Honors Algebra II
Mrs. Marsh

Name: _____

Honors Algebra II Summer Assignment

The following packet is to be completed by any students entering Honors Algebra II in the fall. This packet is due on your first day of class. These types of problems should be familiar to you and are designed to help you review what we believe is important to your success in Honors Algebra II. This packet will be one of your first grades for Term 1. This packet is broken up into the following topics:

1. Evaluating Expressions
2. Operations with Fractions
3. Solving for Variables
4. Finding Slope
5. Graphing Equations
6. Simplifying Radicals
7. Simplifying Polynomials

Have a great summer!!

Topic 1: Simplifying Expressions

Directions: Simplify each expression using PEMDAS or rules of fractions or absolute value.

1. $\left(1\frac{2}{7}\right)\left(1\frac{5}{9}\right)$

2. $(2^3 + 3^3) - 16$

3. $4^3 - 5(2) + 13$

4. $9a - [7 - 5(7a - 3)]$

5. $18 - 30 \div 5 - 7$

6. $2 \cdot 7.5 + 2 \cdot 11$

7. $48 \div (5 + 7) - 9$

8. $42 \div 2(-12 + 9)$

9. $\left(\frac{2}{3}\right) \div \left(1\frac{5}{9}\right)$

10. $\frac{3}{4} + \frac{1}{6}$

11. $\frac{7}{9} - \frac{1}{4} \div \frac{5}{8}$

12. $\frac{4}{5} \div \left(-1\frac{3}{10}\right)$

13. $|-14|$

14. $|225|$

Topic 2: Solving Equations

Directions: Solve each equation for x. Leave your answers in simplest fraction form.

1. $5x + 3 = -12$

2. $(6x - 8) - (5x + 9) = 3$

3. $7x - 8x + 4 = 5x - 2$

4. $3(x - 2) = 18$

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

6. $\frac{x+2}{3} = \frac{8}{15}$

7. $\frac{18}{x} = 6$

8. $\frac{5}{7} = \frac{10}{x+2}$

9. $\frac{8}{5}a = -6$

10. $-3(d - 7) = 6 - 5d$

11. $6(x + 5) = -2(x - 3)$

12. $\frac{3}{4}n - 8 = \frac{2}{3}n + 5$

13. $\frac{3x}{5} + \frac{x}{10} = 1$

14. $\frac{9}{7} = \frac{x+3}{4-x}$

Topic 3: Evaluating Algebraic Expressions

Directions: Evaluate each expression if $a = 2$, $b = -3$, $c = 5$, and $d = 4$. Express answers in simplified, fraction (exact) form.

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

2. $\frac{bd}{2c}$

3. $\frac{2d-a}{b}$

4. $5 + d(3b - 2d)$

5. $-2(b^2 - 5c)$

6. $\frac{abc}{d}$

Directions: Evaluate each expression.

7. $3(n - 1) + 2n$, when $n = 5$.

8. $7b - 2a$, when $a = -3$ and $b = 4$.

9. $\frac{2r}{t} + 7$, when $r = 12$ and $t = 3$.

10. $(3x)^2 - 7y^2$, when $x = 3$ and $y = 2$.

11. $4(3d + 6) - 2d$, when $d = -6$.

12. $3x^2 + 5x + 1$, when $x = -2$.

Topics 4: Slope and Linear Equations

Directions: Solve the following equations for y.

1. $3y = 2x - 3$
2. $3x - y = 1$
3. $5x + 2y = -4$
4. $-2x + 3y = 6$
5. $3x - y = 3$
6. $-6x + 12y = 24$

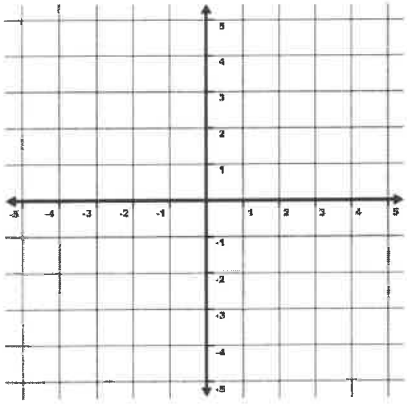
Directions: Use the slope formula to find the slope between the following two points. $m = \frac{y_2 - y_1}{x_2 - x_1}$

7. $(-7, 2)$ and $(3, -3)$
8. $(-10, 4)$ and $(-7, 23)$
9. Write an equation of a line with a slope of -10 and a y-intercept of 4.
10. Write an equation of the line passing through points $(2, 8)$ and $(-1, 9)$.
11. Write an equation of a line with a slope of 5 containing point $(3, 2)$.
12. Write an equation of a line parallel to $y = -2x + 3$ containing the point $(-2, -1)$.

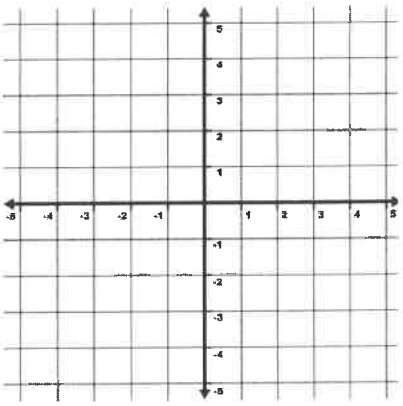
Topic 5: Graphing Linear Equations

Directions: Graph the following equations on the coordinate grids provided. (Hint: You solved for y for #1-6 in Topic 4).

