Flex Summer Math Packet Practice:

Entering Algebra 1 Honors

Purpose: This packet is designed to help students stay on track over the summer and enter Algebra 1 confident and prepared for a great school year. If a student struggles with these concepts, I highly recommend that they watch the instructional videos provided. The instructional videos, available via Khan Academy, may be viewed easily by scanning the QR codes with a smartphone. After watching a video, students can choose to continue watching videos for extra help or work problems live on the site with immediate feedback. **All pages of this packet will be submitted as students' first math grade of the school year. Show ALL work to receive full 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.

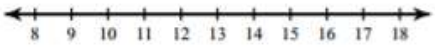
9. Twice a number minus 8 is 40.

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

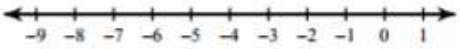
Concept 3: Graphing Inequalities

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.

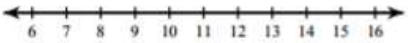
1. $-11 \geq -(-4 + r)$



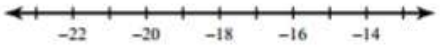
2. $-25 \geq 2 + 9n$



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

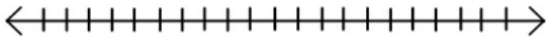


4. $16(8 + x) < -144$

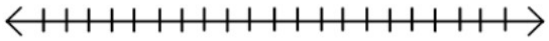


5. $5 + \frac{r}{2} \geq 9$

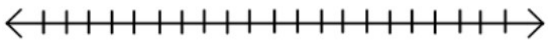
6. $-4(x - 3) \leq 12$



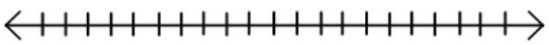
7. $-2y > -4$



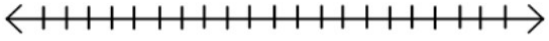
8. $4x + 2 \leq 10 \; or \; 3x > 9$



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



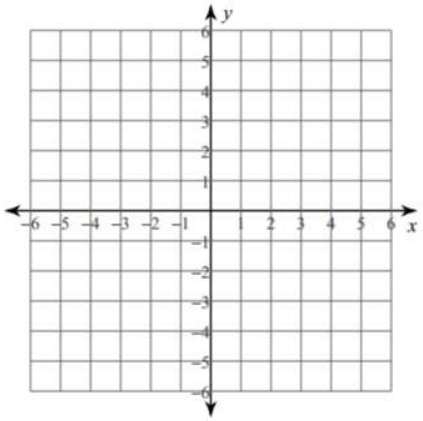
10. $1 \leq \frac{2}{3}x + 3 \leq 4$



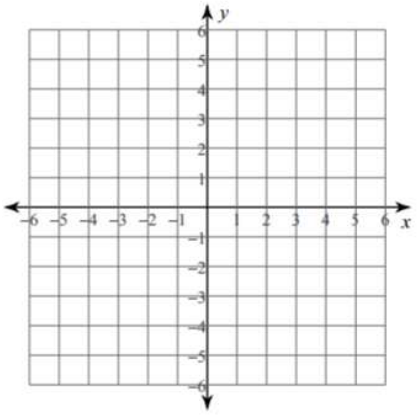
Concept 4: Graphing Linear Equations and Inequalities

