Algebra II
Summer Packet 2019-2020   **Name:**   **Per:_____**

This packet is to help you review various topics that are considered to be prerequisite knowledge upon entering 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 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. Linear Equations
Solve each equation for the indicated variable.

1. $19 = a - 4$

2. $17 = 5 - 3p$

3. $-\frac{3}{4}x - 2 = -8$

4. $\frac{x}{4} = 5$

5. $-4y - (5y + 6) = -7y + 3$

6. $\frac{4}{x} = 5$

7. Write the equation in slope-intercept form of the line with slope 3 and y-intercept 4.

8. Write the equation in slope-intercept form of the line with slope 3 that passes through the point (2, -1).

9. Write the equation in slope-intercept form of the line that passes through (3, 2) and (5, 1).

10. Write the equation of the line in STANDARD FORM (with integer coefficients) that passes through (-4, 5) and (1, 4).

11. Write the equation of the line at passes through (2, 3) and (-2, 3).

12. Write the equation of the vertical line through (1, 5).

13. Find the slope of the line that is perpendicular to $y = -2x + 3$.

14. Find the slope of the line that is parallel to $y = -2x + 3$.

15. Write the equation of a line that contains the point (2, 6) and is parallel to y = 3x − 5. Use point-slope form of an equation. (Honors only)

16. Write the equation of a line that contains the point (-5, 2) and is perpendicular to $y = -\frac{1}{5}x + 3$. Use point-slope form of an equation. (Honors only)

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

18. Sketch the graph of 3x + 2y = 6
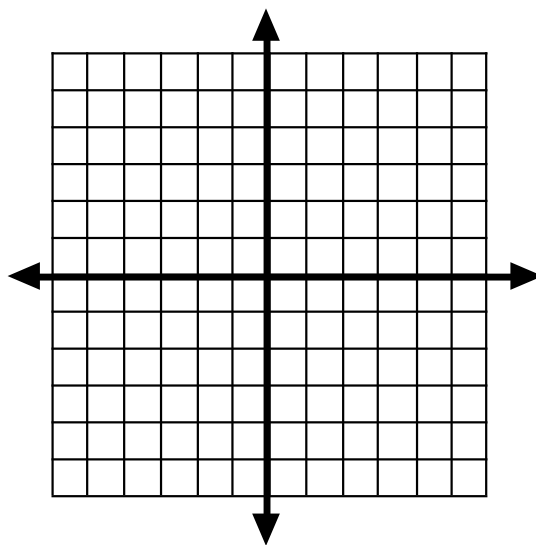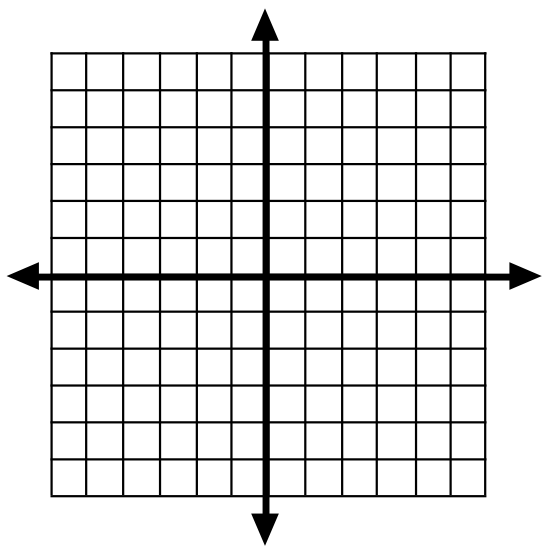
II. <u>Systems</u> Show all work for the following problems.

1. Solve by substitution:
$$x = -3y + 9$$
$$4x - 2y = -6$$

2. Solve by elimination/linear combinations: $\begin{aligned} 2x - 15y &= -10 \\ -4x + 5y &= -30 \end{aligned}$

3. Solve by any method: $\begin{aligned} y &= x + 3 \\ y &= -x + 7 \end{aligned}$

III. <u>**Simplifying**</u> Simplify each as much as possible, use simplest radical form when necessary.

1. $\dfrac{2}{3} + \dfrac{1}{2}$

2. $\dfrac{3}{4} \cdot -\dfrac{2}{3}$

3. $-\dfrac{4}{9} \div 18$

4. $\sqrt{24}$

5. $\sqrt{27}$

6. $\sqrt{75}$

7. $\dfrac{2}{\sqrt{3}}$

8. $\dfrac{3\sqrt{3}}{\sqrt{7}}$

9. $-\dfrac{4}{3\sqrt{18}}$

IV. **Quadratics**

Solve each quadratic equation by factoring:

1. $x^2 + 8x - 9 = 0$

2. $x^2 + 7x + 10 = 0$

3. $x^2 - 2x = 8$

4. $2x^2 + 11x + 5 = 0$

5. $3t^2 + 16t = -5$

Solve each quadratic equation by using the quadratic formula, leave the solution in simplest radical form. (Honors only)

6. $2x^2 - 3x - 8 = 0$

7. $7x^2 + 8x = -1$

8. Solve using the quadratic formula, leave the solution in simplest radical form. (Honors only)

$$x^2 - 2x - 5 = 0$$

V. **Proportions** Solve each proportion.

1. $\dfrac{3}{y} = \dfrac{5}{8}$

2. $\dfrac{6}{3} = \dfrac{x+8}{-1}$

3. $\dfrac{8}{x+2} = \dfrac{3}{x-1}$

4. $\dfrac{x}{3} = \dfrac{12}{x}$

5. $\dfrac{2}{6x+1} = \dfrac{2x}{1}$