Summer Packet 2021- Algebra 1 College Prep

Students Entering Algebra 1

Purpose: This packet is designed to help students stay on track over the summer and enter 8th grade Algebra 1 confident and prepared for a great school year. Math teachers have selected the 6 skills that are important for the students' success in 8th grade Algebra 1. For each of these six concepts, students will only be required to work 6-10 problems totaling 50 problems. If a student struggles with these concepts, I highly recommend that they watch the instructional videos provided. The instructional videos are available by scanning the QR code with a smart phone. After watching the video that is linked, students can choose to continue watching videos on Khan Academy for extra help or work problems live on the site and get immediate feedback to see if their solution is correct. Watching videos and online practice is not required but may prove beneficial for students that often struggle in math or lose skills over the summer. **SHOW ALL WORK TO RECEIVE CREDIT.**

Concept 1: Integer Operations

Directions: Solve each problem showing all steps and circle your answer. Evaluate each expression. NO CALCULATOR ALLOWED.

1. $68 + 22 + 50 - 36$

2. $84 + 80 - 67 + 68$

3. $96 + (-1) - 45 - 98$

Find each product.

4. $6 \times 7 \times -2$

5. $-10 \times 5 \times -7$

Find each quotient.

6. $-105 \div 5$

7. $\frac{-14(2)}{7}$

8. $\frac{21}{-7}$

Concept 2: Ratios, Percent, and Proportion

Directions: Solve each problem showing all steps and circle your answer. Simplify your answer if possible. NO CALCULATOR ALLOWED.

State if each pair of ratios forms a proportion.

1. $\frac{5}{3}$ and $\frac{25}{18}$

Solve each proportion.

2. $\frac{b}{3} = \frac{11}{12}$

3. $\frac{8}{11} = \frac{2}{n}$

4. $\frac{15}{a} = \frac{5}{4}$

5. $\frac{28}{24} = \frac{d}{12}$

Answer each question and round your answer to the nearest whole number. CALCULATOR ALLOWED ON THIS SECTION.

6. A plane is flying at a speed of 425 miles per hours. How far will the plane travel in 45 minutes?

Solve each problem. Show all steps by setting up a ratio. CALCULATOR ALLOWED ON THIS SECTION.

The Percent Equation

$$\frac{is}{of} = \frac{\%}{100}$$

7. 67% of what is 35?

8. 108 is 39% of what?

9. What percent of 73 is 85?

10. What is 42% of 85?

Concept 3: Writing and Solving Two-Step Equations and Inequalities

Directions: Solve the equation or inequality. Isolate the variable. Show all steps and circle your answers. NO CALCULATOR ALLOWED.

1. $18 = -3(m - 6)$

2. $-8(8n + 2) = 112$

3. $-20 = -4x - 6$

4. $12 = -4(-6x - 3)$

5. $5(2x - 1) = 25$

6. $a + 5 = -5a + 5$

7. $-6 - b < 2(b - 3)$

8. $3b + 15 \leq 8b - 5$

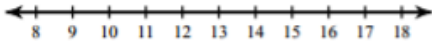Write each verbal expression as an algebraic expression.

9. the product of a number and 9 is 34

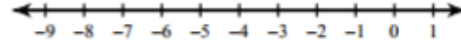10. the difference of a number and 10 is equal to 30

Concept 4: Graphing Inequalities

Directions: Solve each inequality and circle the answer. Then graph the solution on the given number line. Remember to isolate the variable first. NO CALCULATOR ALLOWED.
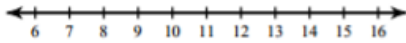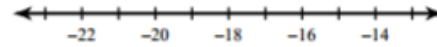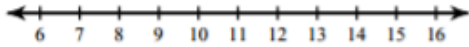
1. $-11 \geq -(-4 + r)$

