Algebra 2
Summer Review Packet

Due the first day of school

The problems in this packet are designed to help you review topics that are important to your success in Algebra 2. All work must be shown for each problem – use the space provided and/or attach additional pages if necessary. Circle all final solutions. The problems should be completely attempted. DO NOT use a graphing calculator solve these problems. You may choose to work alone or with others, but each person must submit his/her own work. If you need help with any of the problems check web sites for explanations and/or a help session is available at EHS this summer:

HELP SESSION DATE:	TIME:
August 22nd	10:00-11:30

Show all work for all problems.

1. Complete these fraction operations WITHOUT the use of a calculator. Answer in simplest form. You must show all of your steps.

   a. $\frac{2}{3} + \frac{4}{9}$

   b. $\frac{7}{4} - \frac{4}{5}$

   c. $\frac{4}{3} * \frac{2}{9}$

   d. $15 * \frac{3}{8}$

2. Evaluate the expression if $x = 3$ and $y = -2$
   $$x + y^2(x + 5) - y$$

3. Solve the following equations. Show your work AND check your answers.

   a. $(x - 1) - (4x + 6) = 8$

   b. $-2(3x - 1) = 5x + 3(x - 4)$

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

   d. $2(x + 2) - 2 = 3 - (x - 3)$

4. A car salesman's weekly salary is a base amount plus an additional amount for each car sold. The table below shows a person's weekly salary earned for the last three weeks.

Cars sold (c)	Weekly salary (S)
4	$500
9	$1000
12	$1300

    a. Write an equation to determine (S) the weekly salary for (c) number of cars sold.

    b. What is the person's weekly salary when 13 cars are sold?

5. Solve the following equations by <u>clearing fractions FIRST.</u> **Leave exact solutions (improper fractions).**
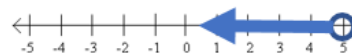
    a. $\frac{4}{9}x + 5 = -\frac{2}{3}x - 8$

    b. $\frac{2x+1}{3} = \frac{5x-1}{4}$

6. Indicate the solutions shown on the number line using inequality statement(s).

    a.

    b.

7. Line l contains the points $(-2, 3)$ and $(1, 5)$. Write the equation of the line in slope-intercept form.

8. Find the value of r so that the line that passes through the pair of points has the given slope.
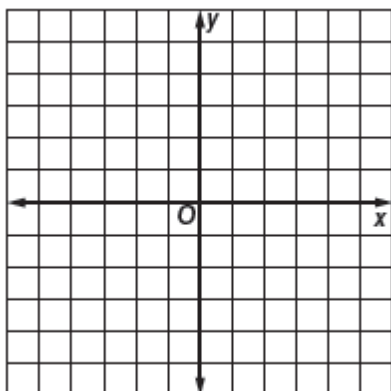   **use the slope formula $m = \frac{y_2 - y_1}{x_2 - x_1}$
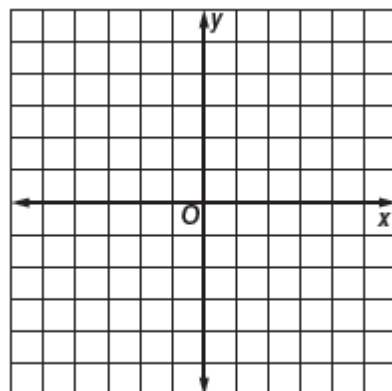
   a. $(11, 6), (-11, r), m = \frac{8}{11}$

   b. $(10, r), (4, -3), \ m = \frac{4}{3}$
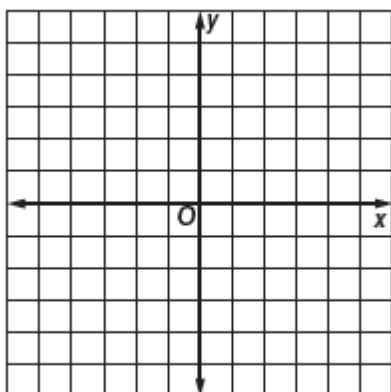
9. Graph the following equations:
   a. $y = 2x - 3$

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

   c. $x = -4$

10. Convert the following linear equations to standard form.

    a. $y - 5 = 3(2x - 1)$ to slope-intercept form $\{y = mx + b\}$

    b. $y + 1 = -2(x + 4)$ to standard form $\{ax + by = c\}$

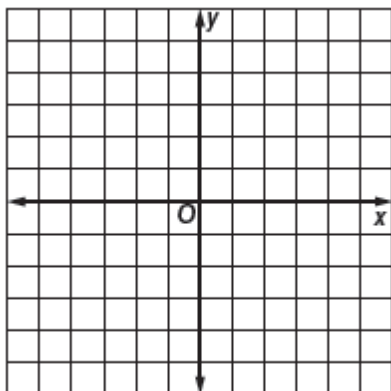   **c.** $5x - 2y = 8$ to standard form $\{ax + by = c\}$

