

Summer Packet 2024-25

Name \_\_\_\_\_

Honors Algebra II

Period \_\_\_\_\_

Instructor: P. Alexander

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## Honors Algebra II

### Summer Packet

#### LISD

The purpose of this packet is to make sure that you have the mathematical skills you will need to succeed in Pre-AP Algebra II. You will benefit the most from this packet by starting it early. You should try to complete a few problems each day, as if it was a daily journal. Do not do all of it now, and do not wait and do it a week before we start school in August. You are more likely to retain the information if you spread it out. Work needs to be shown, when possible, in a neat, legible, organized manner on the page itself or a separate sheet of paper. This packet should be complete prior to the first day of class, during which you will have the opportunity to ask questions over the material covered. You will turn in your completed packet and you will have an assessment over this material during the first week of class.

Discussing and working the problems with your peers is encouraged, but copying someone's answers is not! There is a difference and at this point in your academic career you will be expected to know that. To receive credit all work must be shown, and any work done on additional paper must be turned in with the assignment.

You will be expected to be able to do the majority of these problems without using a calculator, and all non-integer answers should be written as a reduced, improper fraction. I have included a list of several websites that may help you when you come across a difficult problem. If you are unsure of how to attempt these problems please look on line for help.

#### Helpful Websites

<http://www.mathtv.com/>

<http://www.purplemath.com/modules/index.htm>

<https://www.khanacademy.org>

Algebra 2 Honors Summer Assignment

**Objective 1: Solve equations.**

**Solve each equation. Show all work and circle your answers.**

1)  $35 + n = 3(1 - 5n)$

2)  $3(4 + 4k) = 4k + 28$

3)  $7 + 7x = 7(2x - 6)$

4)  $35 + 7n = -7(-5n + 3)$

**Solve each equation for x.**

5)  $xm = \frac{n}{p}$

6)  $z = y - x + m$

7)  $\frac{2}{3} = \frac{x}{8}$

8)  $\frac{x}{4} = \frac{2}{10}$

9)  $z = -3y + \frac{12}{x}$

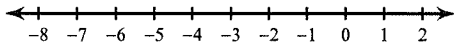
10)  $g = 16yx + 12y$

11)  $|3 + x| - 7 = 3$

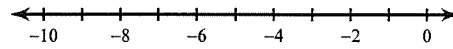
12)  $\frac{|x - 9|}{2} = 2$

**Objective 2: Solve inequalities and graph on a number line.**  
**Solve each inequality and graph its solution.**

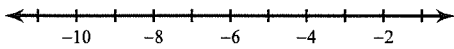
13)  $-7 \leq -7 - 4n - 5n$



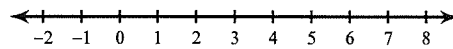
14)  $18 \geq -4k - 2k$



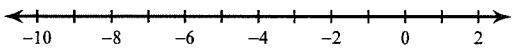
15)  $-175 > -5(3 - 8x)$



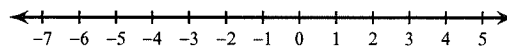
16)  $-105 > -5(1 + 4x)$



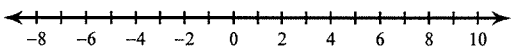
17)  $6n + 8 > -4$  or  $-3 + 7n \leq -45$



