Standard Algebra 2 Prep Packet

Welcome to Standard Algebra 2! This packet is for all students entering Standard Algebra 2.

Attached, you will find the basic learning targets from Algebra 1 that you are expected to remember **BEFORE** you come to class. For each Algebra topic addressed, this packet contains review examples, properties, definitions, and online video tutorial links followed by practice problems. This material must be mastered in order for you to be successful in Algebra 2. You will be assessed at the beginning of the course. Since this material is designed as a review, you are responsible for completing this packet on your own. The packet will be graded to assess the student's EFFORTs to recall this information. Be sure to **SHOW ALL WORK!**

Name:

Target Checklist

Target 1: Evaluate and Rewrite Expressions

- □ A. Evaluate numerical/algebraic using order of operations
- □ B. Rewrite by distributing

Target 2: Solve Equations and Inequalities

- □ A. Solve One Variable Equations
- □ B. Solve One Variable Inequalities
- □ C. Solve Literal Equations

Target 3: Write Equations

- □ A. Find Slope
- □ B. Write Equations of Lines

Target 4: Graph Equations and Inequalities

- □ A. Graph Linear Equations
- □ B. Graph Linear Inequalities

Target 5: Solve Systems of Equations

- □ A. Solve Systems of Linear Equations

Target 6: Exponential Expressions

- □ A. Simplify Exponential Expressions

Target 7: Factor Quadratics

- □ A. Factor Specials (GCF, Difference of Squares)
- □ B. Factor Trinomials

Target 8: Radical expressions

- □ A. Simplify Radical Expressions

Target 9: Scientific Notation

Target 1:

A. Order of Operations (PEMDAS)

- **Parentheses or other grouping symbols**
- **Exponential expressions**
- **Multiplication AND Division (whichever one comes first)**
- **Addition AND Subtraction**

Simplify each numerical expression.

1. $7 \cdot (3 + 4)$

2. $(4 + 8) \div (3 - 1)$

3. $6 + 2 \cdot 8 - 12 + 9 \div 3$

4. $10x + 2 - 8x - 10$

B. Simplify.

5. $-\ 2(x\ -\ 4)$ 6. $5\ +\ 2(x\ +\ 6)$ 7. $2(3x\ +\ 4) - 5(x\ -\ 7)$

Evaluate.

8. $2x\ +\ 4y$ if $x = 3\ and\ y\ =\ -\ 2$

9. $12a\ -\ 4a^{2}\ +\ 7a^{3}$ if $a\ =-\ 3$

TARGET 2:

A. Solve each equation and check your solutions. SHOW ALL WORK!

10. $8y - 2y + 4 = 22$

11. $3(x - 4) = 15$

12. $2y + 4(y + 5) = -16$

13. $4n + 3 = 2n - 5$

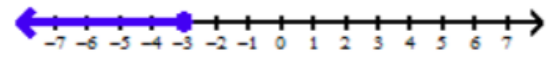
B. Solve the one variable inequality.

14. $-2x + 1 \geq -7$

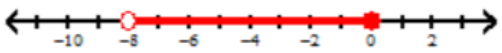
15. $3(5x + 4) \leq 12x - 11$

Write the inequality or compound inequality for each graph.

16.



17.



C. Use inverse operations to solve for the specified variable

18. Solve for x: $x - b = a$

19. Solve for k: $-3k = m$

Target 3:

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Slope-intercept form: $y = mx + b$ **[given m and b(y-intercept)]**

Point-slope form: $y - y_1 = m(x - x_1)$ **[given point** (x_1, y_1) **and m]**

A. Find the slope of the line passing through each pair of points.

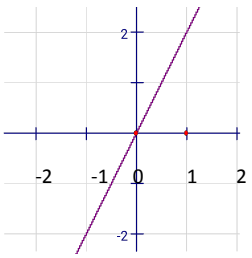
20. $(-3, -4)$ *and* $(-4, 6)$

21. $(-4, -6)$ *and* $(-4, -8)$

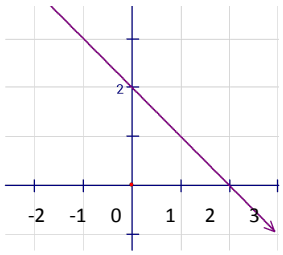
22. $(-5, 3)$ *and* $(-11, 3)$

Find the slope of each line from its graph.

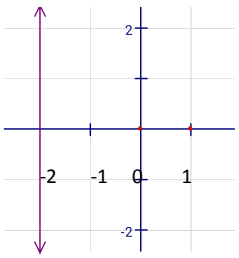
23. Slope = _____



24. Slope = _____



25. Slope = _____



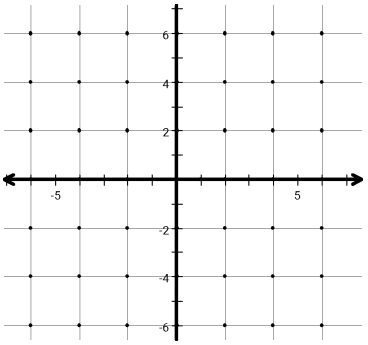
Find the slope of the line from the following equations.

