 3x$

f) $10x = 5$

g) $\frac{x}{6} = 11$

h) $6 = \frac{z}{-12}$

i) $\frac{3}{4}x = 9$

16) Solve each equation (these have 2 or more steps)

a) $3x - 24 = 6$

b) $-2w + 6 = -14$

c) $\frac{x}{4} - 19 = 22$

d) $25 = 10 + 3g + 2g$

e) $-32 + 8h = 8 + 4h$

f) $2(x + 3) + 3x = 31$

g) $8x + 3 = \frac{1}{4}(16x - 20)$

17) Solve each inequality. Graph each on a number line.

a) $7 + 9x > -5$

b) $-5x \geq 2(7 + x)$



18) Complete the table

$y = 4(2x + 1)$

X	1	2	3
y			

19) Rewrite each equation to get y by itself. Then find the value of y when x = 3

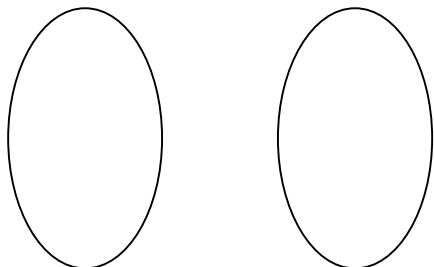
a) $2x - 1 = 2(y + 7)$

b) $2x + 3y = 6$

20) This table shows the number of students in each grade at North Haven High School from the 2016-2017 school year

Input (Grade)	9 th	10 th	11 th	12 th
Output (# students)	281	242	263	233

a) Fill in the mapping diagram and draw the arrows to represent the relation between grade and number of students.



b) Is this relation a function? Explain why or why not.

21) Use the sets of coordinates to find the slope of a line using the slope formula

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

a) (4, 10) and (2, 0)

b) (0, 4) and (8, 0)

22) Use the given slope and y-intercept to write an equation in slope intercept form $y = mx + b$

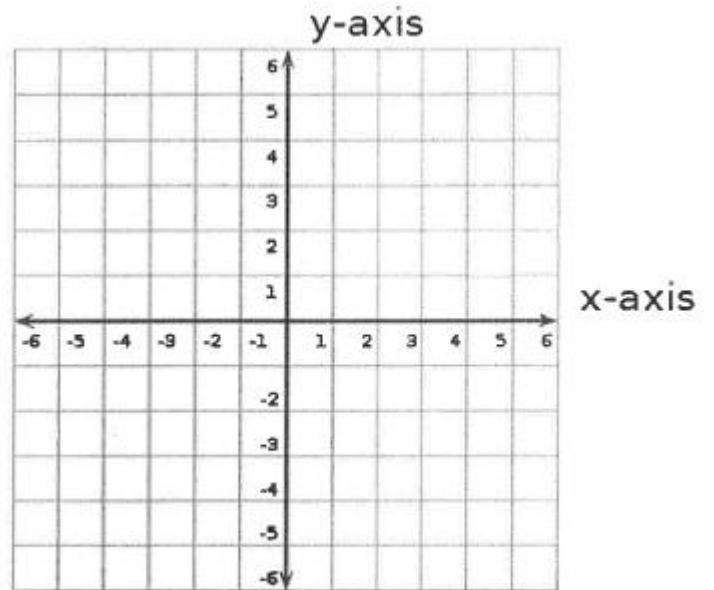
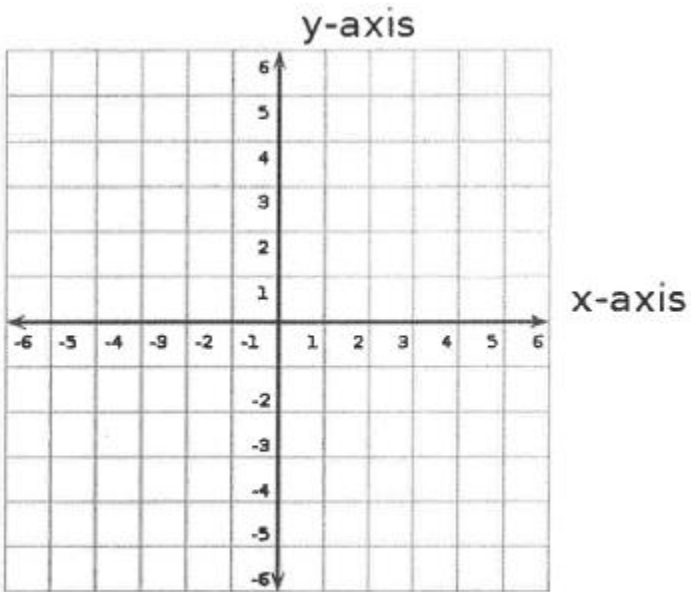
$m = -2$ $b = 4$

Equation: _____

23) Graph the equations

a) $y = 2x - 1$

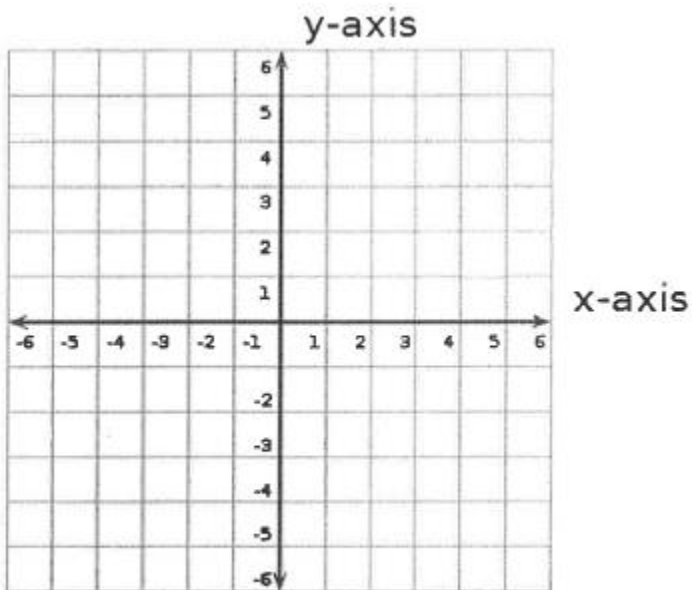
b) $y = -3/4x + 2$



24) Graph the system (both equations on the same graph) and find the intersection point

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

$$y = -2x + 5$$



25) Solve the systems of equations using algebra:

a) $4y + x = 10$
 $x = -3y - 2$

(Hint: substitution works well here)

b) $2x + y = 11$
 $3x - y = 4$

(Hint: elimination works well here)

26) John worked for 6 hours and got paid \$31.50. Rhonda worked for 9 hours and got paid \$46.80. Are both John and Rhonda paid the same rate per hour?

27) Jamie has dimes and quarters in her wallet. In how many different ways can she pay the \$1.25 fare for the bus?

Number of Quarters	Number of Dimes	Total = \$1.25

28) Use the formula $D=rt$ (Distance = rate • time).

a) Let $r = 45$ mi/h and $t = 4$ h. Find D .

b) Let $D = 180$ mi and $r = 15$ mi/h. Find t .

c) Let $D = 2106$ mi and $t = 9$ h. Find r .