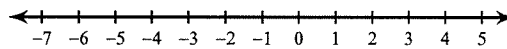
18)  $3 - 2x > -3$  and  $-3x + 5 < 14$



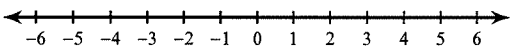
19)  $|-4x + 4| > 16$



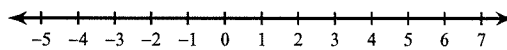
20)  $|8v - 3| \leq 29$



21)  $4|-8a - 5| + 4 > 24$



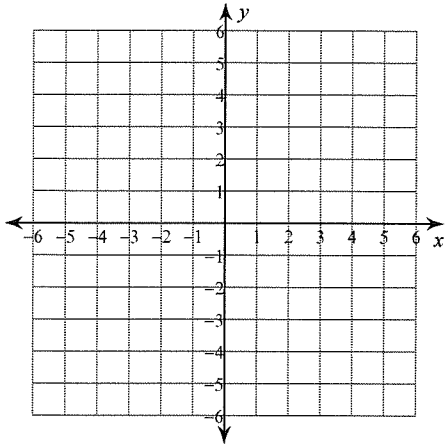
22)  $2|5 - 5k| - 3 < 37$



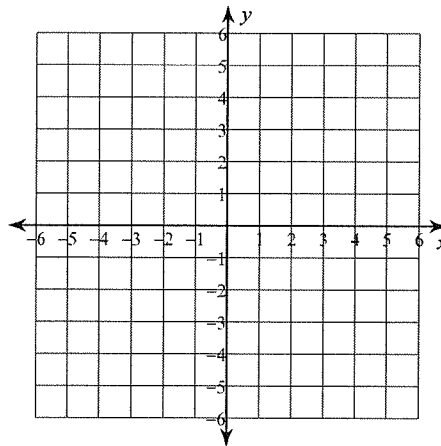
**Objective 3: Graph linear inequalities.**

**Sketch the graph of each linear inequality. Show all work.**

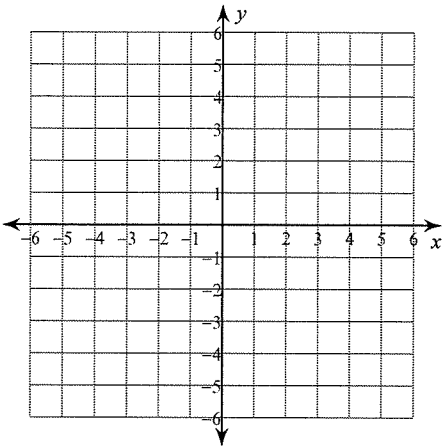
23)  $3x + y \leq 4$



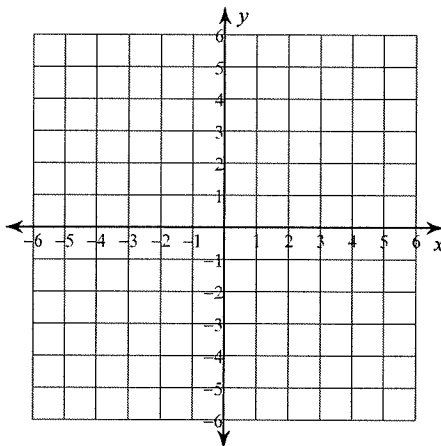
24)  $2x - 5y > -15$



25)  $x \leq -1$



26)  $y > 1$



**Objective 4: Find slope.**

**Find the slope of the line through each pair of points.**

27)  $(2, 8), (12, -3)$

28)  $(4, 13), (-12, -19)$

**Find the slope of each line.**

29)  $y = \frac{1}{5}x - 1$

30)  $y = \frac{3}{4}x - 5$

**Find the slope of a line parallel to each given line.**

31)  $y = \frac{1}{2}x + 2$

32)  $y = \frac{4}{3}x + 1$

**Find the slope of a line perpendicular to each given line.**

33)  $y = \frac{2}{3}x + 1$

34)  $y = -\frac{4}{5}x - 4$

**Objective 5 and 6: Find x & y intercept**

**Find the x and y intercepts of the line. Must be given as an ordered pair. Show all work.**

35)  $10x - 4y = -20$

36)  $y = -7$

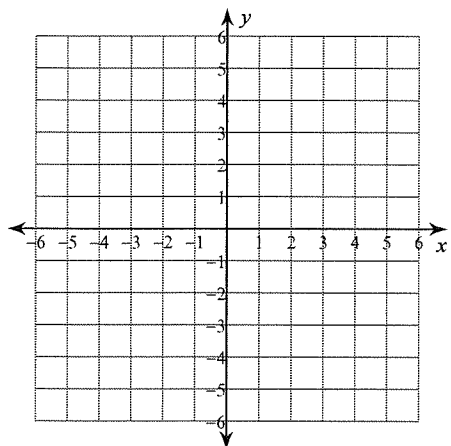
37)  $x = 3$

38)  $y = 2x + 3$

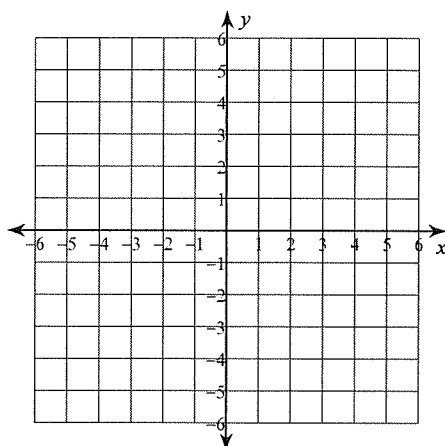
**Objective 7: Graph linear equations.**

