Name _____

SUMMER MATH PACKET 2C

FOR STUDENTS ENTERING ALGEBRA II

The problems in this packet have been selected to help you to review concepts in preparation for your next math class.

Please complete the **odd problems** in this packet.

- Show all your work.
- The work should be done in the booklet itself.
- No calculator for this problem set!
- Give the complete packet to your teacher on the first day of school.
- This will be counted as a graded assignment.

Have a great summer and we look forward to seeing you in September.

Randy Bernstein
Math Chair
Ma'ayanot Yeshiva High School for Girls

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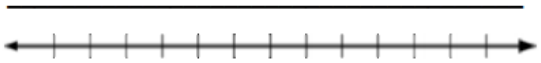
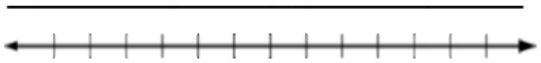
Solve each inequality and graph the solutions.

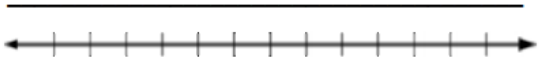
1) $2(3n + 7) > 5n$



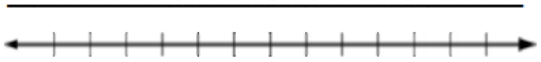
2) $5x - 9 < 2(x - 6)$



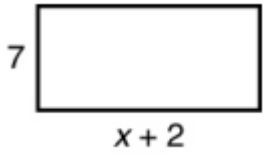
3) $-3(3x + 5) \geq -5(2x - 2)$



4) $1.4x + 2.2 \geq 2.6x - 0.2$



5) For what values of x is the area of the rectangle below greater than its perimeter?



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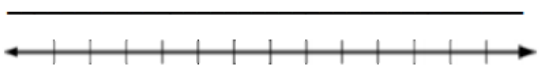
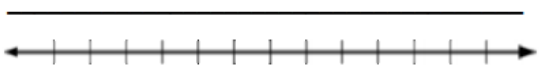
Solve each compound inequality and graph the solutions.

6) $-15 < x - 8 < -4$ 	7) $12 \leq 4n < 28$ 

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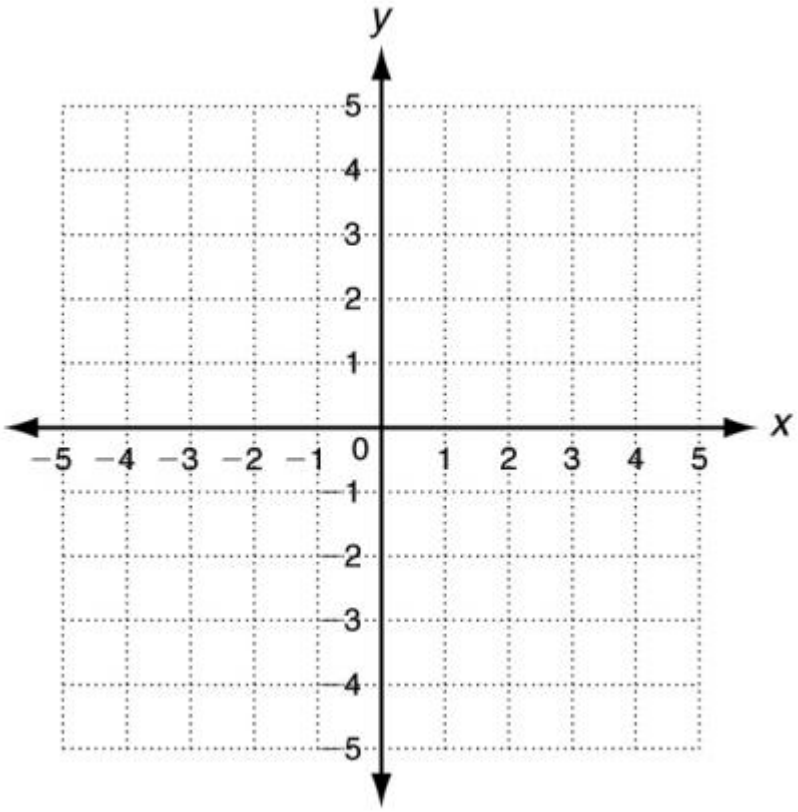
Systems of equations:

8) Solve the system of equations $\begin{cases} 4x + y = -1 \\ y - 4 = x \end{cases}$ by graphing.



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9) Solve the system of equations $\begin{cases} 3x - 2 = y \\ y - 2x = -5 \end{cases}$ by substitution.

10) Solve the system of equations $\begin{cases} 3x - 2y = 4 \\ x + 4y = 34 \end{cases}$ by elimination.

