Algebra 2
June 1, 2015

Summer Practice

In order to be successful in Algebra 2, you must have solid familiarity with certain prerequisite skills. **You will be quizzed on the topics listed below during the first week of school. There will be no reassessment for this quiz.** Complete this practice over the summer. If you do not understand a section, use resources available to you (e.g., the internet, the public library, family, and friends) and complete the work. **Complete this work on lined paper: Copy each problem and show all work in a neat, organized manner. (You may complete #4, 5, 6 in this packet.)**

(1) Solve the equations. Show all algebraic steps.

(a) $x+14=-35$ (b) $16-x=18$ (c) $x-3.1=5.8$

(d) $-94=x-7$ (e) $4x=48$ (f) $-36=9x$

(g) $\frac{x}{-3}=9$ (h) $10=\frac{4}{x}$ (i) $2x-5=9$

(j) $\frac{x}{2}+6=15$ (k) $14.5=3x+2.5$ (l) $5(x-3)=-20$

(m) $104=8(3x+4)$ (n) $7x-5=3x-1$ (o) $-5+4x+3=3x-x-8$

(p) $3x+4(2x+1)=81$ (q) $-3x+23=5-2(x-4)$

(2) Solve the inequalities and graph each solution on a number line. (Number the number lines from -3 to 3.)

(a) $x-5\geq -3$ (b) $-3x>-6$ (c) $\frac{x}{-2}+1\leq 0$

(d) $3+2x<1$ (e) $4-3x\geq -5$

(3) Rewrite the following equations in *y* = form. Example: $y-5=7x$ $y=7x+5$

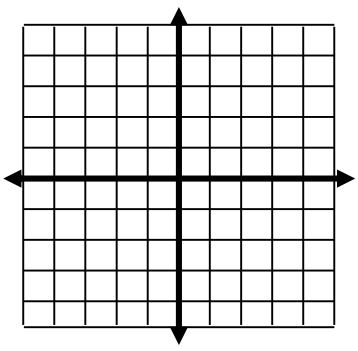
(a) $y+4x=3$ (b) $6y=12x+6$ (c) $2y+4=8x$

(d) $\frac{y}{5}-3x=10$ (e) $\frac{2}{3}y=1+6x$ (f) $xy=30$

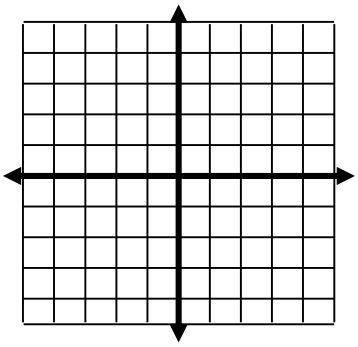
(4) Graph and label the following points.

(a) $A\ (0,4)$ (b) $B\ (-3,0)$ (c) $C\ (4,2)$

(d) $D\ (-3,-4)$ (e) $E\ (-5,3)$ (f) $F\ (1,-4)$

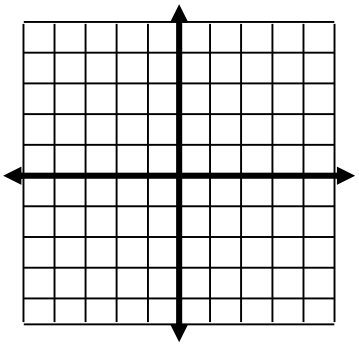


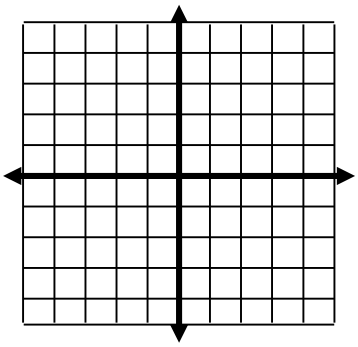
(5) On the following graph, draw 3 *vertical lines* in red and draw 2 *horizontal lines* in blue. Also, label the *x*-axis, the *y*-axis, and the origin.

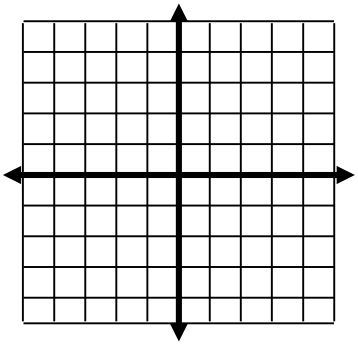


(6) Graph the following lines.

(a) $y = 2x - 4$ (b) $y = \frac{2}{3}x - 1$ (c) $y = -\frac{1}{2}x + 3$







(7) Find the value of each function given the particular *x*-value.

