

Students Enrolled in Structures of Algebra II 2020 – 2021

Summer Packet

Name: _____

This packet is to help you review various topics that are considered to be prerequisite knowledge upon **entering Structures of Algebra II**. In order to ensure that the good skills that you developed in your Algebra I and Geometry courses do not disappear this summer, working on this packet is **highly** recommended over the summer. (A good habit would be to do **at least one** math problem every day.) Enjoy your summer, but be sure to come prepared with the necessary knowledge to continue on into Algebra II next year. There will be a **skills quiz** on these topics in the fall.

I. Evaluating and Simplifying Expressions

Evaluate each expression.

1. $3 \cdot 6 \div 2$

2. $9 + 5 \cdot 3 - 7$

3. $11 + 5 \cdot 8 \div 10$

4. $18 \div (7 - 4) \cdot 5$

Simplify each expression.

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

6. $5(y - 2) - 3y$

7. $3b - 5a + \frac{1}{2}b - a$

8. $22 - 4(n - 5)$

II. Linear Equations

Solve each equation for the indicated variable.

1. $b - 16 = 20$

2. $5 - 2y = 15$

3. $\frac{k}{5} - 6 = 2$

4. $-30 = \frac{n}{3}$

5. $0.2(7 + 2t) = 0.4t + 1.4$

6. $7 = \frac{91}{d}$

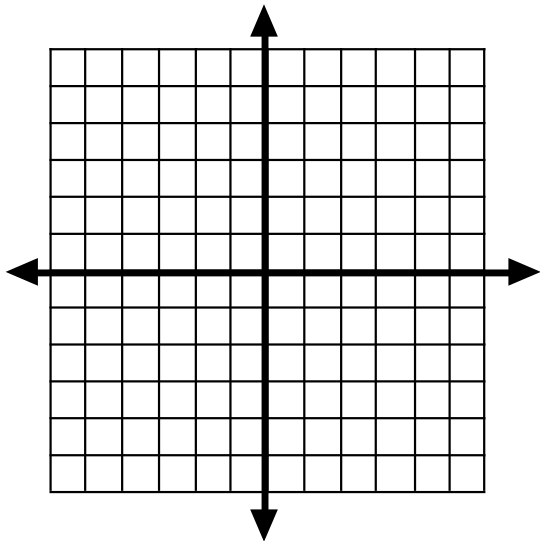
7. Write the equation in slope-intercept form of the line with slope 5 and y-intercept -9 .

8. Write the equation in slope-intercept form of the line with slope $-\frac{1}{2}$ that passes through the point $(6, 4)$.

9. Find the slope of the line that is perpendicular to $y = \frac{2}{3}x - 4$.

10. Find the slope of the line that is parallel to $y = \frac{2}{3}x - 4$.

11. Sketch the graph of $y = \frac{1}{3}x - 4$.



III. Systems Show all work for the following problems.

1. Solve by substitution:
$$\begin{cases} x = 7 - 2y \\ 2x + y = 5 \end{cases}$$

2. Solve by elimination/linear combinations:
$$\begin{cases} 9x + 3y = 3 \\ 3x + 8y = -17 \end{cases}$$

IV. Simplifying Simplify each as much as possible, use simplest radical form when necessary.

1. $\frac{2}{3} + \frac{3}{5}$

2. $\frac{2}{6} \cdot \frac{3}{8}$

3. $\frac{9}{10} \div 3$

4. $\sqrt{180}$

5. $\sqrt{40}$

6. $\frac{2}{\sqrt{7}}$

V. Quadratics

1. Factor each completely.

a. $x^2 - 2x - 8$

b. $x^2 + 8x + 15$

c. $x^2 - x - 12$

d. $6x^2 + x - 2$

e. $6t^2 - 4t - 16$

VI. Proportions Solve each proportion.

1. $\frac{3}{z} = \frac{1}{8}$

2. $\frac{3}{14} = \frac{c-2}{21}$

3. $\frac{3}{m} = \frac{7}{m+4}$

4. $\frac{x}{2} = \frac{8}{x}$