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Simplify the following Expressions.

11) $8x - 9y + 16x + 12y$	12) $14y + 22 - 15y^2 + 23y$
13) $5n - (3 - 4n)$	14) $-2(11x - 3)$
15) $10y(16x + 11)$	16) $-(5x - 6)$
17) $3(18x - 4y) + 2(10x - 6y)$	18) $(8c + 3) + 12(4c - 10)$
19) $9(6x - 2) - 3(9x^2 - 3)$	20) $-(y - x) + 6(5x + 7)$

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Solve each equation. You must show all your work.

21) $8(3x - 4) = 196$	22) $45x - 720 + 15x = 60$
23) $132 = 4(12x - 9)$	24) $198 = 154 + 7x - 68$
25) $-131 = -5(3x - 8) + 6x$	26) $-7x - 10 = 18 + 3x$
27) $12x + 8 - 15 = -2(3x - 82)$	28) $-(12x - 6) = 12x + 6$

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Solving Literal Equations:

- A literal equation is an equation that contains more than one variable.
- You can solve a literal equation for one of the variables by getting that variable by itself. (Isolating the specified variable.)

Ex. 1: $3xy = 18$, Solve for x.

$$\frac{3xy}{3y} = \frac{18}{3y}$$

$$x = \frac{6}{y}$$

Ex. 2: $5a - 10b = 20$, Solve for a.

$$+10b = +10b$$

$$5a = 20 + 10b$$

$$\frac{5a}{5} = \frac{20}{5} + \frac{10b}{5}$$

$$a = 4 + 2b$$

Solve each equation for the specified variable.

29) $Y + V = W, for\ V$	30) $9wr = 81, for\ w$
31) $2d - 3f = 9, for\ f$	32) $dx + t = 10, for\ x$
33) $P = (g - 9)180\ , for\ g$	34) $4x + y - 5h = 10y + u,\ for\ x$

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Exponents:

Simplify each expression.

35) $(c^3)(c)(c^2)$	36) $\frac{m^{15}}{m^3}$	37) $(k^4)^5$
38) d^0	39) $(p^4q^2)(p^7q^5)$	40) $\frac{45y^3z^{10}}{5y^3z}$
41) $(-t^7)^3$	42) $3f^3g^0$	43) $(4h^5k^3)(15k^2h^3)$
44) $\frac{12a^4b^6}{36ab^2c}$	45) $(3m^2n)^4$	46) $(12x^2y)^0$
47) $(-5a^2b)(2ab^2c)(-3b)$	48) $4x(2x^3y)^0$	49) $(3x^4y)(2y^2)^3$

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Multiply. Write your answer in simplest form.

50) $(x+10)(x-9)$	51) $(x-10)(x-2)$	52) $(x-8)(x+81)$
53) $(2x-1)(4x+3)$	54) $(-2x+10)(-9x+5)$	55) $(-3x-4)(2x+4)$
56) $(x+10)^2$	57) $(-x+5)^2$	58) $(2x-3)^2$

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Factor the following expressions completely.

59) $x^2 - 5x$	60) $6x^2 + 3x$	61) $3x^2 - 36x$
62) $-5x^7 - 50x^4$	63) $20x^5 - 8x^4 - 4x^3$	64) $36x^4 + 24x^2$
65) $(x^2 - 36)$	66) $(x^2 - 81)$	67) $(x^2 - 49)$
68) $(9x^2 - 100)$	69) $(x^2 - 121)$	70) $(81x^2 - 4)$

Factor the following trinomials completely.

71) $x^2 + 11x + 10$	72) $x^2 - 14x + 24$	73) $x^2 - 10x - 56$
74) $x^2 + 7x + 12$	75) $x^2 + 12x + 27$	76) $x^2 + 2x + 1$
77) $x^2 - 11x + 18$	78) $x^2 + 8x - 9$	79) $x^2 - 9x + 14$

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Factor the following trinomials completely.

80) $3p^2 - 2p - 5$	81) $2n^2 + 3n - 9$	82) $3n^2 - 8n + 4$
83) $5n^2 + 19n + 12$	84) $2v^2 + 11v + 5$	85) $2n^2 + 5n + 2$

The following equations are factored for you. Solve each equation.

86) $(k + 1)(k - 5) = 0$	87) $(a + 1)(a + 2) = 0$
88) $(4k + 5)(k + 1) = 0$	89) $(2m + 3)(4m + 3) = 0$

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Set each of the following equations to zero, factor, and solve for x.

