

2019 – 2020
Honors Algebra 1
Summer Packet

Dear Student and Parent.

Summer Packet will be available at: www.rademakermath.com/summer

The problems in this packet are designed to help you review topics from previous math courses that are important to your success in Algebra 1 and on the AIR test.

Please try to do each problem and show the work that goes with that answer. Every problem must be attempted. No problem should be left blank. I've talked to your previous math teachers and they assure me that every topic has been previously covered. If there is a specific topic that you do not understand, please do research on that topic (Khan Academy or other online sites are great sources).

This packet is due on the first day of class in August and will be counted as the first grade in the class. A quiz covering the material from the packet will be given sometime within the first two weeks of class after briefly reviewing the topics with additional notes and examples.

****Important Class Information****

- **Grade Point Average:** Since this is a high school level class, we will be using the high school grading scale. It will count as the student's first high school credit and thus will count towards the student's high school GPA
- **Calculators:** Obtaining a graphing calculator is required for the class. A TI-84+ is the recommended brand (TI-83 is also fine). It does not have to be new; older models still have the same capabilities. This calculator will be used in all subsequent math courses in high school, as well as on the ACT/SAT and college courses. I still use the same TI-83+ I received in 7th grade (16 years ago). Additionally, I do have some graphing calculators that students can borrow during the class period. However, there are not enough for an entire class. A graphing calculator is not necessary to complete this packet.

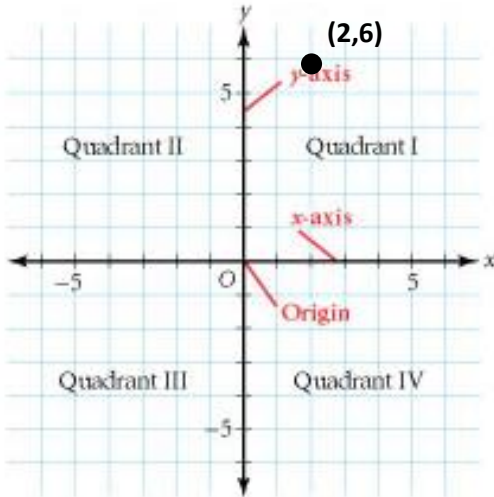
Copies of this packet will be available online at www.rademakermath.com/summer. Please print it off, staple it all together and complete by the first day. Eventually, additional practice with video resources will also be available. I can be contacted through the website or school email at jrademaker@cuyhts.org

I hope that you have an enjoyable summer and return to school ready to be successful in Honors Algebra 1. I look forward to teaching you.

-Mr. Rademaker

Topic 1: Graphing With Coordinates

The coordinate plane is something we will see a lot of this year. It is very important that you know how to plot points, and how to identify points that are given.



(2,6) is called a coordinate pair. A coordinate pair is simply a location of a point on the plane. The first number is always the x-coordinate (how far left or right from the origin) and the second number is always the y-coordinate (how far up or down from the origin).

If I was asked to plot the point (2,6) I would move my pencil right two units to the right along the x-axis and then 6 units up from there and draw a bold point. (I have done so on the diagram to the left)

Write the coordinate pair for each point listed below, and state which quadrant it is in (I,II,III or IV)

F:

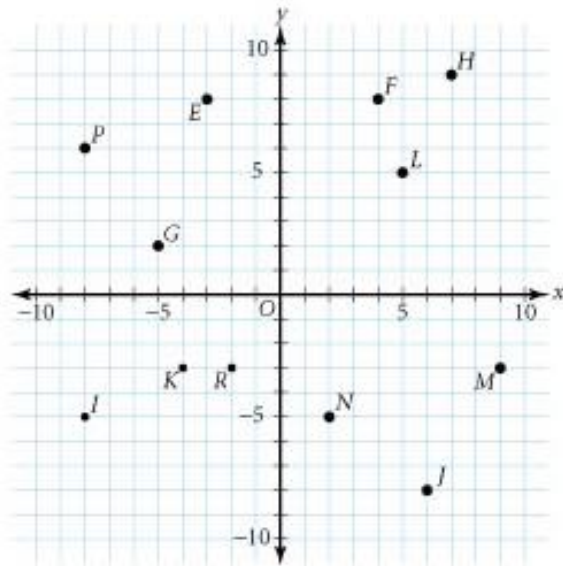
G:

H:

M:

P:

R:



Plot the following points on the provided coordinate plane. Be sure to label the points.

A (1, 3) (example shown)

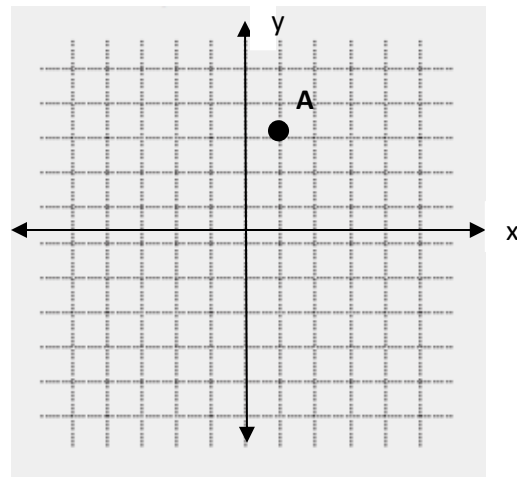
B (-5, 2)

C (-4, -2)

D (3, -4)

E (-3, -3)

F (3, 5)



Topic 2: Fractions

Perform the indicated math operation. Reduce answers into integers or simplified improper fractions. No mixed numbers or decimals.

