WJHS Summer Math Packet
For Rising Algebra 1 Students

This packet is an optional review of the skills that will help you be successful in Algebra 1. By completing this packet over the summer, you will not only keep your brain mathematically active but you will be able to identify skills that you need to strengthen for your year ahead. Complete the exercises in the space provided then check your answers with the Answer Key. If you struggle with any of the exercises, please seek help from a friend, parent, sibling, book, or online resource (some suggestions have been provided for you). Enjoy your math review and we look forward to meeting you in August!

I. Factors. Write the factor pairs for each number.

http://www.mathsisfun.com/greatest-common-factor.html

> ***Example***:
> Give the factor pairs of 12:
> ***Answer:*** 1 x 12
> 2 x 6
> 3 x 4

a) 48
1 x 48
2 x 24
3 x 16
4 x 12
6 x 8

b) 72
1 x 72
2 x 36
3 x 24
4 x 18
6 x 12
8 x 9

c) 126
1 x 126
2 x 63
3 x 42
6 x 21
7 x 18
9 x 14

d) 39
1 x 39
3 x 13

e) 53
1 x 53

f) 121
1 x 121
11 x 11

II. Greatest Common Factor (GCF). Find the GCF for each pair of factors.

a) 12 and 20
4

b) 54 and 81
27

c) 15 and 70
5

d) 27 and 72
9

e) 18 and 63
9

f) 169 and 39
13

III. Order of Operations and Integer Operations. Simplify each expression.

http://www.mathsisfun.com/operation-order-pemdas.html

a) $3 - 4$ b) $-14 - 8$ c) $-7 + 3$ d) $-4 + 9$

-1 -22 -4 5

e) $-1 - -7$ f) $-2 + -9$ g) $-4 \bullet -2$ h) $-54 \div 9$

6 -11 8 -6

i) $15 \bullet -2$ j) $-32 \div -4$ k) $27 \div 3 + 4^2$ l) $2[5 + 3(14 - 6)]$

-30 8 25 58

m) $24 \div 8 + 5 \bullet 6$ n) $\frac{(5-2)^2+9}{6}$ o) $30 - 4 \bullet 5 + 7$ p) $18 \div [(8)(2) - 7]$

33 3 17 2

IV. Fractions. Perform the indicated operation. Make sure final answer is simplified.

http://www.mathsisfun.com/fractions.html

a) $\frac{2}{5}+\frac{1}{5} = \frac{3}{5}$ b) $\frac{3}{4}+\frac{2}{3} = \frac{17}{12}$

c) $\frac{1}{2} - \frac{5}{7} = \frac{-3}{14}$

d) $\frac{-12}{7} - \frac{3}{14} = -\frac{27}{14}$

e) $\frac{5}{8} \cdot \frac{4}{10} = \frac{1}{4}$

f) $\frac{3}{4} \cdot 8 = 6$

g) $\frac{1}{3} + \frac{1}{2} = \frac{2}{3}$

h) $\frac{2}{9} + \frac{5}{3} = \frac{2}{15}$

V. Combining Like Terms and Distributive Property. Simplify.

http://www.glencoe.com/sec/math/brainpops/00112041/00112041.html

http://www.themathpage.com/alg/like-terms.htm

a) $2 + 3y - 5y$

$= -2y + 2$

b) $9x + 6 - 5x$

$= 4x + 6$

c) $15n + 2n - 8n$

$= 9n$

* we typically write the variable term before the constant.

d) $4x^2 - 5x^2 + 7x$

$= -x^2 + 7x$

e) $3p - 7p^2 + 4p - 2p^2$

$= -9p^2 + 7p$

f) $-9 - 8x - 4 - 7x$

$= -15x - 13$

* we typically write the term w/ the largest exponent

g) 3(y + 6)

$= 3y + 18$

h) -4(2x + 7y)

$= -8x - 28y$

i) (4r - 5)(-2)

$= -8r + 10$

j) 3x + 7(x - 4)

$= 10x - 28$

k) 2 - 7(3 - 5x)

$= 35x - 19$

l) -3(x + 1) - 2

$= -3x - 5$

m) -2(x + 5) + 3(4x - 9)

$= 10x - 37$

n) 9(3x + 4) - 5(3 - 2x)

$= 37x + 21$

o) 7(w + 3y) - 6(2w + 3y)