90) $x^2 - 11x + 19 = -5$	91) $n^2 + 7n + 15 = 5$
92) $n^2 - 10n + 22 = -2$	93) $n^2 + 3n - 12 = 6$
94) $6n^2 - 18n - 18 = 6$	95) $7r^2 - 14r = -7$

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96) $n^2 + 8n = -15$	97) $5r^2 - 44r + 120 = -30 + 11r$
98) $-4k^2 - 8k - 3 = -3 - 5k^2$	99) $b^2 + 5b - 35 = 3b$
100) $3r^2 - 16r - 7 = 5$	101) $6b^2 - 13b + 3 = -3$

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102) $7k^2 - 6k + 3 = 3$	103) $35k^2 - 22k + 7 = 4$
104) $7x^2 + 2x = 0$	105) $10b^2 = 27b - 18$
106) $8x^2 + 21 = -59x$	107) $15a^2 - 3a = 3 - 7a$

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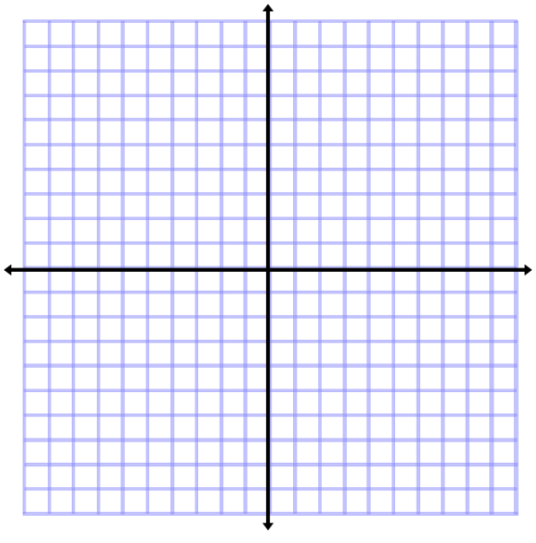
Express each of the following radicals in simplest radical form.

108) $\sqrt{90}$	109) $\sqrt{175}$	110) $\sqrt{288}$
111) $\sqrt{486}$	112) $2\sqrt{16}$	113) $6\sqrt{500}$

Use the slope and intercept to graph the following lines.

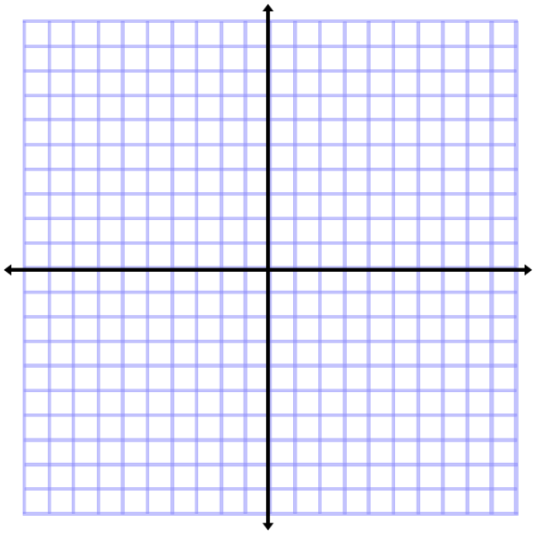
114) $y = 2x + 5$

Slope: _____ Intercept: _____



115) $y = -3x$

Slope: _____ Intercept: _____



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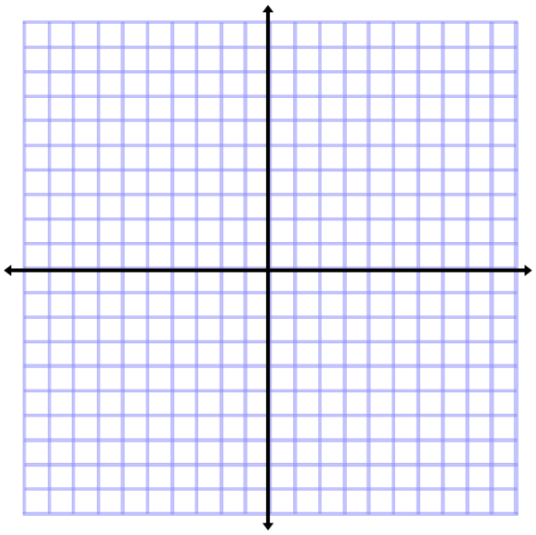
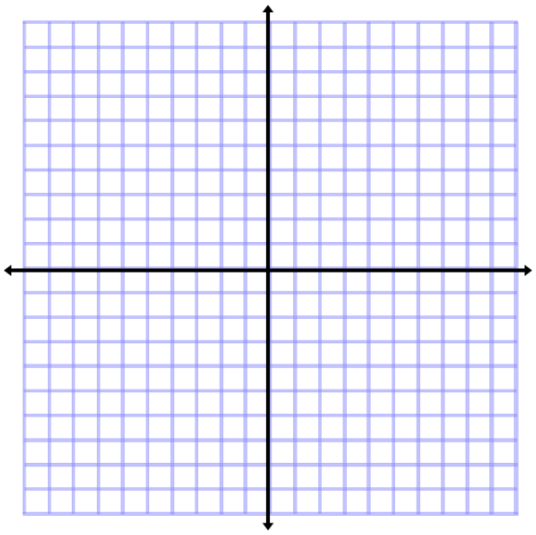
116) $y = -\frac{2}{5}x + 4$

