

Algebra II Pre-AP Summer Assignment

This assignment is designed to make the transition to Algebra II Pre-AP a smooth one. You will be practicing skills you have acquired in earlier math classes. THE CONCEPT(S) COVERED BY THE PROBLEM HAS BEEN GIVEN TO YOU ABOVE EACH PROBLEM, SO THAT YOU CAN LOOK UP CONCEPTS IF YOU HAVE FORGOTTEN HOW TO DO THE PROBLEM. **The entire assignment is due on the first day of class.** There will be a test on this material during the first week of school in the Fall.

Directions: In order to receive credit all work must be completed **in pencil**. Remember that we care about process, so show your work carefully on lined paper. **This should include: problem numbers, calculations done neatly, sketches drawn carefully, and labeled answers (circled, underlined, or boxed).** Graphs should be done on **graph paper**. Organize your work into columns and work down, not across the paper. **No Calculators! DO NOT USE CALCUTATORS AT ALL!**

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| Substitution/Order of operations/Simplifying | Absolute Value |
| 1. Evaluate: $-\frac{a}{3} + (2-b)^2$ when $a = -6$; $b = 4$ | 2. Evaluate: $ 8-5x -2$ when $x = 2$ |
| Order of operations (PEMDAS) | Distribution/Combining Like Terms |
| 3. Simplify: $16-4+12 \div 6 \times 2$ | 4. Simplify: $2(6x-5(x-1))$ |
| Exponential Rules | Simplifying Radicals/Recognizing perfect squares |
| 5. Simplify each expression: a. x^4x^8 b. $(x^6)^2$ c. $x^{12}x$ d. $(x^3)x^4$ e. $3x(2x^{11})$ f. $(3x^3)^2$ | 6. Simplify each expression: a) $\sqrt{50}$ b) $\sqrt{18}$ c) $\sqrt{48}$ d) $\sqrt{24}$ e) $\sqrt{250}$ f) $\sqrt{1000}$ |
| Exponential Rules | Exponential Rules |
| 7. Simplify: $\frac{9^6}{9^3} =$ | 8. Simplify: a) $\frac{25x^2}{5x^5}$ b) $\frac{9x^2y^3}{27x^5y}$ |
| Polynomials-adding and subtracting | Polynomials – multiplying then adding |
| 9. Simplify: a) $(4x^2 + 2x - 7) + (2x^2 - 3x + 5)$ b) $(4x^2 + 2x - 7) - (2x^2 - 3x + 5)$ | 10. Simplify: $(x + 4) + (2x - 3)(x + 5)$ |
| Polynomials – multiplying | Dividing Fractions |
| 11. Multiply: a) $(x+5)(3x-4)$ b) $(x+5)^2$ c) $(x+1)(x+1)$ d) $(3x-5)^2$ | 12. Divide: $\frac{3}{7} \div \frac{9}{14}$ |
| Absolute Value - Solving | Absolute Value - Solving |
| 13. Solve for x : $ 4x-10 =6$ | 14. a) Solve for x : $10- x+2 =3$ b) Graph the solution set on a number line. |
| Solving multi-step equations (distribution) | Solving multi-step equations (distribution) |
| 15. Solve for x : $4x-3(2x-5)=16x$ | 16. Solve for x : $2(x-4)-4=3(x+7)$ |
| Solving system of equations | Solving system of equations |
| 17. Solve the system of equations: $x = -3y + 5$ $2x + 8y = 4$ | 18. Solve the system of equations. $3x - 5y = 21$ $2x + 10y = -26$ |
| Graphing – slope-intercept form | Graphing – slope-intercept form |
| 19. Graph the equation $y = -2x - 4$ | 20. Graph the equation $y = \frac{1}{2}x + 1$ |

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| Graphing linear inequality – slope-intercept form | Putting into slope intercept form/Slope |
| 21. Graph the inequality : $y > -2x + 2$ | 22. Graph $-2x + 3y = 9$ and $4x - 6y = 12$. Are they parallel, perpendicular, or neither? |
| Slope-intercept/parallel/perpendicular | Equation of a line parallel to a line |
| 23. Without graphing, are the graphs of the two equations parallel, perpendicular, or neither? Explain how you can tell. $3x - 5y = 12$ and $5x + 3y = 20$ | 24. Write an equation that represents a line that is parallel to $y = -\frac{5}{4}x - 9$ and has a y-intercept of 10. |
| Finding X and y intercepts | Writing equation of a line |
| 25. What are the x-intercept and the y-intercepts of the line defined by the equation: $-2x + 3y = 24$? | 26. What is the equation of the line with slope $\frac{1}{4}$ and goes through the point (8,-2)? |
| Point on a line given an equation | Slope/writing equation of a line given 2 points |
| 27. Which of the given points satisfies the equation $2x + 4y = 8$? a. (0,4) b. (-4,0) c. (2,1) d. (-4,2) | 28. What is the equation of the line the goes through (2, 4) and (3, -1)? |
| Factoring | Factoring |
| 29. Factor: $a^2 + 3a - 4$ | 30. Factor: $x^2 - 9x + 20$ |
| Factoring – Difference of Perfect Squares | Factoring – Difference of Perfect Squares |
| 31. Factor: $x^2 - 9$ | 32. Factor: $81a^2 - 25$ |
| Solving a quadratic from factored form | Solving quadratics/Factoring/Quadratic formula |
| 33. Solve: $(x + 3)(x - 5) = 0$ | 34. Find the solutions of this quadratic equation: $x^2 - 3x - 18 = 0$ |
| Quadratic Formula | Quadratic Formula/Simplifying Radicals |
| 35. Solve by using the Quadratic Formula: $x^2 + 11x + 28 = 0$ | 36. Solve by using the Quadratic Formula: (Leave answer in simplest radical form) $x^2 - 3x + 1 = 0$ |
| Quadratic Formula | Quadratic Formula |
| 37. Use the Quadratic Formula to find the solutions to the equation $3x^2 - 11x = -5$. Express the solutions as radicals in simplest form. Be sure to set equation equal to 0 first. | 38. Use the Quadratic Formula to find the solutions to the equation $8x^2 + 3x = 1$. Express the solutions as radicals in simplest form. Be sure to set equation equal to 0 first. |
| Linear Function Application | Writing linear equation application |
| 39. The total cost (c) in dollars of renting a sod cutter for n days is given by the equation $c = 20 + 60n$. If the total cost of renting the cutter is \$440, for how many days was the cutter rented? | 40. A 60-foot-long piece of string is cut into 3 pieces. The second piece is twice as long as the first piece. The third piece is 5 feet longer than the second piece. What is the length of the shortest piece of rope? |
| Writing linear equation application | Writing linear equation application |
| 41. The lengths of the sides of a triangle are x, $2x + 2$, and 13. If the perimeter of the triangle is 30, what is the value of x? | 42. A garden is 4x feet long and 5x feet wide. Write an expression (in simplest form) that represents the area of the garden. |
| Multiplying Rational Functions/Factoring | Dividing Rational Functions/Factoring |
| 43. Multiply and express in simplest terms: $\frac{7z^2 + 7z}{4z + 8} \cdot \frac{z^2 - 4}{z^2 + z} =$ | 44. Divide and express in simplest terms: $\frac{x^2 + 8x + 16}{x + 3} \div \frac{2x + 8}{x^2 - 9}$ |