Summer Packet for Rising Algebra 1 Students

Dear Students and Parents:

All students entering Algebra 1 are expected to be proficient in all their previously- learned skills. The following exercises are intended to provide a review of the skills needed to be successful in Algebra 1. ***Show all work!***

If you need assistance with any topics, please refer to the following websites:

- http://coolmath.com/algebra/Algebra1/index.html
- http://www.algebra.com/
- http://www.classzone.com/books/algebra_1/index.cfm?state=NJ
- http://mathforum.org/dr.math/

Answers to the exercises are provided on the last page – however, you must <u>show all work</u> to receive full credit.

NOTE: This packet should be completed for turn-in on the first day of class. **For completing this packing and turning it in with all work shown, you will be given a test grade of 100%. ***

Sincerely,

Tyree Ladd   Emily Nichols
Math Department Chair   HS Managing Director
abanks@belovedccs.org   kacosta@belovedccs.org
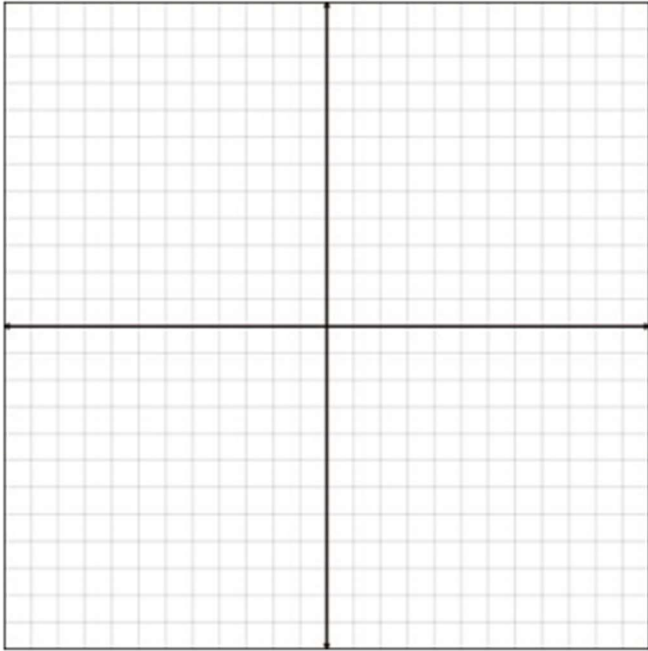
Graphing

Connect the series of points below to reveal each shape.

