Summer Packet - Honors

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. 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.**

*****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.**

Concept 1: Integer Operations/Order of 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. $96 + (-1) - 45 - 98$

4. $-10 \times 5 \times -7$

5. $\frac{4+|6-2|+8^2}{4+6 \cdot 4}$

6. $5[3(2 + 5) - 5]$

7. $\frac{-3-2(-9)}{-15-3(-4)}$

8. $5 + 2[(7 - 5)^2 + (1 - 3)]$

Concept 2: 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. $5(n - 3) = 7 + 3n$

6. $6x + 3 - (-x) = -20 + 5x - 7$

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

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

Write each sentence as an algebraic equation and SOLVE.

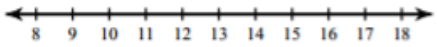
9. Twice a number minus 8 is 40.

10. The product of a number and 6 is equal to the sum of the number and 20.

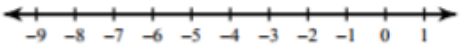
Concept 3: Graphing Inequalities

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.

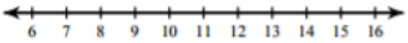
1. $-11 \geq -(-4 + r)$



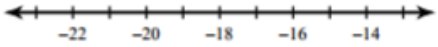
2. $-25 \geq 2 + 9n$



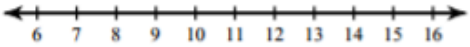
3. $\frac{n}{4} + 1 \leq 3$



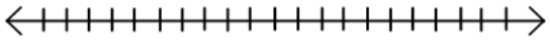
4. $16(8 + x) < -144$



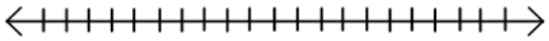
5. $5 + \frac{r}{2} \geq 9$



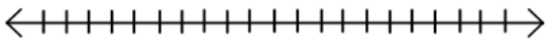
6. $-4(x - 3) \leq 12$



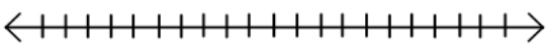
7. $-2y > -4$



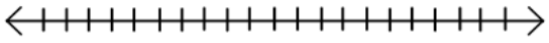
8. $4x + 2 \leq 10 \; or \; 3x > 9$



9. $0 < 4 + 2x \leq 10$



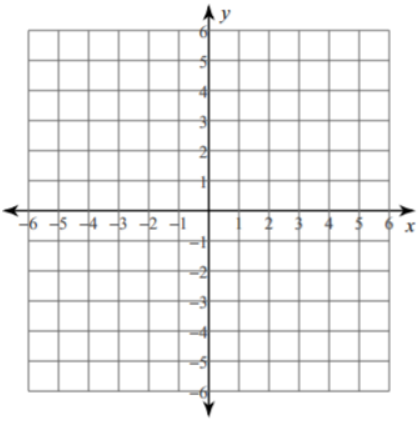
10. $1 \leq \frac{2}{3}x + 3 \leq 4$



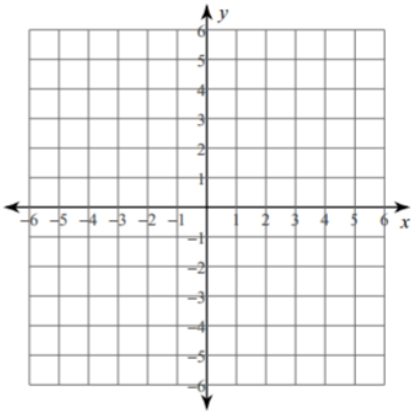
Concept 4: Graphing Linear Equations

Directions: Sketch the graph of each line. Isolate the "y" first. Remember to use the y-intercept and the slope.

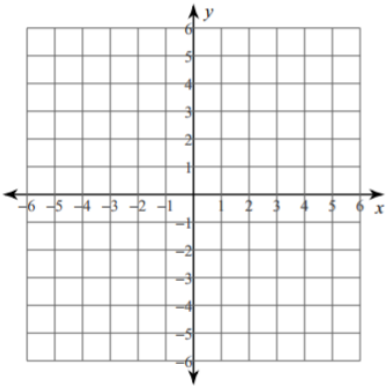
1. $y = \frac{7}{4}x - 2$ m= b=



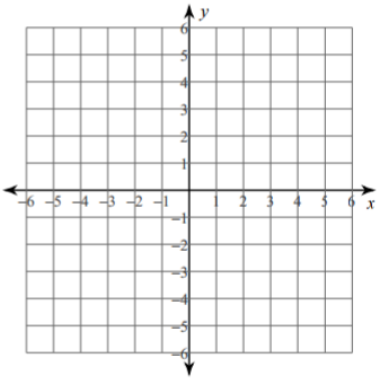
2. $y = -\frac{4}{3}x + 3$ m= b=



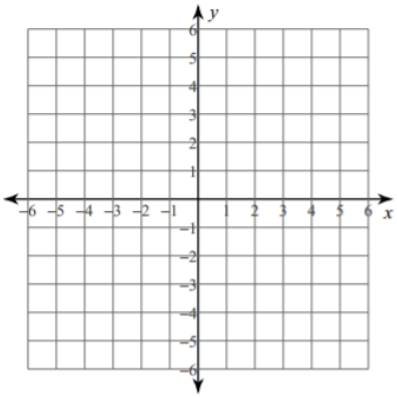
3. $y = -3$ m= b=



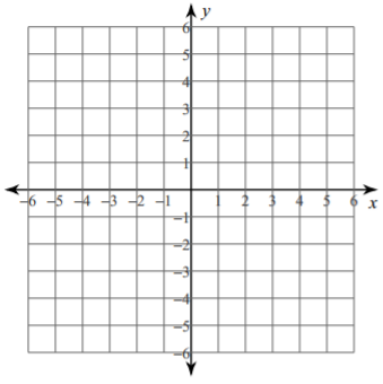
4. $y = 4x + 5$ m= b=



5. $y = \frac{2}{5}x - 1$ m= b=



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



Concept 5: Exponents

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

1. $x^5 \cdot x^9$

2. $a \cdot 4a^{11} \cdot 3a^5$

3. $(-5x^2y^3)(-5x^4y)$

4. $(x^2)^9 \cdot (x^5)^3$

5. $(2a^5b)^4(3a^9b^4)^2$

6. $\frac{n^3 \cdot n^5}{n^2}$

7. $\frac{x^5y^5}{x^2y^7}$

8. $\frac{2a^4h^7}{42a^4h^2}$

9. 12^0

10. $-3x^0$

11. $\frac{y^{-3}}{y}$

12. $(-9x^4y^{-5})(3x^{-8}y^4)$

Concept 6: Polynomials

Directions: Simplify. Perform the specified operation. NO CALCULATOR ALLOWED ON THIS SECTION.

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

2. $(x+4)(x-2)$

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

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

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

6. $3(2-5y)$

Find the GCF: Find the greatest common factor of the list of polynomials.

7. y^7, y^2, y^{10}

8. $6y^7, 9y^6, 15y^5$

Factor the GCF: Factor out the GCF from each polynomial.

9. $3y^2 + 18y$

10. $4x^3 + 12x^2 + 20x$

11. $z^7 - 6x^5$

12. $-20x + 4x^2 - 2$

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.

Concept 1: Integer Operations/Order of Operations

Concept 2: Writing and Solving Two-Step Equations and Inequalities

Concept 3: Graphing Inequalities

Concept 4: Graphing Linear Equations and Inequalities

Concept 5: Exponents

Concept 6: Polynomials

Adding and Subtracting Polynomials

Multiplying Monomials

Dividing Monomials

Factoring GCF with Polynomials