Summer Review Packet for Students Entering Algebra II

Fayette Academy
Summer Review Packet
For Students entering Algebra II

Name: _____

This packet is to be handed in to Mr. Wilson (your Algebra II teacher) on the first day of the school year.

All work must be shown in the packet OR on a separate sheet of paper attached to the packet.

Completion of this packet will be a graded assignment.

My signature below indicates that I have received the Algebra II Summer Review Packet.

Signature: _____

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. $8 + 2 - 7$

2. $9 \div 3 + 7$

3. $5 + 4 - 9 \div 3$

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

5. $(4 + 8) \div (3 - 1)$

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

7. $10x + 2 - 8x - 10$

8. $\frac{15-[8-(2+5)]}{18-5^2}$

9. $100 - [20(3) \div 6 + 15 \div 5]$

B. Simplify.

10. $-2(x-4)$ 11. $5+2(x+6)$ 12. $2(3x+4)-5(x-7)$

13. $(x+3)(x-2)$ 14. $(2x+3)^2$ 15. $2(x+3)^2$

Evaluate.

33. 1. $2(3)^x$ if $x=3$ 34. $2\left(\frac{1}{3}\right)^x$ if $x=2$

29. $12a-4a^2+7a^3$ if $a=-3$ 30. $\frac{-b+\sqrt{b^2-4ac}}{2a}$ if $a=1,\ b=-4,\ c=-21$

32. $\frac{3(x+y)-2(x-y)}{5x+y}$ if $x=3,\ y=4$

TARGET 2:

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

1. $4x + 9x = 39$

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

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

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

5. $3y = 2y + 14$

6. $4n + 3 = 2n - 5$

7. $-3y - 9 = 2y + 3$

8. $-3(2x - 3) = 20 - 4x$

9. $\frac{1}{3}(6x - 9) = 7 - 2x$

10. $5 + 2(x + 4) = 5(x - 3) + 10$

11. $6 + 2x(x - 3) = 2x^2$

B. Solve the one variable inequality.

12. $2x + 1 \geq -7$

13. $3(5x + 4) \leq 12x - 11$

14. $-8 > 5 - x$

15. $3(x - 5) < 4 - (2 - 2x)$

16. $5x - 12 \geq 7x + 4$

17. $2x + 4 \leq 3(x - 2)$

Write the inequality or compound inequality for each graph.

18.

19.

C. Use inverse operations to solve for the specified variable

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

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

22. Solve for g: $aeg = 10$

23. Solve for y: $\frac{y}{3} = h$

24. Solve for y: $3x + y = 4$

25. Solve for x: $3y + 2x = -1$

26. Solve for b: $A = \frac{1}{2}bh$
(Area of a rectangle)

27. Solve for W: P=2L+2W
(Perimeter of a rectangle)

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)]**

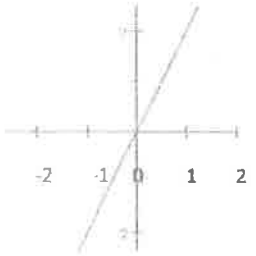
Point-slope form: $y - y_1 = m(x - x_1)$ **[given point** (x_1, y_1) **and m]**

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

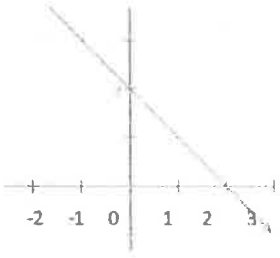
1. $(-3, -4)$ *and* $(-4, 6)$ 2. $(-4, -6)$ *and* $(-4, -8)$ 3. $(-5, 3)$ *and* $(-11, 3)$

Find the slope of each line from its graph.

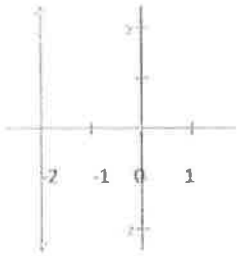
4. Slope = _____



5. Slope = _____



6. Slope = _____



Find the slope of the line from the following equations.

7. $y = 3x - 4$ 8. $2x + y = -4$ 9. $y - 3 = -4(x + 1)$

B. Write the equation of the line, in slope-intercept form, using the given information.

10. $(-2, 4)$ *and* $m = -3$

11. $(3, 4)$ *and* $m = -\frac{2}{3}$

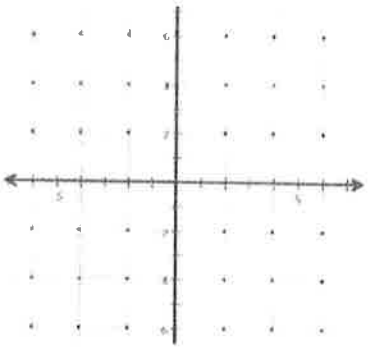
12. $(-2, 3)$ *and* $(0, 1)$

13. $(-6, -3)$ *and* $(-2, -5)$

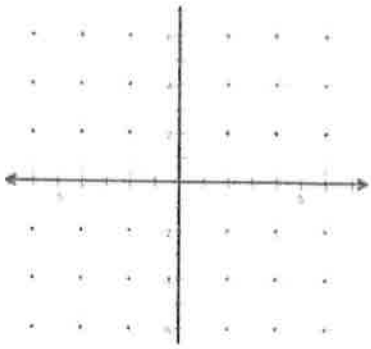
Target 4:

A. Graph each linear equation.

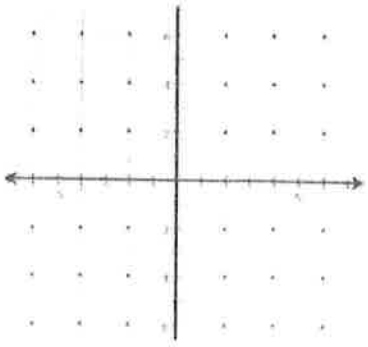
1. $y = -3x + 4$



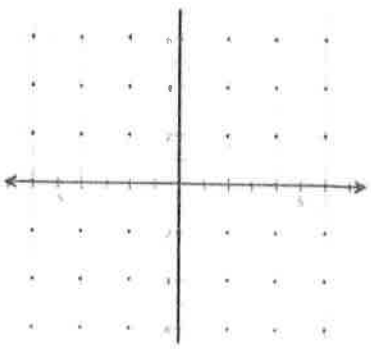
2. $y = 4 + x$



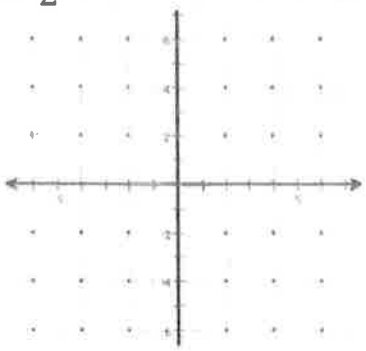
3. $x = -4$



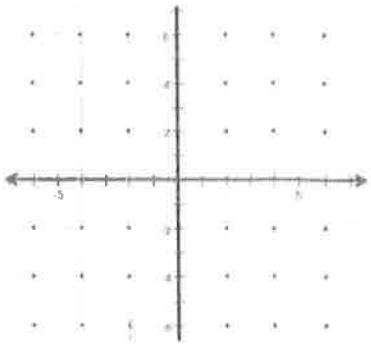
4. $y = 3$



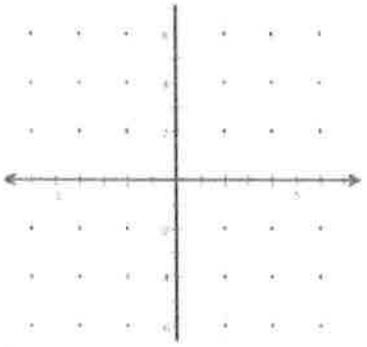
5. $y = -\frac{1}{2}x - 2$



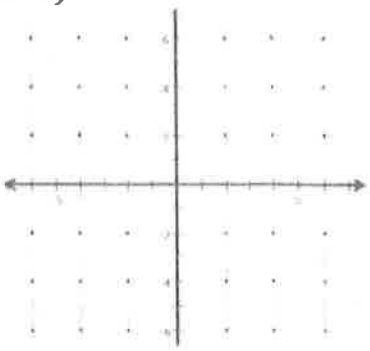
6. $2x + y = -4$



7. $2x - 5y = 10$

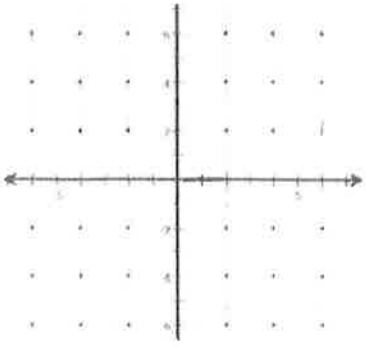


8. $y - 3 = -3(x + 1)$

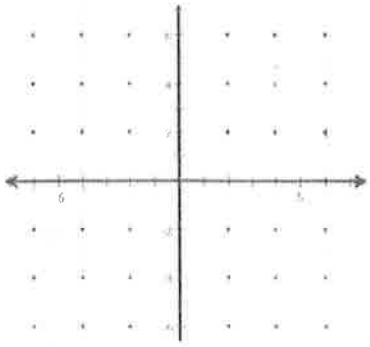


B. **Graph each linear *inequality.***

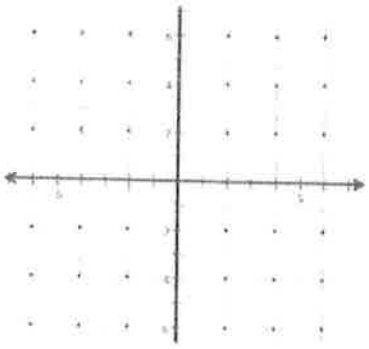
9. $x \geq -2$



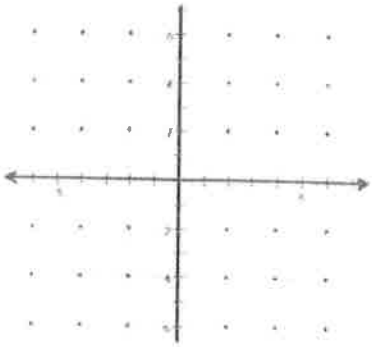
10. $y > 2x - 3$



11. $y < 3$



12. $3x - y \leq -3$



Target 5:

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

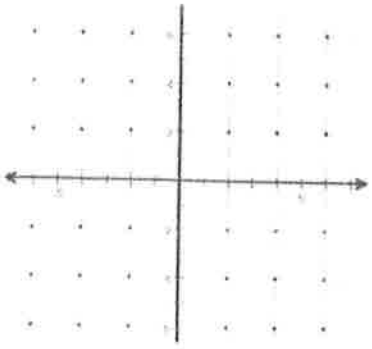
B) Solve by substitution – set one equation equal to a variable, then plug into the other equation for that variable.

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.

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

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



3. $y = 2x + 4$ (use substitution)
   $-3x + y = 9$

4. $3x + 7y = -1$ (use elimination)
   $6x + 7y = 0$

5. $x - 5y = -14$ (Use any method)
$3x + y = 6$

6. $5x - 2y = 11$ (Use any method)
$3x + 5y = 19$

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	$a^{-n} = \frac{1}{a^n}$ $(a \neq 0)$	$x^{-3} =$
Zero Power	$a^0 = 1$ $(a \neq 0)$	$4^0 =$
Quotient of Powers	$\frac{a^m}{a^n} = a^{m-n}$ $(a \neq 0)$	$\frac{x^3}{x^2} =$
Power of a Quotient	$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$ $(a \neq 0)$	$\left(\frac{x}{y}\right)^3 =$

A. Simplify.

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

2. $(b^6)^3$

3. w^{-7}

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

5. $(3x^7)(-5x^3)$

6. $(-4a^5b^0c)^2$

7. $(-x^2)(-x^5)$

8. $y^3(y^4)(-y^5)$

9. $(3x)(7x^3)$

10. $(-4y^3)(-7y^2)$

11. $y(5y^3)(-2y^4)$

12. $(n^9)^8$

13. $(-x)^3$

14. $\frac{x^3}{x^3}$

11th Grade Honors/10th Grade Standard move to Target 7

11th Grade Accelerated/10th Grade Honors complete #s 15–18

15. $\frac{x^2y^5}{xy^2}$

16. $\frac{25x^4y^2}{5xy}$

17. $\frac{18m^8n^5}{-3m^6n^3}$

18. $\frac{-20x^9y^4z^3}{-5x^7y^2z}$

Target 7:

A. Factor completely.



1. $16y^2 + 8y$

2. $18x^2 - 12x$

3. $15x^2 + 24$

4. $x^2 - 25$

6. $2x^2 - 18.$

7. $x^2 + 4x + 4$

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

9. $x^2 - 12x + 36$

10. $y^2 + 4y - 21$

11. $x^2 - 5x + 6$

12. $x^2 - 3x - 4$

13. $x^2 - 6x - 7$

11th Grade Honors/10th Grade Standard move to Target 8

11th Grade Accelerated/10th Grade Honors complete #s 14-17*

14. $3x^2 + 3x - 6$

15. $18 + 8x - 48$

16. $4x^2 + 28x + 48$

17. $6x^2 - 24x + 18$

Target 8:

A. Simplify the Radicals.

1. $\sqrt{50}$

2. $\sqrt{24}$

3. $\sqrt{192}$

4. $\sqrt{289}$

5. $\sqrt{\frac{13}{49}}$

6. $\sqrt{\frac{6}{27}}$

B. Simplify.

7. $\sqrt{12} \cdot \sqrt{3}$

8. $\sqrt{6} \cdot \sqrt{8}$

9. $\sqrt{7} \cdot \sqrt{5}$

10. $\frac{3\sqrt{2}}{\sqrt{3}}$

11. $\frac{4\sqrt{2}}{\sqrt{12}}$

12. $\frac{5}{\sqrt{8}}$

Target 9:

- **There are 5280 feet in 1 mile and 12 inches in a foot**
- **There are 1.6 kilometer in 1 mile**
- **There are 1.05 quarts in 1 liter**
- **There are 4 quarts in 1 gallon**

A. Convert labels.

1. Convert 23 miles to feet.

2. Convert 120 pounds to kilograms.

3. Convert 6 feet to miles.

4. Convert 4 quarts to liters.

5. Convert 75 minutes to days.

6. Convert 46 inches to miles.

8. How many miles would you run in a 5 kilometer race?

9. If your house is 7.2 miles away from the school, how many feet is that?

10. How many seconds are there in a day?

B. Convert
Convert from Standard form to Scientific Notation.

1. 9,900,000

2. 9.3

3. 48.59

4. 0.006

5. 0.00007693

6. 106.2

7. 0.00573

8. 0.223

Convert from Scientific Notation to Standard Form.

1. 6.5×10^{5}

2. 3.75×10^{0}

3. 7.21×10^{-3}

4. 8×10^{4}

5. 9.57×10^{7}

6. 1.23×10^{-1}

7. 4.515×10^{9}

8. 4.879×10^{-6}