Shape 1: (11,11), (14,11), (14,14), (16,14), (16,11), (19,11), (19,19), (16,19), (16,16), (14,16), (14,19), (11,19), (11,11) **Shape 2:** (9,11), (9,16), (7,14), (2,19), (1,18), (6,13), (4,11), (9,11) **Shape 3:** (12,8), (12,2), (14,2), (14,4), (16,4), (16,2), (18,2), (18,8), (16,8), (16,6), (14,6), (14,8), (12,8) **Shape 4:** (8,9), (5,6), (2,9), (1,8), (4,5), (1,2), (2,1), (5,4), (8,1), (9,2), (6,5), (9,8), (8,9)
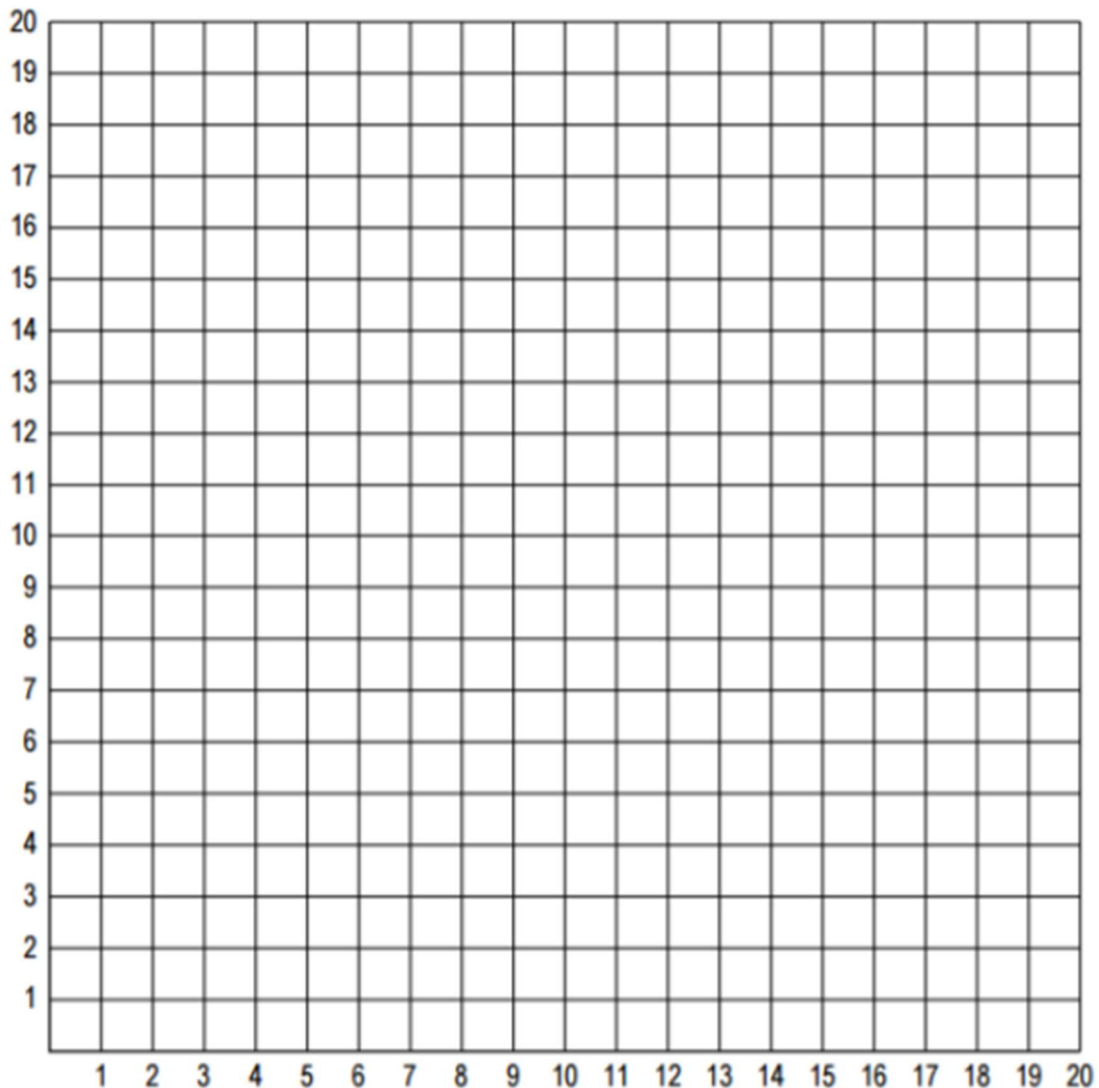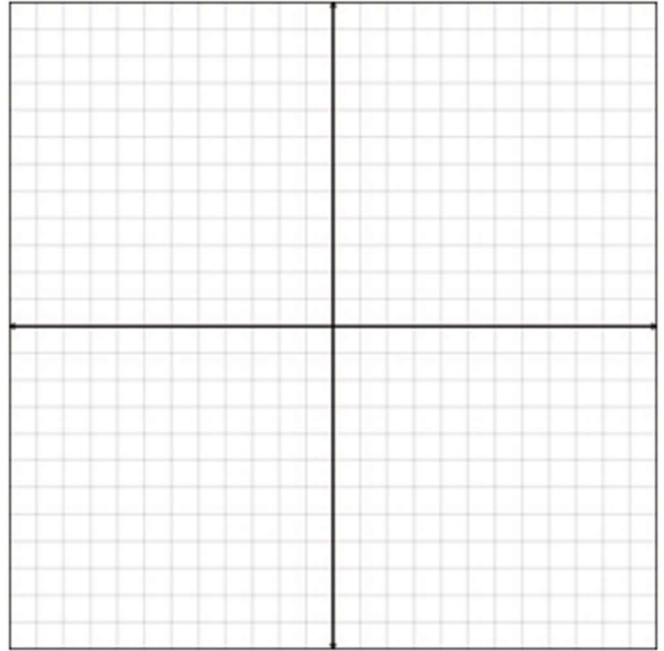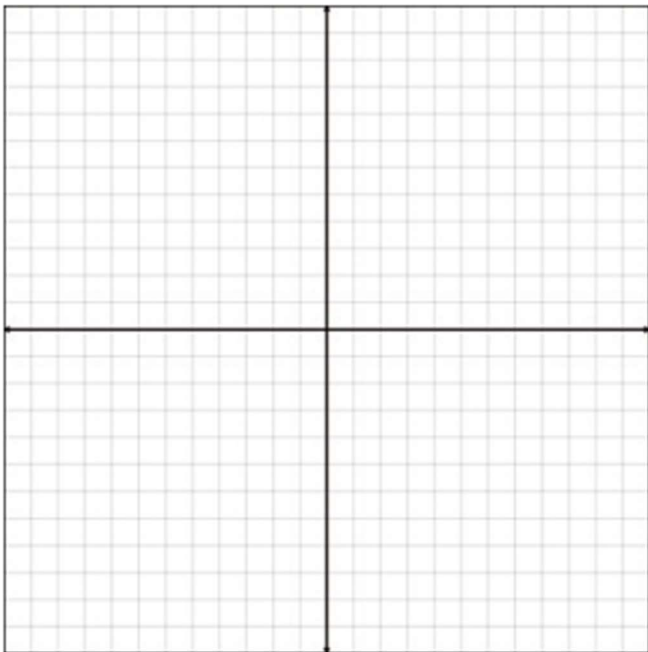
Graphing Lines in Slope Intercept Form
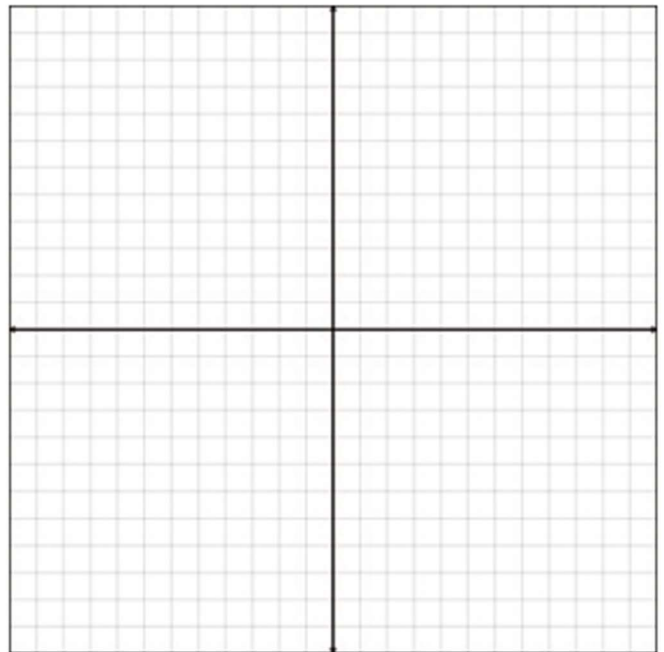
$y = 3x + 1$

