Summer 2014 Math Packet for students entering

Honors Algebra 2

The problems in this packet are meant to help you review material that you have learned in previous math courses. You will need to understand these concepts in order to be successful in Honors Algebra II.

**You should be able to complete all problems
WITHOUT USING A CALCULATOR.
Note – most chapter tests contain "no calculator" sections.**

ALL work needs to be completed to the best of your ability, showing organized work in the space provided. If you cannot remember how to solve some of the problems, please DO NOT GUESS or LEAVE ANYTHING BLANK. Instructional videos on various topics can be found at www.khanacademy.org. To help facilitate your video search, you will find some "keywords" within each section of this packet.

This packet will be due on the FIRST DAY of class. You will be tested on the material during the beginning of the SECOND week of school (it will be a "no" calculator test).

Here is another GREAT review option that the math department recommends: www.summerskills.com. This site sells an Algebra review book that comes with an answer key that has *worked* solutions, not just answers.

Have a great summer. We are looking forward to seeing you this fall.

Student Name _____

Previous Course Taken _____

I. Fraction Operations.
Simplify final answers (where applicable)

a. $\dfrac{9}{10} - \dfrac{2}{3}$

b. $\dfrac{5}{6} + \dfrac{6}{7}$

c. $\dfrac{5}{9} \bullet \dfrac{3}{20}$

d. $\dfrac{11}{12} \bullet \dfrac{6}{7} \bullet \dfrac{21}{33}$

e. $\dfrac{4}{9} \div \dfrac{8}{27}$

f. $\dfrac{8}{15} \div \dfrac{12}{5}$

II. Order of Operations (PEMDAS)
Simplify the expressions.

a. $(-2)^3 - (5 + -6 \bullet 2)$

b. $5 - (4 \bullet 3)^2 \div 2 + 6$

c. $3 \bullet \left[\sqrt{10^2 - 4(3+6)} - (-2) \right]$

d. $\left(\dfrac{2}{3} - \dfrac{5}{9} \right) \div \left(\dfrac{4}{7} + \dfrac{1}{6} \right)$

III. Simplify the following.
Write final answers using <u>positive</u> exponents only.

a) $x^3 \cdot x^2 \cdot x^{-8}$

b) $(2a^4b^3)(3ab^2)$

c) $(3x^6)^4$

d) $(12x^4y^{-5})^2$

e) $\dfrac{12x^5y^5}{3x^6y^3}$

f) $\dfrac{(5b^{-2})(10b^6)}{b^2}$

g) $\dfrac{2xy^6z^{-2}}{8x^4yz^8}$

h) $(5a^2b^6)^2(2ab^2c^4)^3$

i) $\left(\dfrac{18h^8j}{-3h}\right)^0$

j) $(144)^{\frac{1}{2}}$

k) $(7)^{-2}$

l) $(27)^{\frac{2}{3}}$

m) $(32)^{\frac{1}{5}}$

n) $z^{p+1} \cdot z^{p-3} \cdot z^{p+4}$

o) $\dfrac{18z^{p+2}}{6z^{p+3}}$

IV. Simplify each radical below.

Write the answers in: a) *Simplest Radical Form*
b) *Rounded to 3 decimal places*

a. $\sqrt{75}$　　　b. $\sqrt{96}$　　　　c. $10\sqrt{480}$　　　　d. $-3\sqrt{800}$

V. Linear Functions

a. A line contains the point (-3, 6) and (3, 4).

   i. Find the slope of the line.

   ii. Write the equation of the line in **y = mx + b form.**

b. A line passes through the point (2, 8) and is **parallel** to y = 3x + 10.
    Write the equation of the line in **y = mx + b form.**

c. A line passes through the point (-2, -5) and is **perpendicular** to the line
    -2x + y = 9. Write the equation of the line in **y = mx + b form.**

d. Solve for x.