$= -5w + 3y$

VI. Solving one-step equations. Solve each equation.

http://www.montgomeryschoolsmd.org/departments/itv/mathdude/MD_Algebra1_1-2.shtm

a) z - 7 = -3

$z = 4$

b) p + - 7 = 9

$p = 16$

c) 8 + q = -4

$q = -12$

d) 3a = -27

$a = -9$

e) $-5y = 23$

$y = -\frac{23}{5}$

f) $\frac{w}{3} = 8$

$w = 24$

g) $\frac{x}{-6} = 9$

$x = -54$

h) $\frac{1}{5}x = 12$

$x = 60$

VII. Solving multi-step equations. Solve each equation.

https://www.youtube.com/watch?v=CGS0vihzSlc

https://learnzillion.com/lesson_plans/7792-solve-multi-step-equations-using-the-distributive-property

a) $5 + 3r = 5r - 19$

$r = 12$

b) $8x + 12 = 4(3 + 2x)$

all real numbers

c) $-5x - 10 = 2 - (x + 4)$

$x = -2$

d) $6(-3m + 1) = 5(-2m - 2)$

$m = 2$

e) $3(d-8)-5=9(d+2)+1$ $d=-8$

VIII. Translating Verbal Phrases

Hint: More, sum, plus = addition	*Difference, less, minus = subtraction*
Product, time, multiplied = multiplication	*Quotient, divided by = division*
is = Equal to	

a) The difference of 7 and 10 times a number

$7-10n$

b) 11 plus the quotient of a number and 7

$11+\frac{n}{7}$

c) Two less than the sum of six and a number

$(6+n)-2$

d) Half of a given number

$\frac{n}{2}$

e) The sum of 6 and a number

$6+n$

f) 3 less than 4 times a given number

$4n-3$

g) The sum of 6 and a number is 18.

$6+n=18$

h) Sixteen more than a number is 36.

$n+16=36$

i) 12 more than a number

$n+12$

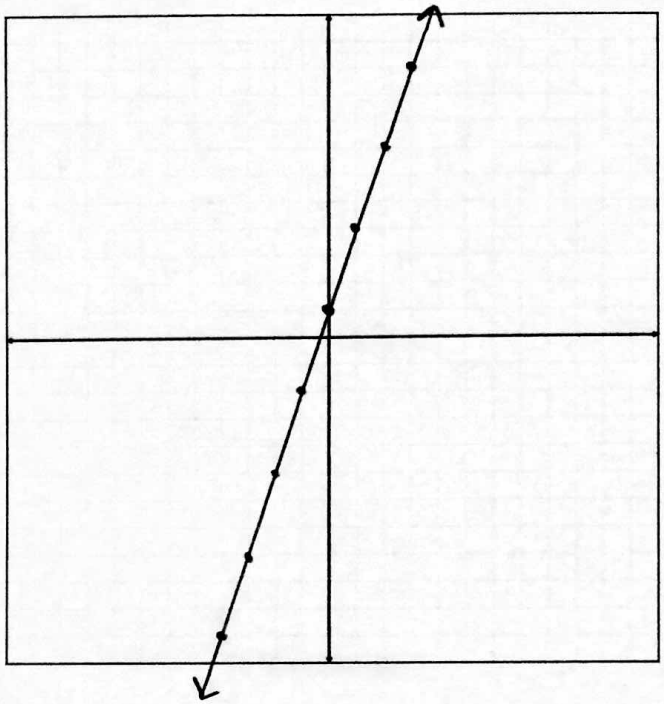
j) One number decreased by the sum of 10 and the square of another number

$n-(10+m^2)$

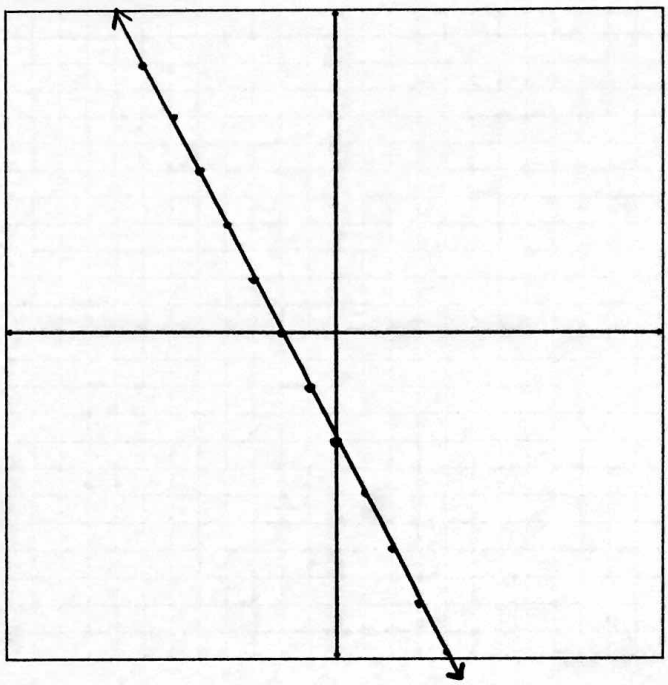
VIII. Graphing Lines in Slope Intercept Form

https://www.khanacademy.org/math/algebra-basics/core-algebra-graphing-lines-slope/core-algebra-graphing-slope-intercept/v/graphing-a-line-in-slope-intercept-form

