Algebra 2/Trig H
MA 300
Summer Packet

This packet contains problems which is a review of Algebra 1 topics necessary for Algebra 2. You may use your calculator to complete the problems. This packet will not be collected but you will earn a homework grade for its completion. On the 1st full day of class, we will go over the packet. On the 2nd full day of class, you will have a test on this material. This will be your first grade for the semester. You should use an algebra 1 text or google it. Khan Academy or Freckle are helpful sites.

NAME: _____

Answer the following questions. Show your work. Answers should be in simplest fraction form, unless it is money. Don't forget to include units where appropriate. When graphing make sure that the function fills up most of the coordinate plane.

A. Write the **algebraic model** for the following verbal models:
   1) The sum of 12 and the quantity 8 times a number is equal to 48.

   2) The difference of a number and 7 is greater than 10 and less than or equal to 20.

B. Check whether the given numbers are **solutions** to the functions.

   3) $f(x) = 6x - 7 = 29$; 5

   4) $g(x) = x - 3.5 < 6$; 9

C. **Problem Solving**: Write the equation or inequality that you use to solve the problem.
   5) You buy a storage rack that holds 40 DVDs. You already have 27 DVDs. You want to buy 15 more DVDs. Will they fit on the rack?

   6) You are comparing two dorm-sized refrigerators, both with cube-shaped interiors. One model has an interior edge of 14 inches and the other has an interior edge of 16 inches. How much more cubic inches does the larger model have?

   7) Each of the long sides of a rectangle has a length of x inches. Each of the other sides is 1 inch shorter than the long sides. The perimeter of the rectangle is 22 inches. Determine the length & width of the rectangle. Determine the area of the rectangle.

   L = _____   w = _____

   A = _____

   8) You are making a scale drawing of your classroom using the scale 1 in : 3 ft. The floor of your classroom is a rectangle with a length of 21 ft and a width of 18 ft. What should the length and width of the floor in your drawing be?

9) A golf course charges $45 to play 18 holes of golf. It charges $24.75 to play 9 holes. Find the cost per hole for each game. Which game costs less per hole to play?

10) You have 26 DVDs and plan to buy 2 more each month. Write a rule for the number of DVDs as a function of the number of months from now. Identify the independent and dependent variables, domain, and range.

11) An architect is making a scale drawing of a building using a scale of 1 in : 4 ft. The height of the building on the drawing is 23 inches. What is the height of the actual building?

Height = _____

12) Evaluate: $35 - [6 + (4^2 \div 2)] =$ _____

13) Evaluate: $\frac{27-13}{4^2-9} =$ _____

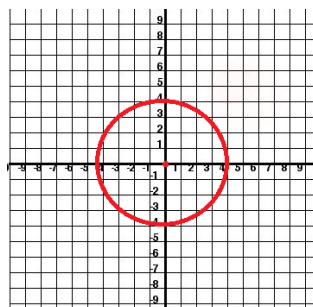14) Evaluate: $7x^2 - 4x$ when x = 3 _____

15) Evaluate: $-\sqrt{121} =$ _____

D. **Functions:** Determine whether the following are functions, explain your answer.
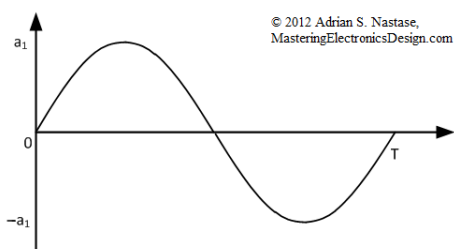
16) (2, 5), (4, 8), (3, 9)

17)