**Sketch the graph of each line. Show all work necessary to graph the line.**

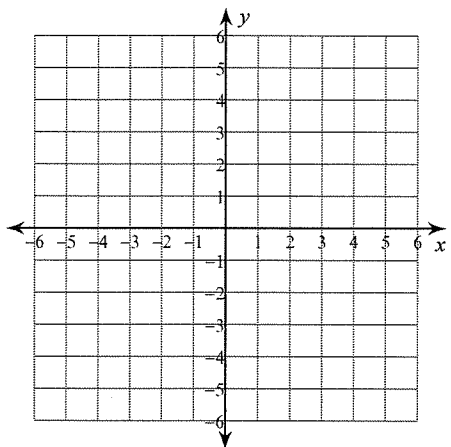
39)  $2x + 5y = 5$



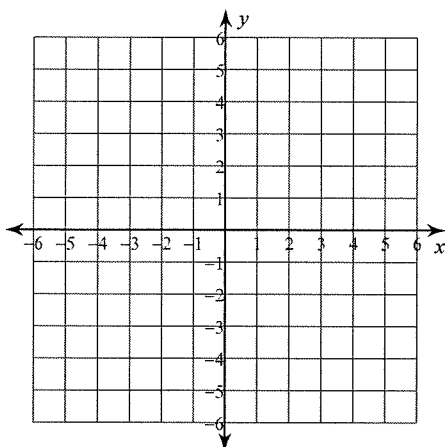
40)  $-3y = 6$



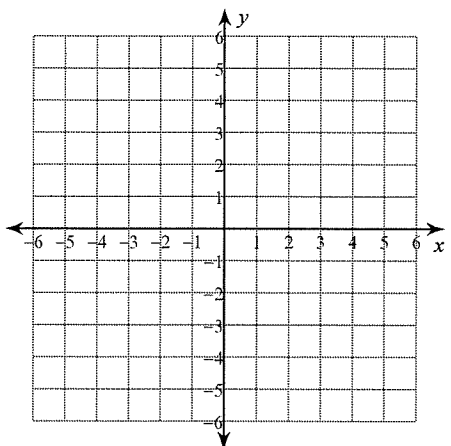
41)  $y = -1$



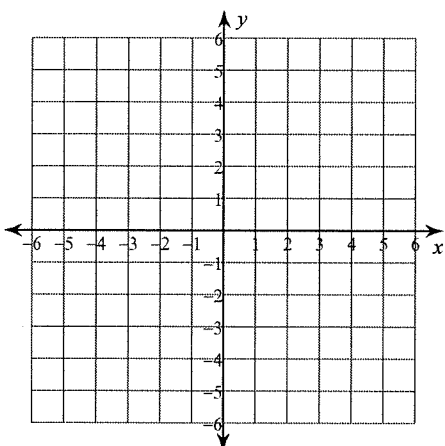
42)  $-5y + 25 = -2x$



43)  $y = \frac{1}{5}x - 1$



44)  $y = -\frac{2}{3}x - 2$



**Objective 8: Write the equation of a line.**

Write the slope-intercept form of the equation of each line.

45) Slope =  $-\frac{2}{5}$ , y-intercept = 5

46) Slope =  $\frac{1}{3}$ , y-intercept = -1

47)  $y - 1 = -\frac{2}{3}(x - 3)$

48)  $y - 4 = 9(x - 1)$

49) through:  $(-1, -3)$ , parallel to  $y = -2x + 4$

50) through:  $(3, 2)$ , parallel to  $y = -\frac{2}{3}x + 2$

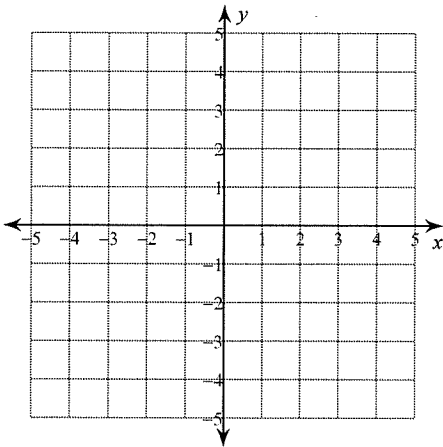
51) through:  $(-4, 4)$ , perp. to  $y = \frac{4}{9}x - 5$