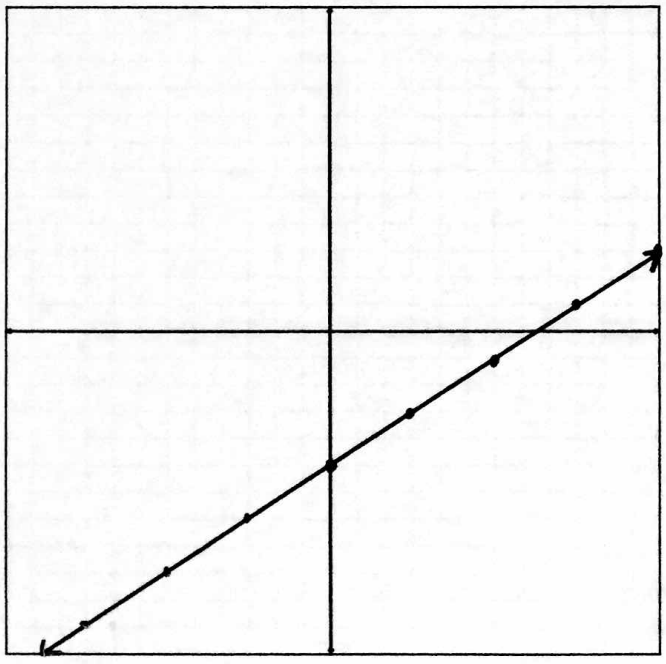
$y = 3x + 1$



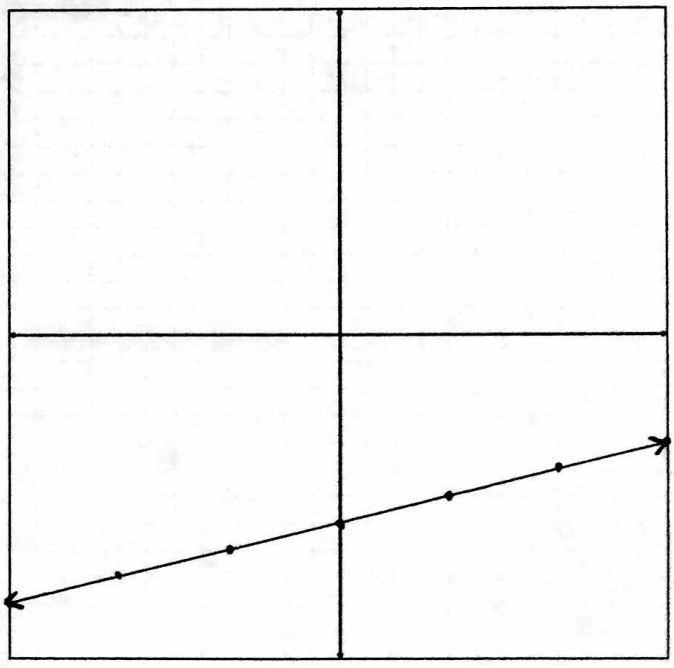
$y = -2x - 4$



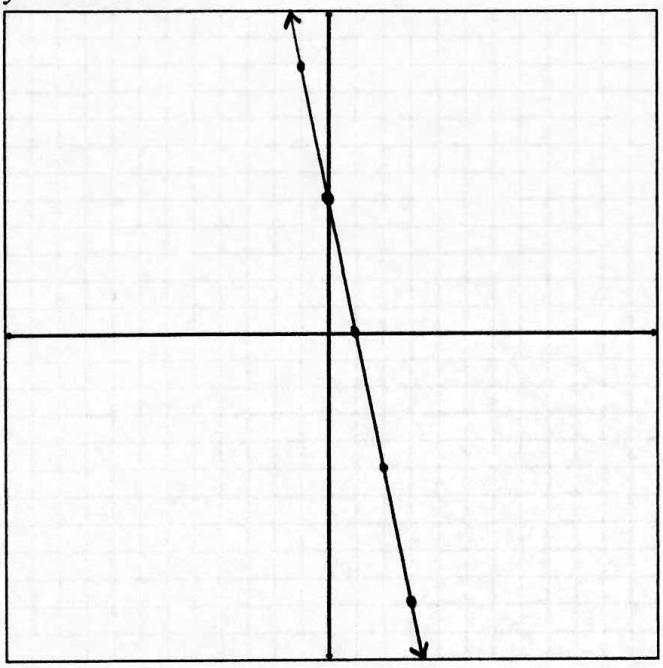
$y = \frac{2}{3}x - 5$



$y = \frac{1}{4}x - 7$



$y = -5x + 5$



$y = -\frac{2}{3}x + 6$