x	1	5	7	9	13
y	5	13	19	27	35

18) _____

19) _____

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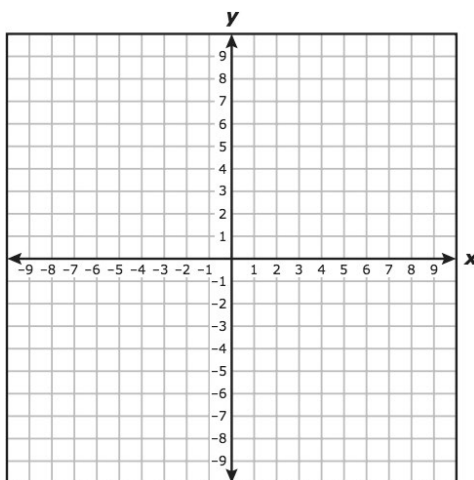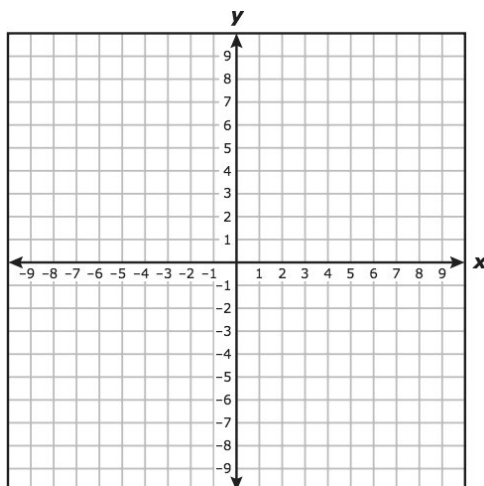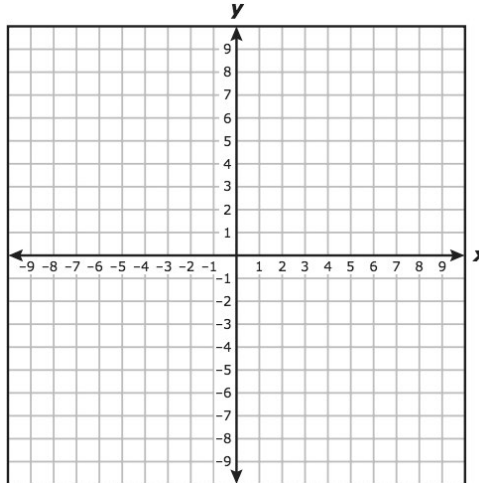## E. Linear Equations/Inequalities.

20) Graph $y = x + 2$

21) Graph $y = \dfrac{-1}{2}x + 4$

22) Graph $6x + 2y = 8$

23) The table shows the cost of using a computer at an internet café for a given amount of time. Find the rate of change in cost with respect to time.

Time (hours)	2	4	6
Cost (dollars)	7	14	21

24) Find the slope of the line containing the points: (1, -3) and (6, 5)

25) Identify the slope and y intercept of the line: $y = -4x - 12$?

26) Identify the slope and intercept of the line: $3x - 9y = 27$

27) Write an equation of the line in slope intercept form of the line that passes through the given point and has the given slope m: (1, 3) and $m = 4$

28) Write the equation of the line in slope intercept form of the line passing through the points: (0, 5) and (6, 9)

29) Write the equation of the line in slope intercept, point-slope, and standard form for the line going through the points: (7, 4) & (5, 3).
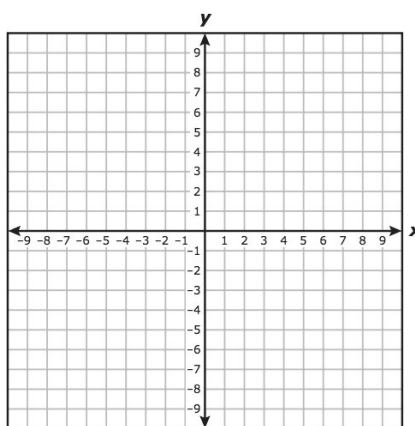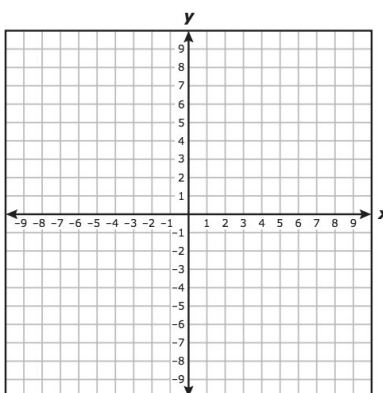
Slope-intercept: _____

Point-slope: _____

Standard: _____

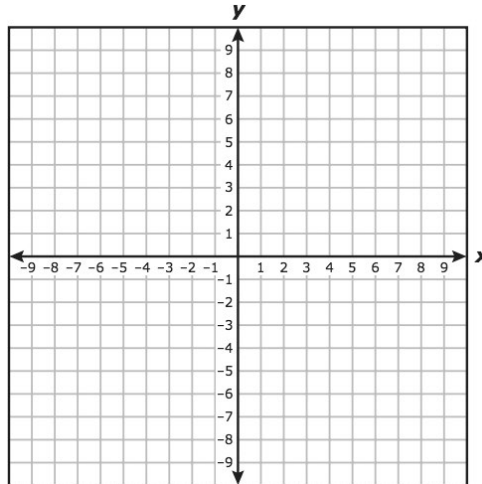30) Write the equation of the line for the line that is parallel to y = x + 3 and goes through the points (9, 4).