52) through:  $(3, -3)$ , perp. to  $y = 3x - 5$

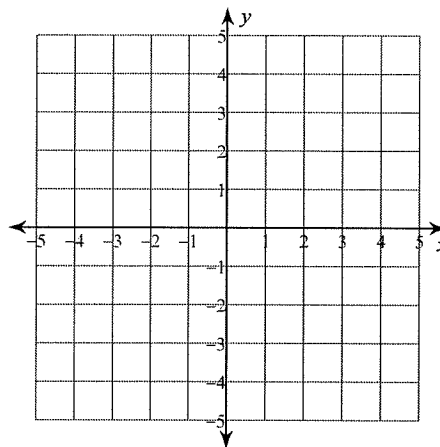
**Objective 9: Solve linear systems of equations.**

Solve by graphing in the coordinate plane provided. Show all work. Answers should be in the form of an ordered pair where appropriate. Put your answers in the blanks.

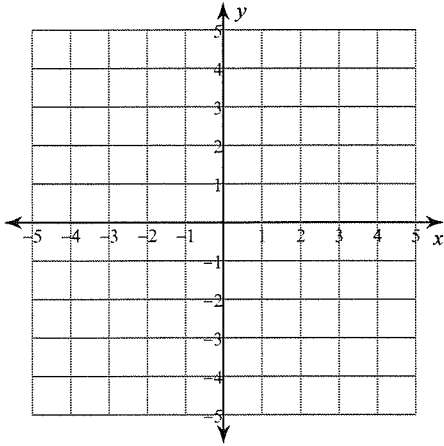
53)  $3x = 3y - 3$   
 $4x - 2 = y$



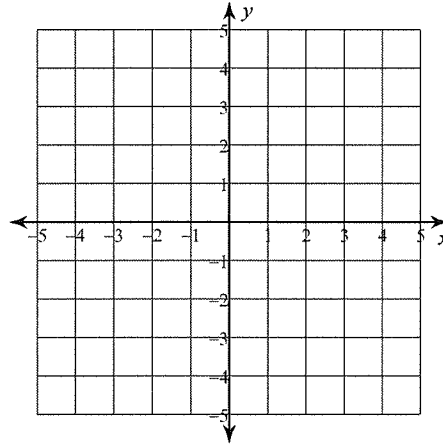
54)  $y + 2x = 3$   
 $-4 = y - 5x$



$$55) \begin{aligned} 5x + 4y &= 8 \\ -16 + 4y &= -5x \end{aligned}$$



$$56) \begin{aligned} 2 &= -5x - y \\ 2 + 5x &= -y \end{aligned}$$



**Solve each system by substitution or elimination (linear combination). Answers should be in the form of an ordered pair where appropriate.**

$$57) \begin{aligned} 4x + y &= 10 \\ -4x - 3y &= 2 \end{aligned}$$

$$58) \begin{aligned} -x - 8y &= -15 \\ 6x + y &= -4 \end{aligned}$$

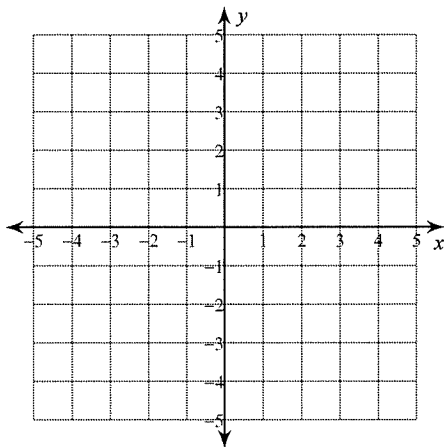
$$59) \begin{aligned} x - 5y &= -8 \\ -2x + 5y &= 16 \end{aligned}$$

$$60) \begin{aligned} x - 5y &= 23 \\ 7x - 3y &= 1 \end{aligned}$$

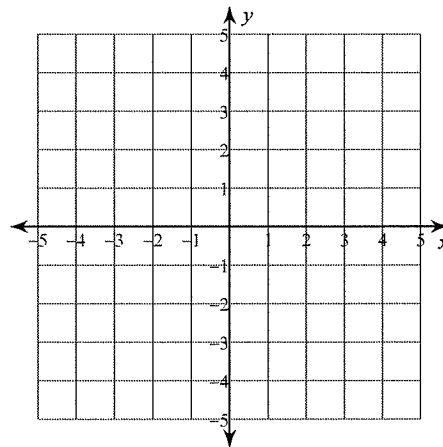
**Objective 10: Graph systems of linear inequalities.**