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

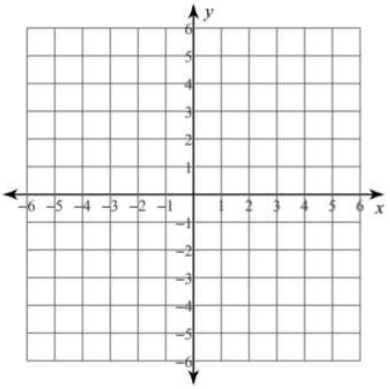
1. $y = \frac{7}{4}x - 2$ m= b=



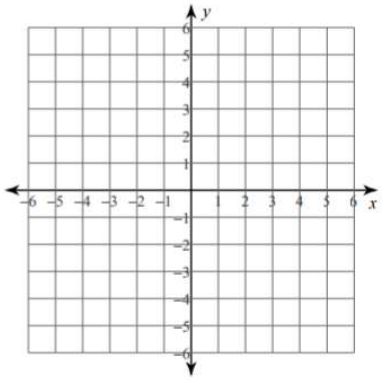
2. $y = -\frac{4}{3}x + 3$ m= b=



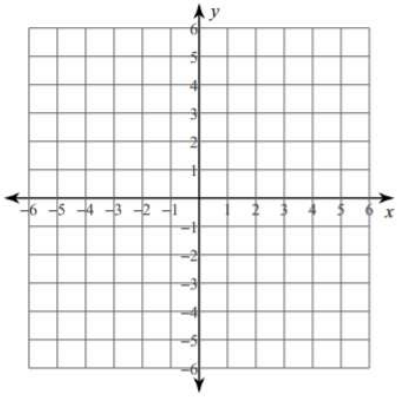
3. $y = -3$ m= b=



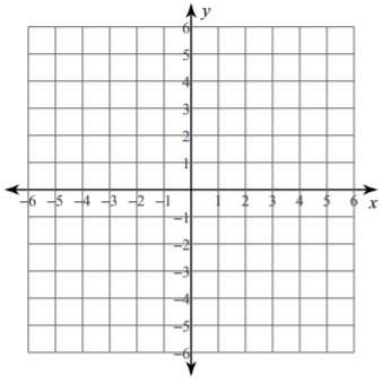
4. $y = 4x + 5$ m= b=



5. $y \geq \frac{2}{5}x - 1$ 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. $z^7 - 6x^5$

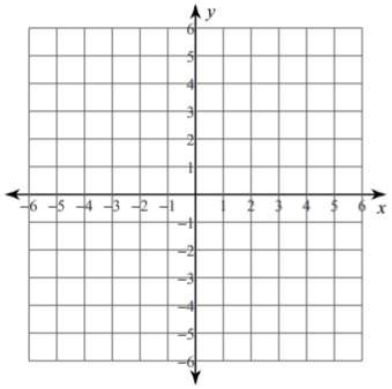
12. $-20x + 4x^2 - 2$

Concept 7: Solving Systems of Equations

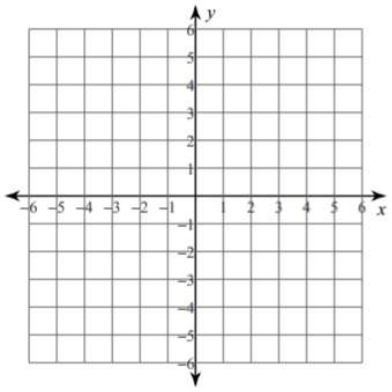
Directions: Solve each problem and **show your work**. Follow the directions with the correct method.

I. Solve the system by graphing.

1. $\begin{cases} x + y = 5 \\ x - y = 1 \end{cases}$ Solution: _____



2. $\begin{cases} x = -3 \\ y = 2 \end{cases}$ Solution: _____



II. Solve the system using substitution. **#3-4 are optional for bonus.**

3. $\begin{cases} y = 2x + 6 \\ 3x - 2y = -11 \end{cases}$

4. $\begin{cases} y = 3x - 7 \\ 2x - 3y = 7 \end{cases}$

III. Solve the system using elimination/the addition method. **#5-8 are optional for bonus.**

5. $\begin{cases} 2x + 3y = -6 \\ x - 3y = -12 \end{cases}$

6. $\begin{cases} 4x + y = 15 \\ -4x + 3y = -19 \end{cases}$

7. $\begin{cases} 2x - 3y = -15 \\ x + 4y = 31 \end{cases}$

8. $\begin{cases} x - 5y = -22 \\ 4x + 3y = 4 \end{cases}$

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

Concept 7: Solving Systems of Equations

Solving by Graphing 

Solving by Substitution 

Solving by Elimination or the Addition Method