26. $y = 3x - 4$ 27. $2x + y = -4$ 28. $y - 3 = -4(x + 1)$

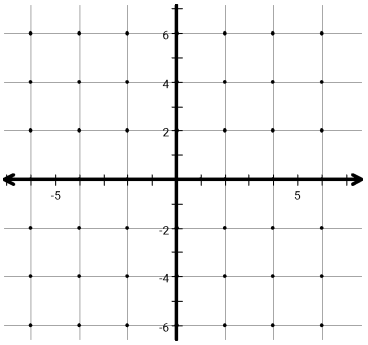
Target 4:

A. Graph each linear equation.

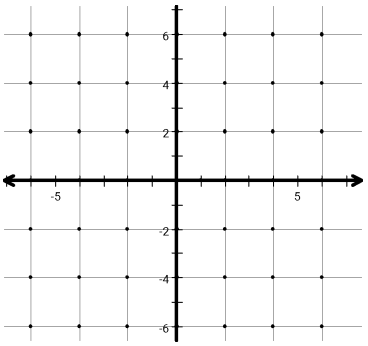
29. $y = -3x + 4$



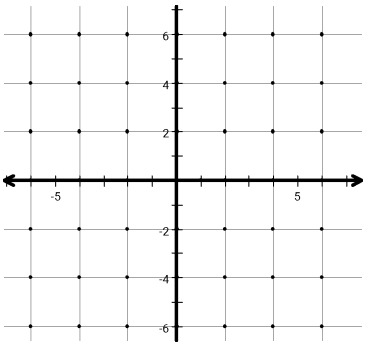
30. $y = 4 + x$



31. x = -4

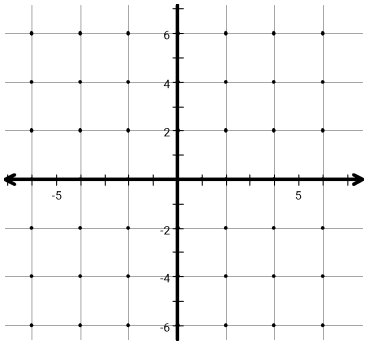


32. y = 3

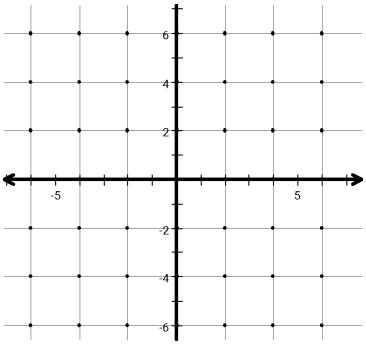


B. Graph each linear *inequality.*

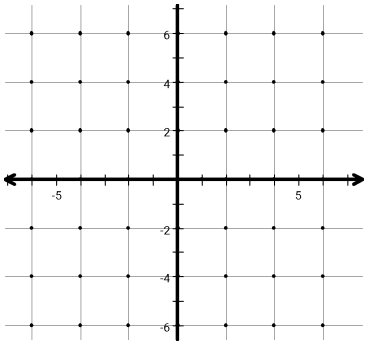
33. $x \geq -2$



34. $y > 2x - 3$



35. $y < 3$



Target 5:

A) Solve by graphing – graph the equations on the same graph. The solution will be the intersection of the 2 lines.

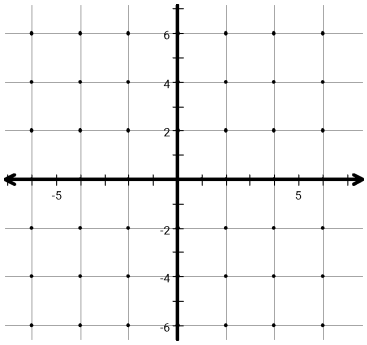
B) Solve by substitution – set one equation equal to a variable, then plug into the other equation for that variable.

C) Solve by elimination – Multiply through the equations to get opposite coefficients on one variable, then add equations.

A. Solve the system of linear equations.

36. $x + y = 6$ (use elimination)
$x - y = 4$

37. $y = -3x - 1$ (use graphing)
$y = 3x + 5$



38. $y = 2x + 4$ (use substitution)

Target 6:

Properties of Exponents:

PROPERTY		EXAMPLE
Product of Powers	$a^m \cdot a^n = a^{m+n}$	$x^4 \cdot x^2 =$
Power of a Power	$(a^m)^n = a^{m \cdot n}$	$(x^4)^2 =$
Power of a Product	$(ab)^m = a^m \cdot b^m$	$(2x)^3 =$
Negative Power	$a^{-n} = \frac{1}{a^n} \quad (a \neq 0)$	$x^{-3} =$
Zero Power	$a^0 = 1 \quad (a \neq 0)$	$4^0 =$
Quotient of Powers	$\frac{a^m}{a^n} = a^{m-n} \quad (a \neq 0)$	$\frac{x^3}{x^2} =$
Power of a Quotient	$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m} \quad (a \neq 0)$	$\left(\frac{x}{y}\right)^3 =$

A. Simplify.

39. $g^5 \cdot g^{11}$

40. $(b^6)^3$

41. w^{-7}

42. $\frac{y^{12}}{y^8}$

Target 7:

A. Factor completely.

43. $16y^2 + 8y$

44. $x^2 - 25$

45. $m^2 + 12m + 32$

Target 8:

A. Simplify the Radicals.

46. $\sqrt{50}$

47. $\sqrt{24}$

48. $\sqrt{192}$

Target 9:

Convert from Standard form to Scientific Notation.

49. 9,900,000

50. 9.3

51. 48.59

52. 0.006

Convert from Scientific Notation to Standard Form.

53. 6.5×10^{5}

54. 75×10^{0}

55. 21×10^{-3}

56. 8×10^{4}