**Sketch the solution to each system of inequalities. Shade only the solution area. Show all work.**

$$61) \begin{aligned} y &< -3 \\ y &> -x - 1 \end{aligned}$$

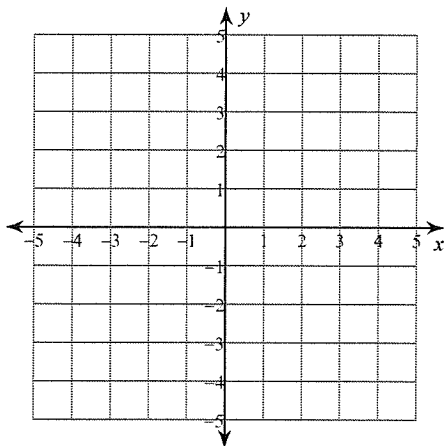


$$62) \begin{aligned} y &\leq x + 2 \\ y &> 3 \end{aligned}$$

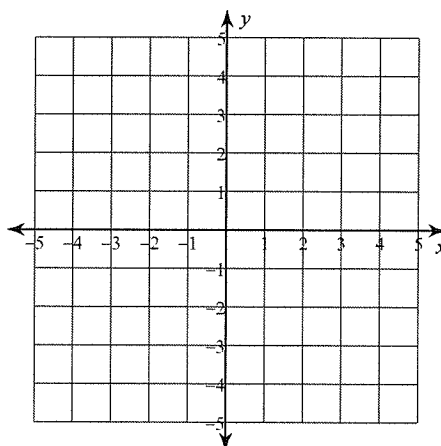




$$63) \begin{aligned} y &\leq -x - 1 \\ y &> -5x + 3 \end{aligned}$$



$$64) \begin{aligned} y &\leq -x - 2 \\ y &\leq 1 \end{aligned}$$



**Objective 11: Simplify integral exponential expressions.**

**Simplify. Show all work and circle your answer. Your answers should contain only positive exponents.**

$$65) 4n^{-3} \cdot -2n$$

$$66) -3m \cdot 3m^4$$

$$67) \frac{2^3}{(2^{-1})^2}$$

$$68) \frac{2^{-1}}{(2^4)^2}$$

$$69) \frac{yx^3 \cdot (x^4y^4)^4}{2y^2}$$

$$70) \left( \frac{2x^2y^2}{2x^2y^{-4} \cdot xy} \right)^0$$

$$71) \frac{y^3}{(2x^{-4})^4 \cdot xy^{-1}}$$

$$72) \frac{a}{(a^3)^{-2} \cdot b^{-2}}$$

73)  $\frac{xy^3}{(y^3)^{-2} \cdot yx^4}$

74)  $\left(\frac{2x^4y^2 \cdot x^{-4}}{2x^4y^{-1}}\right)^3$

**Objective 12: Factor****Factor each completely. Show all work and circle your answer.**

75)  $9x^2 - 25$

76)  $9r^2 - 16$

77)  $k^2 - 25$

78)  $4p^2 - 1$

79)  $-10m + 5$

80)  $20b^2 + 5b$

81)  $n^2 - 9n + 18$

82)  $3p^2 + 36p + 105$

83)  $25x^2 + 30x$

84)  $3x^2 - 7x + 2$

85)  $5x^2 - 16x + 12$

86)  $3n^2 + 16n - 12$

**Objective 13: Solve quadratic equations**  
**Solve each equation by factoring.**

87)  $m^2 - 16 = 0$

88)  $x^2 - 10x + 16 = 0$

89)  $n^2 + 7n + 6 = 0$

90)  $7x^2 - 21x + 14 = 0$

91)  $x^2 - 6x = 0$

92)  $r^2 - 13r + 42 = 0$

93)  $b^2 + 3b - 40 = 0$

94)  $n^2 - 11n + 24 = 0$

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

95)  $x^2 + 4x = 32$

96)  $n^2 + 2n = 48$

97)  $x^2 + 2x - 48 = 0$

98)  $b^2 + 10b + 24 = 0$