    i. $-2(2x+3)-4=2$

    ii. $\dfrac{3}{4}(4x+16)=-2x+7$

    iii. $\dfrac{x-1}{5}=-3(x+1)$
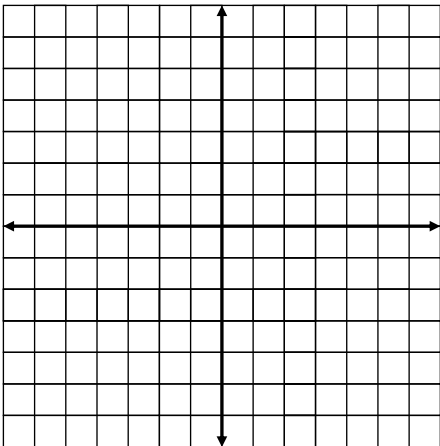
    iv. $9-5(4-3)=-16+\dfrac{x}{3}$

Keywords:
Graph linear equations
x and y intercepts

e. Complete the table for each equation below.
   Find the x and y intercepts.
   Graph the equation.

    i. $y=3x-2$

X	Y
-2	
-1	
0	
1	
2	

x-intercept: _____   y-intercept:_____

ii. $y = -\dfrac{3}{4}x + 2$

X	Y
-4	
-2	
0	
2	
4	

x-intercept: _____   y-intercept: _____
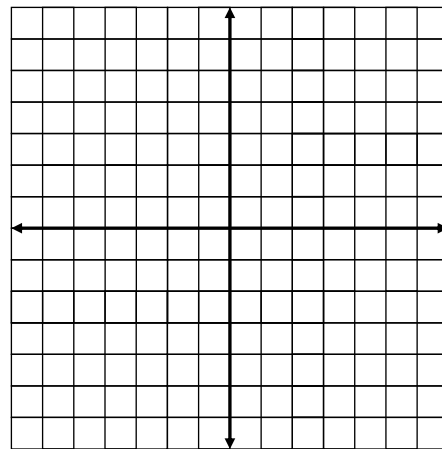
VI. Solving systems of Equations

a. y = 3x + 8
    4x + 2y = 6

b. 5x + 2y = 7
    4x + y = 8

VII. Solve each inequality below.
   ## Then graph the solution on a number line.

a. $14 - 8x < 12 - 6x$

b. $5x + 7 - 3x > -1$

c. $-2 < 4x - 6 < 18$

VIII. Solve each equation for the specified variable.

a. $-2c-6b=12a$, solve for c.

b. $\dfrac{9r}{w}-10=71$, solve for w.

IX. Absolute value functions
Solve for x.

a. $|x-3|=4$

b. $3|2x-1|=15$

X. Simplify the expressions.
Write final answers in standard form.

a. $(-3x^2+4x-11)+(2x^2-7x+8)$

b. $(30x^4-4x^3+2x^2-x-7)-(10x^3+3x-12)$

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

XI. CRITICAL CONCEPT.....Factoring!! (click on recommended links below)

→Easy factoring. FACTOR each expression below completely.

a) $x^2 + 11x + 24$

b) $x^2 + 34x - 35$

c) $x^2 - 8x - 48$

d) $x^2 - 15x + 56$

e) $x^2 + 4x - 60$

f) $x^2 - 17x + 42$

→ Advanced Factoring. Factor each expression below completely.
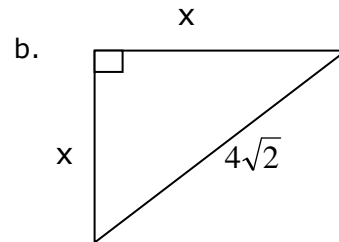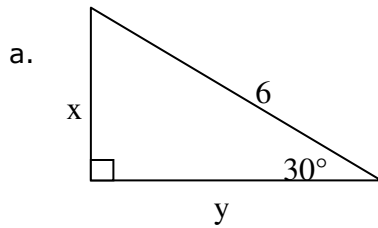
a) $2x^2 + 11x + 15$

b) $3x^2 + 14x - 5$

c) $7x^2 - 5x - 2$

d) $5x^2 - 21x + 4$

XII. Geometry review….from last year!!!

    a. Find the value of x and y, using **special right triangles**.

a.

6

x

$30°$

y

b.

x

x

$4\sqrt{2}$

    b. If a right triangle has a hypotenuse with a length of 12 and a leg with a length of 6, find the length of the other leg using the **Pythagorean theorem**.

    c. Use the triangle to find:

       sinx=

       cosx =

       tanx =

5

4

x

3