

BERMAN HEBREW ACADEMY

MANDATORY ALGEBRA II HONORS SUMMER PACKET

DUE THE FIRST DAY OF SCHOOL

This summer packet is required for all students enrolled in Algebra II Honors and is due on the first day of school. Show all work.

All topics in this packet were covered in Algebra I. You will be tested on the contents of this material early in the school year so it is important that you understand the material well.

DO ALL PROBLEMS WITHOUT CALCULATORS.

However, you will need to have a TI-83, TI-83+, TI-84, or TI-84+ for class.

Name: _____

Date completed: _____

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Objective 1: Classify numbers by sets

1. Put an "x" in each box for which the number on the left of the chart belongs to the set of numbers across the top.

	Integer	Rational	Irrational	Real	Natural	Whole
a. -5						
b. .025						
c. 7						
d. $\sqrt{5}$						
e. $\sqrt{36}$						
f. 0						
g. π						
h. 3.765						
i. $-\frac{17}{5}$						
j. $-\sqrt{6}$						

Objective 2: Simplify expressions

2. $8 - (5 - x)$

3. $3(2x - 3(x - 1))$

4. $-(-(-(-(-x))))$

5. $7[x - 9(x - 1)] + 3[2x + 3(2x - 5)]$

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Objective 3: Identify properties

Match the property that justifies each statement.

6. $y^2 + (-y^2) = 0$

7. $x\left(\frac{1}{x}\right) = 1$

8. $a(bc) = a(cb)$

9. $-8 + 0 = -8$

10. If $\frac{m}{-10} = 3$, then $-10\left(\frac{m}{-10}\right) = -10(3)$

11. If $x - a = y$, then $x = y + a$

12. $3(-a + b) = -3a + 3b$

13. $m + n + 8 = n + m + 8$

14. $3d(1) = 3d$

15. $4 + (16 + 7) = (4 + 16) + 7$

- (a) Commutative of addition
- (b) Commutative of multiplication
- (c) Associative of addition
- (d) Associative of multiplication
- (e) Distributive
- (f) Additive Identity
- (g) Multiplicative Identity
- (h) Additive Inverse
- (i) Multiplicative Inverse
- (j) Addition Property of Equality
- (k) Multiplication Property of Equality

Objective 4: Evaluate expressions.

16. $10(t^2 + t)$ for $t = -5$

17. $-5|k + 1|$ for $k = -10$

18. $\frac{(x + y)^2}{-y}$ for $x = -12$, $y = 4$

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Objective 5: Solve equations

Solve for x . Show all work and circle your answer.

19. $-(x-1)+10=-3(x-3)$

20. $2.5(x-3)+1.7x=10.8(x+1.5)$

21. $a+bx=dx$

22. $6-|4x+1|=-1$

Objective 6: Solve Inequalities

Solve each Inequality and graph on a number line. Show all work and circle your answer.

23. $5-5x \geq 4(3-x)$

24. $52 < 4-3x < 13$

25. $7-3x \geq -5$ and $-2 \leq 5-7x$

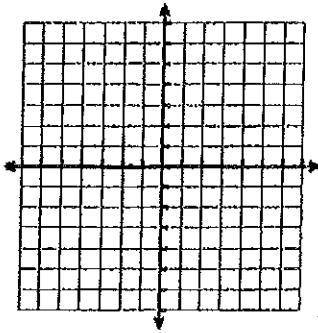
26. $|2x-1| \geq 12$

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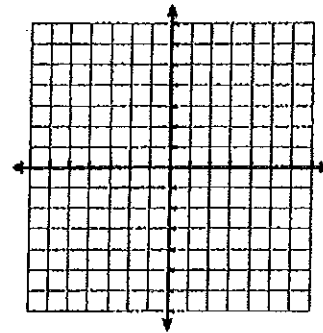
Objective 7: Graph inequalities

Graph each inequality on a separate coordinate plane. Show all work.

27. $x > -3$



28. $x + 2y > 4$



Objective 8: Identify slope.

29. through (8, 5) and (11, 14)

30. $x = -4$

31. parallel to $3x - y = -2$

32. perpendicular to $4x - 5y = 5$

Objective 9: Determine x-intercepts.

Objective 10: Determine y-intercepts.

Find the x and y intercepts of the line. Intercepts must be given as ordered pairs. Show all work.

33. $10x - 6y = -30$

34. $y = 5x - 3$

35. $x = -2$

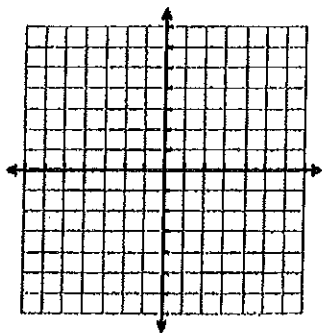
36. $y = 6$

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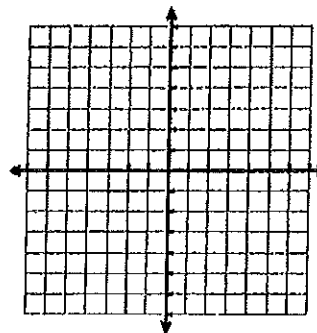
Objective 11: Graph linear equations.