11. Line k passes through the point $(8, -3)$ and is parallel to the line $y = 3x - 4$. Write an equation for line k.

12. Write the equation for the line perpendicular to the given line and through the given point.
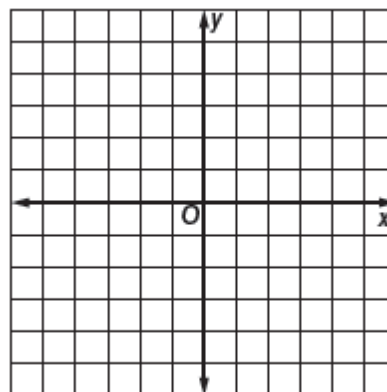
    $y = \frac{4}{3}x - 3$ and $(3, -1)$

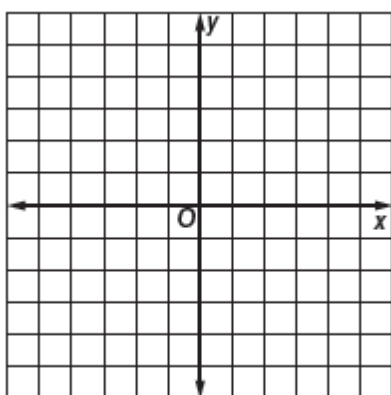**13.** Graph each of the following lines.

   a. slope: $-\frac{3}{4}$, through $(-5, -1)$

   b. slope: -3, x-intercept: 4

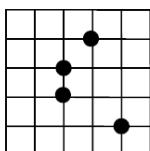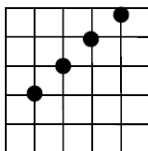   **c.** slope: 0;   y-intercept: -2

14. State whether each set is a function. Find the domain and range.
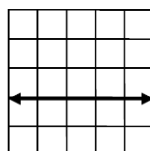
   a.   {(2, 5), (5, 6), (2, -6), (3, 8)}   _____   Domain: _____   Range: _____
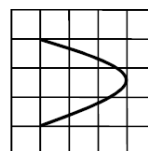
   b.   {(1, -2), (8, -4), (-3, 8), (-1, 2)}   _____   Domain: _____   Range: _____

15. Determine whether each graph is the graph of a function.

   _____   _____   _____   _____

16. Use $f(x) = x^2 - 3$ and $g(x) = 4x - 1$ to find each value.

    a. $f(-3)$ **b.** $g(-7)$

    c. $f\left(\frac{4}{3}\right)$ **d.** $f(-5) + 8$

17. The function $g(x) = 1.5x + 160$ models the weight gain of a basketball player as he starts a workout program where g is the weight in pounds after x weeks.
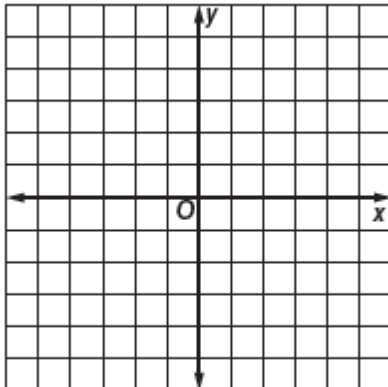
    a. Explain the meaning of 160 in the context of this problem.

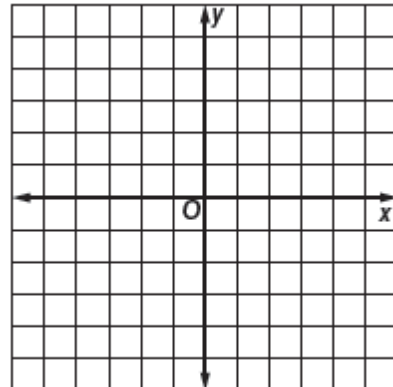   **b.** Explain the meaning of 1.5 in the context of this problem.

    c. Evaluate $g(6)$ and explain its meaning.

18. Solve the following systems of equations by graphing.

    a. $y = -\frac{1}{2}x + 4$ **b.** $y = -\frac{2}{3}x + 3$

        $y = 2x - 6$ $4x + 6y = 18$

19. Solve the following systems by substitution:

a. $a = -4b - 4$
   $3a - 5b = 22$

b. $6x - 7y = 23$
   $y = -2x + 11$

c. $9y + 3x = 18$
   $3y + x = -6$

20. Solve the following systems by elimination:

a. $5x + 7y = 2$
   $2x - 7y = -9$

b. $x - 6y = 44$
   $8x + 12y = 0$

c. $-5x + 11y = 35$
   $6x + 8y = 62$

21. Use the laws of exponents to simplify each expression. (Negative exponents should be simplified)

a. $3a^4b(-5a^7b^3)$

b. $(3y^2z^2)(-5yz^4)$

c. x^0

d. $(2c^{-3})^2(4c^2)$

e. $\dfrac{22x^3y^6}{14x^{13}y^{-3}}$

f. $(3x^4y)^3$

g. $\dfrac{\left(3x^{-2}\right)^2}{3x^6}$

22. Simplify the radicals – answer in simplified radical form (not decimal!).

   a. $\sqrt{40}$

   b. $\dfrac{3\sqrt{8}}{\sqrt{3}}$

   c. $-3\sqrt{98}$

   d. $\sqrt{18} \cdot \sqrt{32}$