$y = -2x - 4$

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

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

Operations with Signed Numbers

When adding and subtracting, if the signs are the same then you add the numbers and keep the sign. If the signs are mixed, subtract the numbers and keep the sign of the larger number.

When multiplying and dividing, if the signs are the same then the answer is positive. If the signs are mixed, then the answer is negative.

1) $-3 + 7 = $ _____

2) $4 - 6 = $ _____

3) $-1 - 5 = $ _____

4) $3 - (-2) = $ _____

5) $5 + (-9) = $ _____

6) $12 - 3 = $ _____

7) $(4)(-2) = $ _____

8) $-3(-5) = $ _____

9) $7 \cdot 2 = $ _____

10) $-9 \cdot 5 = $ _____

11) $-16 \div 8 = $ _____

12) $-90 \div -9 = $ _____

13) $\frac{54}{6} = $ _____

14) $\frac{64}{-8} = $ _____

Order of Operations

The order you should complete operations in is commonly remembered by PEMDAS. The order you should perform operations is Parenthesis, Exponents, Multiplication, Division, Addition, and Subtraction. Remember to always work from left to right when there is multiplication and division in the same problem or addition and subtract in the same problem.

1. $2(-3) + 7$	2. $4(6) - 3(5)$
3. $(2 - 5)^2$	4. $-2(4 - 2)^3$
5. $\dfrac{4 - 10}{-2}$	6. $\dfrac{3(5) + 17}{(-8)^2}$

Evaluating Algebraic Expressions

A variable is a letter that represents a number. When there is an algebraic expression (a statement with an "=") we can determine that value of the expression if we know what the variables represent. For each of the following, plug-in the values of the variables and determine the value of the expression.

Let x = 3 , y = -4, z = 2 in each of the following.

1. $2y$	2. $(x - z)^2$
3. $xz - y$	4. $(3z)^3$
5. $7y^2$	6. $\dfrac{y-z}{x}$
7. $2x - 3y$	8. xyz

Solving Equations

One Step Equations:

Decide what operation is happening… and to cancel out the number, you need to perform the OPPOSITE OPERATION with the SAME number.
(Remember: don't change the sign when you divide.)

1. $x - 4 = -7$	2. $x + 10 = -3$	3. $x - 9 = 2$
4. $5x = 40$	5. $-4x = 12$	6. $\frac{x}{7} = 42$

Two Step Equations:

When you solve equations that require multiple steps, it is important to remember that you want to approach cancelling pieces of the equation in the opposite order of PEMDAS. That is, first get rid of addition and subtraction and then get rid of multiplication and division.

7. $4x - 6 = 26$	8. $-2x + 8 = 2$
9. $10 - 3x = -11$	10. $12 = -8 + 5x$

Equations with Variables on Both Sides:

The object is to get all the variables on one side and the constants on the other side so that the las step looks something like $(5x = 10)$. It does not matter if you chose to the move the variables to the left or right, but if it is easier, you may always bring them to one particular side.

YOU ARE NOT COMBINING LIKE TERMS. Therefore, in order to move something from one side to the other, you need to cancel it out by performing the opposite operation.

11. $4x + 5 = 2x - 17$	12. $-3x - 4 = 2x + 1$
13. $10x - 3 = -2x + 21$	14. $2x + 2 = x + 3$

Equations where you need to Distribute first:

When a number is next to a parenthesis, you need to multiply that number by every term on the inside.

15. $2x + 8 = 3(x - 3)$	16. $4(x - 5) = -3(2x + 10)$

Equations where you need to Combine like terms first:

When there are "like terms" on the SAME side of the equal sign, uou should combine those terms first.

17. $5x - 10 + 4 = 3 - 4$	18. $x + 3x - 5 = 2x + 8 - 7$

Equations with fractions:

To get rid of the denominator (the operation is division), use the opposite operation with the number (multiplication) to cancel it out.

19. $\frac{1}{2}x = -3$	20. $\frac{3}{4}x = 6$
21. $\frac{x}{3} - 5 = 2$	22. $-\frac{2}{3}x + 11 = 7$