Graph each line on the coordinate plane provided. Show all work necessary to graph the line.

37. $y = -4x$



38. $4x - 6y + 24 = 0$



Objective 12: Write the equation of a line.

Write the equation of the line in slope-intercept form. Show all work and circle your answer.

39. slope = -3, y-intercept $(0, -8)$

40. Passing through $(8, -5)$ and $(-4, 7)$

41. Parallel to $3x + 2y = 6$ and passing through $(-2, 5)$

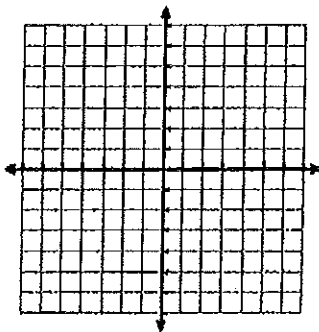
42. Perpendicular to $y = -4x + 2$ and passing through $(-4, 2)$

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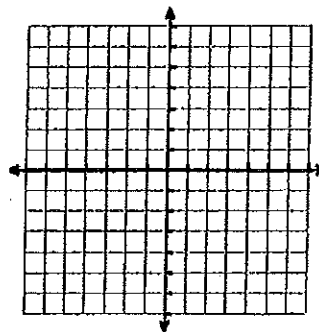
Objective 13: Solve systems of equations.

Solve by graphing on the coordinate plane provided. Show all work. Answers should be in the form of an ordered pair where appropriate. If the lines are coincident write all points on the line and name the line. Write no solution for parallel lines. Put your answer in the blank.

43. $2x - 2y = 0$
 $6x - 6y = 0$



44. $y = \frac{3}{2}x - 7$
 $x - 5y - 22 = 0$



Solve by substitution. Answers should be in the form of an ordered pair where appropriate. Show all work and circle your answer.

45. $3x - y = 5$
 $-3x + y = 7$

46. $2x + 3y = 28$
 $4x - y = 4$

Solve by elimination (linear combination). Answers should be in the form of an ordered pair where appropriate. Show all work and circle your answer.

47. $2x - 3y - 15 = 0$
 $9x + 5y = 0$

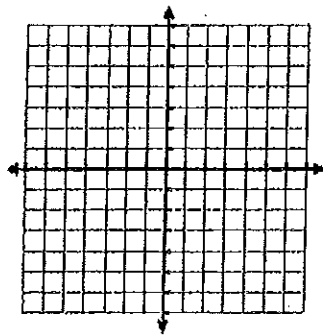
48. $6x - 2y = 14$
 $3x - y = 7$

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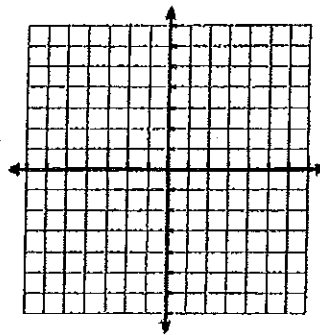
Objective 14: Graph systems of linear inequalities.

Graph the system of linear inequalities on the coordinate plane. Shade only the solution area. Show all work.

49. $x - 2y < 0$
 $y \geq -x + 2$



50. $y < -3x$
 $y > -3x + 2$



Objective 15: Simplify integral exponential expressions.

Simplify. Show all work and circle your answer.

51. $(10y^{-3})^4$

52. $\left(-\frac{ab^5}{c^4}\right)^{-3}$

53. $\frac{(m^3n^4)^2}{(-mn^5)^2(m^4n^2)}$

Objective 16: Factor sum and difference of binomials.

Factor completely. Show all work and circle your answer.

54. $x^2 - 36$

55. $3x^3 - 27x$

56. $x^4 - 16$

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Objective 17: Factor quadratic expressions.

Factor completely. Show all work and circle your answer. If not factorable, write prime.

57. $x^2 - x - 42$

58. $7x^2 - 9x + 2$

59. $12x^2 - 28x - 24$

60. $x^2 + 7x + 9$

Objective 18: Solve quadratic equations.

Solve by factoring. Show all work and circle your answer.

61. $3x^2 - 12x = 0$

62. $2x^2 + 11x + 9 = 0$

Solve by using the quadratic formula. Show all work and circle your answer.

63. $3x^2 - 4x + 1 = 0$

64. $2x^2 - 12x - 8 = 0$

65. Solve each formula for the indicated variable

a. $A = 2\pi r$; Solve for r

b. $S = \pi r(h + k)$; Solve for h

c. $V = \frac{4}{3}\pi abc$; Solve for c

Simplify:

$$103) \frac{\sqrt{5}}{\sqrt{2}}$$

$$104) \frac{\sqrt{7}}{6\sqrt{2}}$$

$$105) \frac{\sqrt{28}}{\sqrt{20}}$$

$$106) \frac{\sqrt{7}}{3\sqrt{21}}$$