31) Graph: y < 2x + 5

32) Graph x ≤ -3

33) Graph

  $y < 3x + 4$

  $y \geq -2x - 1$

F. **Solve the** following equations/inequalities. Show your work. Graph the solution for inequalities.

34) $15x - 17 = 13$ x = _____

35) $-12x + 39 = -4x - 17$ x = _____

36) $3(3x + 4) = 54 + 6x$ x = _____

37) $\frac{1}{3}(24x - 66) = 3x + 43$ x = _____

38) $\frac{k}{7} - 9 = 33$ k = _____

39) $17 = -5x - 6x + 14$ x = _____

40) $\frac{1}{2} = 4(5x - 3)$ x = _____

41) $2(x + 3) = \frac{3}{4}(8x - 12)$ x = _____

42) $\frac{4}{7} = \frac{x}{56}$ x = _____

43) $\frac{13}{x} = \frac{26}{x+5}$ x = _____

44) $\frac{-5x}{4} = \frac{15}{2}$　　　　　　　　　　x = _____

45) $\frac{34}{6} = \frac{2x+1}{3}$　　　　　　　　　x = _____

46) $\frac{-4x-1}{-10x} = \frac{3}{8}$　　　　　　　　　x = _____

47) $\frac{2x+7}{6} = \frac{5x-2}{5}$　　　　　　　　x = _____

48) $5x + 9 < 4$　　　　　　_____

49) $3(s - 4) \geq 2(s - 6)$　　　　_____

50) $2(4c - 7) \geq 8(c - 3)$　　　_____

51) $2.2h + 0.4 \leq 2(1.1h - 0.1)$　　_____

52) $6 < x + 5 \leq 11$　　　　_____

53) $16 < -x - 6$ or $2x + 5 \geq 11$　　_____

54) $|x - 3| = 8$　　　　_____

55) $3|2x - 7| - 5 = 4$　　　_____

56) $|x - 5| \geq 7$　　　　_____

57) $2|\frac{1}{4}x - 5| - 4 > 3$　　　_____

58) Solve the linear system: $y = -x + 4$　　　_____
　　　　　　　　　　　　$y = 2x - 8$

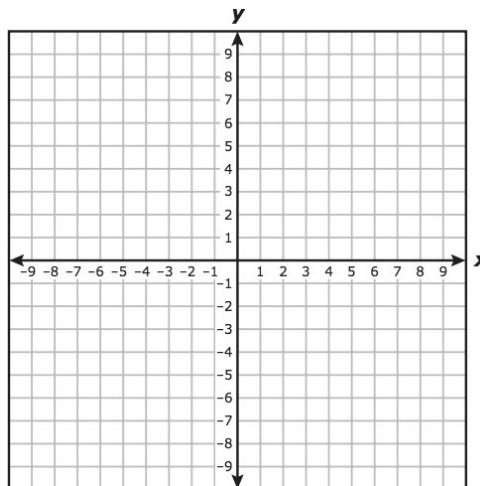59) Solve the linear system: $6x + 12y = -6$
$2x + 5y = 0$ _____

60) Solve the linear system: $y = -6x - 2$
$12x + 2y = -6$ _____

61) Solve the linear system: $4x + 3y = 27$
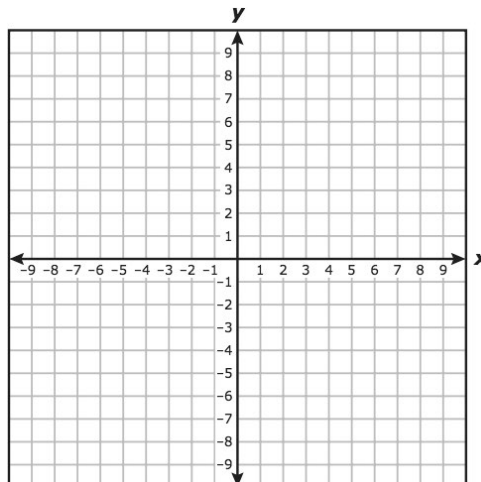$4x - 3y = -27$ _____

62) Solve the linear system: $9x - 7y = 31$
$-9x + 3y = -39$ _____

G. Graph Quadratics.

63) Graph: $y = x^2 + 5$

64) Graph: $x^2 - 2x = 3$

H. Factor/Solve Quadratics

65) Solve: $2x^2 = 8$ _____

66) Solve by factoring: $2x^2 + 8x = 0$ _____

67) Use the vertical motion model ($h = -16t^2 + vt + s$) to solve: A startled armadillo jumps straight into the air with an initial velocity of 14 feet per second. After how many seconds does it land on the ground?

                                      $t =$ _____

68) Factor and solve: $x^2 + 3x + 2 = 0$ _____

69) Use the quadratic formula to solve: $2x^2 + 9x + 7 = 3$ _____