Addition and Subtraction

1. $\frac{2}{5} + \frac{4}{5}$

2. $2 - \frac{13}{8}$

3. $\frac{7}{6} - \frac{5}{6}$

4. $\left(-\frac{4}{3}\right) - \left(-\frac{3}{2}\right)$

5. $\frac{1}{3} - \left(-\frac{5}{3}\right)$

6. $2\frac{4}{5} - \frac{5}{8}$

7. $\frac{5}{6} - \frac{5}{8} + \frac{2}{3}$

8. $(-1) + \left(-2\frac{2}{5}\right)$

Multiplication and Division

$$9. -\frac{5}{4} \times \frac{1}{3}$$

$$10. \frac{8}{7} \cdot \frac{7}{10}$$

$$11. -1\frac{1}{4} \times 10$$

$$12. -2 \cdot \frac{3}{7}$$

$$13. -2\frac{1}{5} \times -1\frac{3}{4}$$

$$14. -2\frac{2}{3} \cdot 4\frac{1}{10}$$

$$15. -\frac{3}{2} \div -\frac{10}{7}$$

$$16. -3\frac{5}{9} \div 2$$

$$17. \frac{9}{5} \div 3$$

$$18. -3\frac{7}{10} \div 2\frac{1}{4}$$

Topic 3: Order of Operations

To simplify numeric expressions we must use the proper order of operations.

- 1) Parenthesis – do all computations inside the parenthesis following the order of operations.
- 2) Evaluate exponents.
- 3) Perform all multiplication and division, going from left to right.
- 4) Perform all addition and subtraction, going from left to right.

Evaluate the expressions using the order of operations. Show each step of simplification.

19. $4 \cdot 16 \div 8 - 0 \div 5$

20. $8(3 + 4) - 2 \cdot 8 \div (5 - 3)$

21. $(8^2 + (13 - 4)^2) \div 5$

22. $5 - 3 + 12 \div (2 - 1 + 5) \cdot 6 \div 3$

23. $3^2 + 6 \div 2 \cdot 4 - (12 - 6 + 4) \div 2$

24. $42 \div 2(-12 + 9)$

Topic 4: Combining Like Terms

Like terms are terms that have the same combination of variables. To combine them, add or subtract the coefficients (number in front of the variable) and leave the variables the same.

3x and 4x

2y and -6y

10ab and 2ab

3xy and 4yx (these are like terms because multiplication is Commutative)

Simplify the following expressions. If it cannot be simplified, copy the problem and circle it as your answer.

1) $-5x + 2y + 7y - 3x$

2) $5a + 4a - 2b + 7a$

3) $150x - 50x$

4) $2xy - 6xy$

5) $25ab + 50ba$

6) $-6d + 7d$

7) $-5x + x + x + x$

8) $2x + 5a - 2x + 5a$

9) $4a - a$

10) $12r + 5 + 3r - 4$

11) $-3x - 9 + 15x$

12) $12r - 8 - 12$

13) $-7n - 21 + 5n + 4$

14) $2ab + 3xy - 5ab + 4x$

15) $3x + 4y - 8xy$

16) $-5n + 18 - 7n$

17) $10 - 45j + 5$

18) $-2x + 11 + 6x$

Topic 5: Evaluating Expressions

To evaluate each expression, substitute the given number in for each variable. Then simplify using the proper Order of Operations.

$$\begin{aligned}\text{For example: } & 2(x + 7) - 2y, \text{ when } x = 5 \text{ and } y = -3 \\ & = 2(5 + 7) - 2(-3) \\ & = 2(12) + 6 \\ & = 24 + 6 \\ & = 30\end{aligned}$$

17) $3(n - 1) + 2n$, when $n = 5$

18) $7b - 2a$, when $a = -3$ and $b = 4$

19) $3x^2 + 5x + 1$, when $x = -2$

20) $\frac{2r}{t} + 7$, when $r = 12$ and $t = 3$

21) $(3x)^2 - 7y^2$, when $x = 3$ and $y = 2$

22) $4(3d + 6) - 2d$, when $d = -6$

Topic 6: Solving Single and Two Step Equations:

In solving equations, you want to get the variable, or the letter, by itself. In order to do that you must eliminate the value on the same side of the variable by adding or subtracting that number from both sides of the equal sign, and then by multiplying or dividing by the coefficient, or number, in front of the variable.

One Step:

1. $5 - x = 3$

2. $\frac{x}{6} = 7$

3. $3x = -15$

4. $x + 6 = 14$

5. $\frac{x}{7} = 12$

6. $x - 12 = 54$

7. $12x = 144$

8. $15 - x = 32$

9. $32 = 8x$

10. $98 = -12 + x$

Two Step:

11. $\frac{6x}{5} + 8 = -2$

16. $8 - 2n = -4$

12. $-2 - 14z = -30$

17. $7y - 1 = 27$

13. $-51 = 8x + 5$

18. $\frac{3x}{4} + 9 = 9$

14. $4a - 2 = 30$

19. $36 = 3m + 6$

15. $\frac{x}{6} - 17 = -25$

20. $\frac{151+r}{3} = 80$

Topic 7: Distributive Property

Simplify each expression using the distributive property.

Example: $4(x + 5) = 4(x) + 4(5) = 4x + 20$

40) $3(b + 9)$

41) $5(2x - 3)$

42) $-3(4x + 9)$

43) $x(2x + 4)$

44) $\frac{1}{2}(4r + 12)$

45) $-(6p - 11)$

Topic 8: Translating Expressions and Equations

Write an algebraic expression or equation to represent each verbal expression.

Example: 18 less than the quotient of a number and 3. $\rightarrow \frac{n}{3} - 18$

The sum of six times a number and 25

7 less than fifteen times a number

The sum of a number and 23 is 78.

Four times the square of a number increased by five times the same number