8   9   10   11   12   13   14   15   16   17   18

2. $-25 \geq 2 + 9n$

-9 -8 -7 -6 -5 -4 -3 -2 -1 0 1

3. $\frac{n}{4} + 1 \leq 3$

6   7   8   9   10   11   12   13   14   15   16

4. $16(8 + x) < -144$

-22   -20   -18   -16   -14

5. $5 + \frac{r}{2} \geq 9$

6   7   8   9   10   11   12   13   14   15   16

6. $4 - 10b < -96$

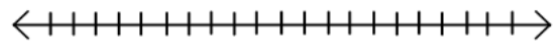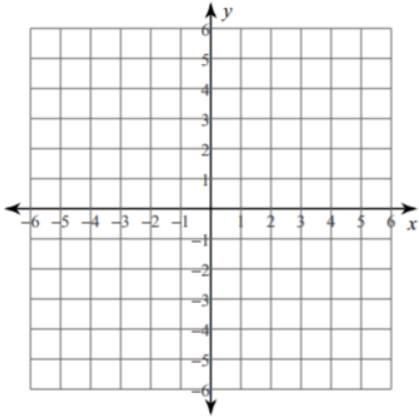6   7   8   9   10   11   12   13   14   15   16
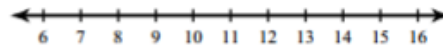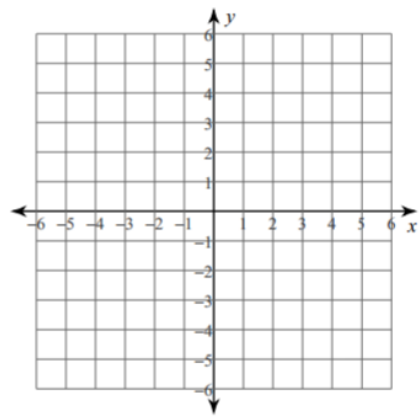
7. $-2y > -4$
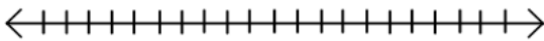
8. $x \leq 6$

Concept 5: Graphing Linear Equations

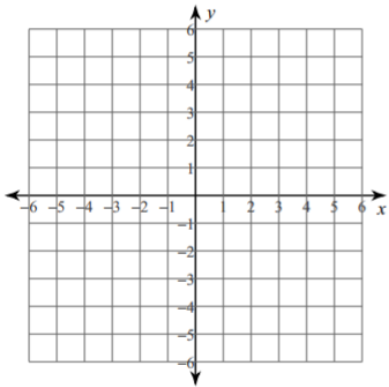Directions: Sketch the graph of each line. Remember to use the y-intercept and the slope.
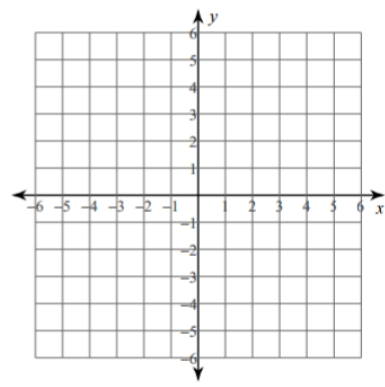
1. $y = \frac{7}{4}x - 2$

2. $y = -\frac{4}{3}x + 3$

3. $y = -3$

4. $y = 4x + 5$

5. $y = \frac{2}{5}x - 1$
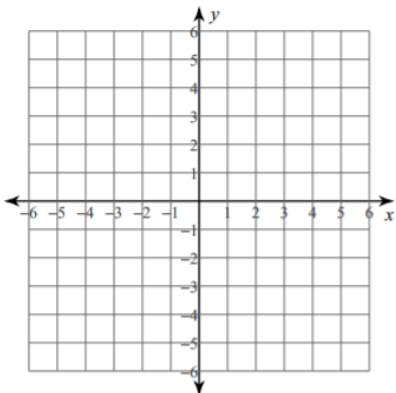
6. $y = -\frac{3}{2}x + 2$
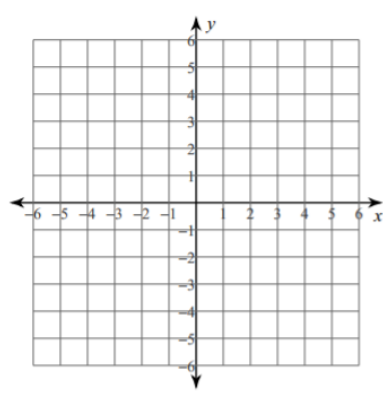
Concept 6: Monomials

Directions: Simplify. NO CALCULATOR ALLOWED ON THIS SECTION.