(a) $f(x) = 3x - 14;\ f(6)$ (b) $f(x) = \frac{2x+1}{x-4};\ f(3)$ (c) $f(x) = -7x + 2;\ f(-1)$

(d) $f(x) = x^2 + x^3;\ f(2)$ (e) $f(x) = 4 - 5x;\ f(-3)$ (f) $f(x) = \sqrt{x+20};\ f(16)$

(8) Without using a calculator, multiply.

(a) 3□8 (b) 7□6 (c) 5□6 (d) 9□9 (e) 10□4 (f) 8□7 (g) 9□4

(h) 7□3 (i) 5□8 (j) 9□6 (k) 4□8 (l) 5□7 (m) 8□6 (n) 9□8

(9) Without using a calculator, perform the following operations.

(a) $2 \square (-8)$ (b) $-2 \square (-8)$ (c) $-2 \square 8$ (d) $\frac{-8}{-2}$ (e) $\frac{-8}{2}$ (f) $\frac{8}{-2}$ (g) $2 + (-8)$

(h) $-2 + 8$ (i) $-2 + (-8)$ (j) $8 - (-2)$ (k) $-8 - 2$ (l) $-8 - (-2)$

(10) Distribute or F.O.I.L.

(a) $4x(x+3)$ (b) $-3x(2x-1)$ (c) $x^2(5x+4)$

(d) $(x+3)(x+4)$ (e) $(x-7)(x-2)$ (f) $(x-10)(x+3)$

(g) $(2x+1)(3x-5)$ (h) $(5x-4)(x-2)$

(11) Simplify the following, or state "already simplified."

(a) $5x+8x$ (b) $6x-(-4x)$ (c) x^2+4x

(d) $8x-4y$ (e) $-3x+y+5x+1$ (f) $3y+(-2y)+y^2$

(12) Rearrange the following expressions into standard form.

(a) x^2-4+3x (b) $5+4x^2-7x$ (c) $8x-5-2x^2$

(13) Set the following equations equal to zero. Example: $x^2=5x-3$ $x^2-5x+3=0$

(a) $x^2=-7x+4$ (b) $6x+20=-x^2$ (c) $9+5x^2=3x$

(d) $2x^2-3x=5x+4$ (e) $x^2+7=6x^2+10$ (f) $-5x^2-7x+4=4+4x$

(14) Recognize perfect squares. Are the following numbers perfect squares? Yes or no.

(a) 81 (b) 50 (c) 36 (d) 16 (e) 100 (f) 9 (g) 38

(h) 4 (i) 18 (j) 49 (k) 1 (l) 41 (m) 64 (n) 25

(15) Recognize perfect cubes. Are the following numbers perfect cubes? Yes or no.

(a) 7 (b) 1 (c) 8 (d) 27 (e) 40 (f) 25 (g) 64

(h) 125 (i) 100 (j) 24

(16) Using the zero product property, state the solutions. Example: $(x-3)(2x+1)=0$ $x=\left\{3,-\frac{1}{2}\right\}$

(a) $(x-7)(x-4)=0$ (b) $(x+1)(x-5)=0$ (c) $(2x-5)(x+10)=0$

(d) $x(x-5)=0$ (e) $(3x-8)(4x+7)$

(17) Simplify without any negative exponents in the final answer.

(a) $x^2 \bullet x^7$ (b) $7x^4 \bullet (-2x^4)$ (c) $(3x^5)(2x^{-9})$

(d) $\dfrac{x^{10}}{x^4}$ (e) $\dfrac{10x^7}{5x^3}$ (f) $\dfrac{-8x^4}{4x^6}$

(g) $\left(x^2\right)^5$ (h) $\left(2x^2\right)^3$ (i) $\left(x^3\right)^{-2}$

(j) x^0 (k) 2^5 (l) 5^2

(m) 2^3 (n) 3^3 (o) $(-2)^2$

(18) Find the least common multiple between the following sets of numbers.

(a) 6 and 3 (b) 4 and 6 (c) 5 and 20

(d) 8 and 10 (e) 9 and 120

(19) Simplify completely.

(a) $\dfrac{3}{5}+\dfrac{1}{10}$ (b) $\dfrac{3}{8}+\dfrac{4}{10}$ (c) $\dfrac{8}{6}-\dfrac{1}{3}$

(d) $\dfrac{8}{9}-\dfrac{1}{6}$ (e) $\dfrac{10}{3}\cdot\dfrac{6}{8}$ (f) $\dfrac{2}{4}\cdot\dfrac{15}{20}$

(g) $\dfrac{4}{7}\div\dfrac{10}{21}$ (h) $\dfrac{8}{10}\div\dfrac{16}{5}$