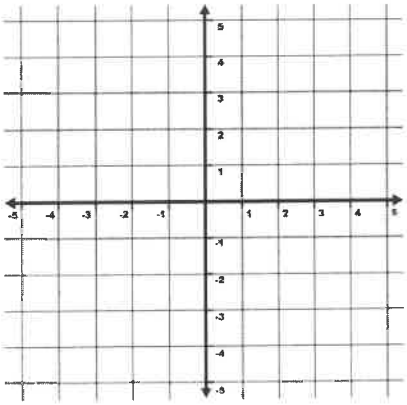
1. $3y = 2x - 3$



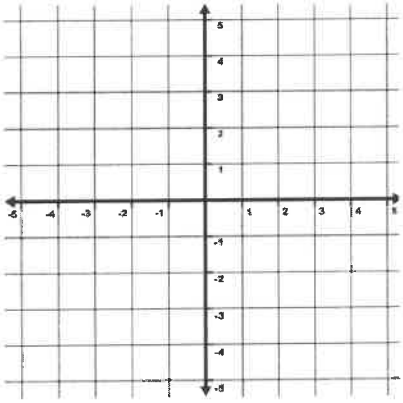
2. $3x - y = 1$



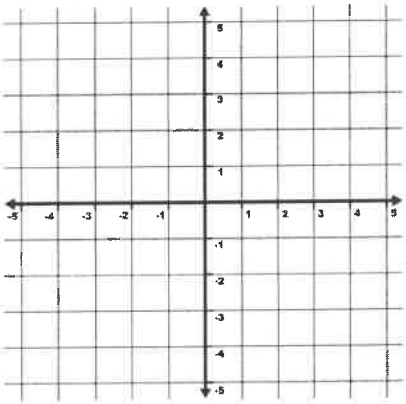
3. $5x + 2y = -4$



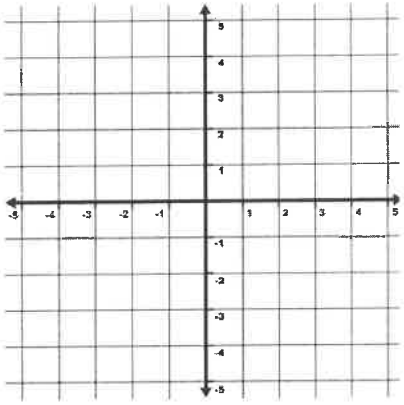
4. $-2x + 3y = 6$



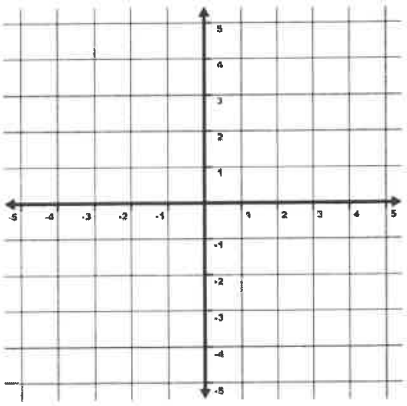
5. $3x - y = 3$



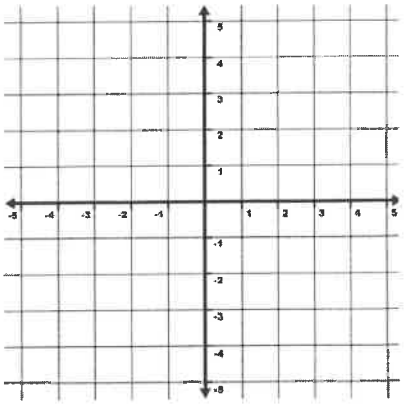
6. $-6x + 12y = 24$



7. $x = 4$



8. $y = -2$



Topic 6: Simplifying Radicals

Directions: Simplify the following radicals. This does not mean plug it into your calculator!

1. $\sqrt{81}$

2. $\sqrt{121}$

3. $\sqrt{75}$

4. $\sqrt{200}$

5. $\sqrt{32}$

6. $\sqrt{50}$

7. $-\sqrt{36}$

8. $\sqrt{\frac{100}{49}}$

9. $3\sqrt{45} - \sqrt{50}$

10. $\sqrt{2}(2 - 3\sqrt{6})$

Topic 7: Simplifying Polynomials

Directions: Simplify the following expressions.

1. $x^5 \cdot x^6$

2. $(5y^2)^3$

3. $(3p^2a)^3$

4. $(3a^2b^3)(-6ab^6)$

5. $\frac{d^7}{d^3}$

6. $\frac{-36a^2b^3c^4}{24ab^4c^3}$

7. $9x^{-2}$

8. $4m^2(-2m^2+7m-5)$

9. $(3x^4-2x^3+8x^2+4x-9)+(9x^4+5x^3-2x^2-6x-1)$

10. $(6x^3+2x^2-4x-13)-(10x^3-2x^2-8x+7)$

Topic 8: Factoring

Directions: Factor the following expressions.

1. $24xy - 12x$

2. $5x^2 + 25$

3. $6y^4 + 3y^3$

4. $9y^2 - 25$

Nice Work!! ☺