1. $(2h^7)(6h)$

2. $\dfrac{k^{10}}{k^4}$

3. $18x^2 - 7x + 5x^2 + 3x$

4. $(3x + 2) + (5x - 7)$

5. $(x - 7) - (5x + 3)$

6. $(12a^7)(-4a^2b^6)$

7. $\dfrac{n^3 \cdot n^5}{n^2}$

8. $3(2 - 5y)$

***For success in Algebra 1, all students need to know perfect squares from 1-17, 20, 25 and perfect cubes from 1-10. (ex: $3^2 = 9$, $15^2 = 225$, $20^2 = 400$, $5^3 = 125$, $9^3 = 729$). This is good to learn with flash cards if you do not already know them.

QR CODES:

Each QR code links to a video lesson. Some are on YouTube, and others are on Khan Academy. Watching the videos is not mandatory, but they can be used to review the material on this review.

1. Integer Operations

2. Ratios, Percent, and Proportion

3. Writing and Solving Two-Step Equations and Inequalities

4. Graphing Two-Step Inequalities on a Number Line

5. Graph Linear Equations

6. Adding and Subtracting Monomials

Multiplying Monomials

Dividing Monomials

Integer Operation Practice Game: Students should be fluent with adding, subtracting, multiplying, and dividing with integers. This will direct you to a game that is easy to practice integers.

Link: http://www.hoodamath.com/mobile/games/integerstimedtests.html

QR Code:

Summer Vocabulary Words

Directions: Use Google to define the following vocabulary words. These are words I expect you to be able to use fluently in class this year.

WORD	Definition
1. Inverse Operation	
2. Order of Operations	
3. Algebraic Expressions	
4. Numerical Expressions	
5. Variable	
6. Coordinate Plane	
7. x-axis	
8. y-axis	
9. Coordinate	
10. Evaluate	
11. Equation	
12. Integers	

Summer Fluency Practice

Directions: You should be fluent in operations with integers. You should be able to complete this worksheet in 1.5 minutes to be considered fluent. I have attached two additional practice worksheets (only this one must be completed).

$9 - 6 =$

$(-5) + 7 =$

$(-9) + (-2) =$

$7 - (-2) =$

$(-2) + 2 =$

$(-8) - 1 =$

$5 - (-1) =$

$2 + 1 =$

$7 + 1 =$

$15 \div 3 =$

$8 \div (-4) =$

$(-4) - 4 =$

$9 \times (-8) =$

$25 \div (-5) =$

$1 + 7 =$

$4 \div 2 =$

$(-6) \times (-1) =$

$5 \times 6 =$

$16 \div 2 =$

$5 + 5 =$

$(-5) \times (-2) =$

$6 \times (-8) =$

$9 + (-7) =$

$(-27) \div (-3) =$

$9 - 1 =$

$4 \times (-7) =$

$(-2) - 7 =$

$3 + 4 =$

$(-6) - (-1) =$

$5 - (-4) =$

$5 + 4 =$	$(-24) \div 8 =$	$(-9) \div (-1) =$
$(-10) \div 5 =$	$63 \div (-9) =$	$(-6) \div (-6) =$
$(-25) \div (-5) =$	$(-6) \div 3 =$	$4 - (-9) =$
$(-3) - (-1) =$	$2 \times 2 =$	$6 + (-1) =$
$1 + 8 =$	$(-6) \times (-6) =$	$8 \div (-1) =$
$5 \div (-5) =$	$3 \div 3 =$	$(-2) + 1 =$
$9 - 2 =$	$3 - (-3) =$	$9 \times (-9) =$
$6 \times (-3) =$	$4 + 4 =$	$8 \times (-4) =$
$(-6) + (-6) =$	$(-8) - 3 =$	$(-5) \times (-9) =$
$5 + (-6) =$	$(-4) \div (-1) =$	$(-2) + (-7) =$

$7 \times 6 =$	$(-4) + (-9) =$	$24 \div 6 =$
$(-7) + 2 =$	$21 \div (-7) =$	$(-8) \times (-8) =$
$(-35) \div 7 =$	$(-8) - (-6) =$	$(-9) + (-4) =$
$6 + 4 =$	$(-5) + (-2) =$	$2 + (-9) =$
$4 \times 5 =$	$3 - 7 =$	$(-5) - 6 =$
$9 - 3 =$	$(-1) - (-5) =$	$(-3) - 1 =$
$(-6) + (-9) =$	$5 - 2 =$	$56 \div (-8) =$
$(-72) \div (-8) =$	$(-8) \times (-1) =$	$16 \div (-2) =$
$14 \div 2 =$	$6 + (-8) =$	$28 \div (-7) =$
$(-7) - (-4) =$	$(-9) \times (-6) =$	$6 \div (-1) =$