Slope: _____ Intercept: _____



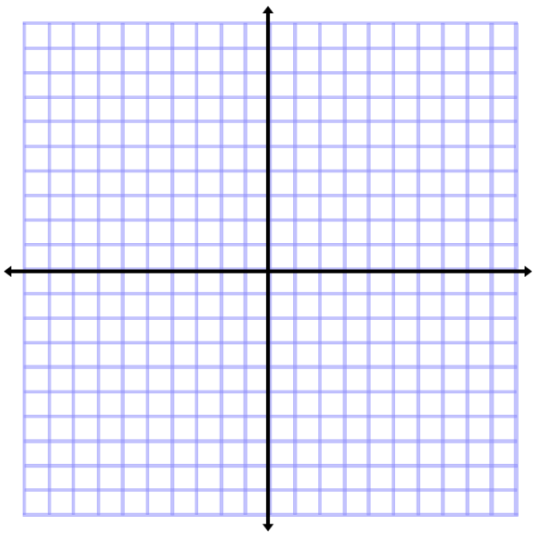
117) $y = \frac{1}{2}x - 3$

Slope: _____ Intercept: _____



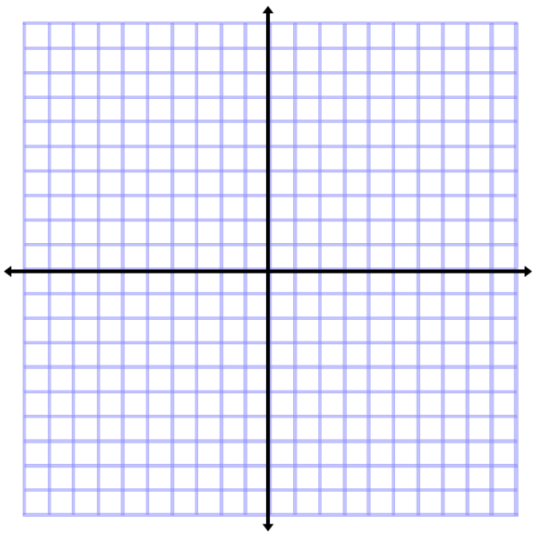
118) $y = -x + 2$

Slope: _____ Intercept: _____



119) $y = x$

Slope: _____ Intercept: _____



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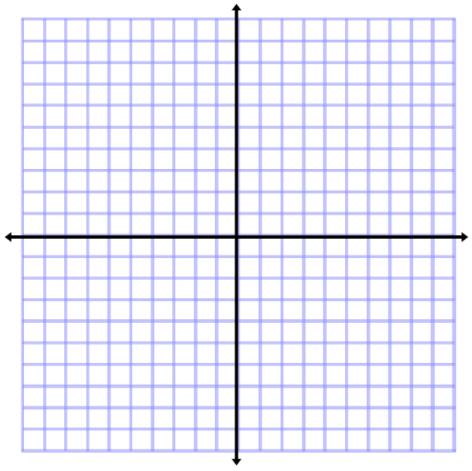
The following equations are in standard form. Rewrite them in slope intercept form, identify the y-intercept and slope, and then graph them.

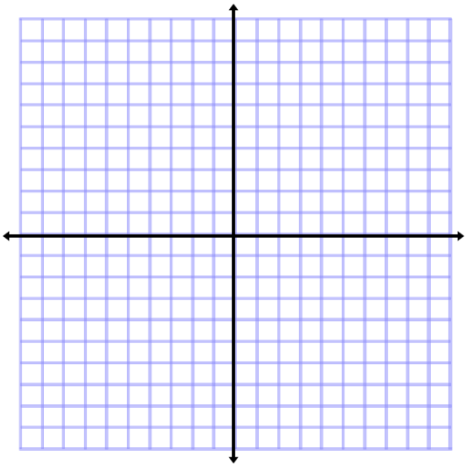
120) $5x + 2y = 10$

Slope: _____ Intercept: _____



121) $4x - 3y = 9$

Slope: _____ Intercept: _____



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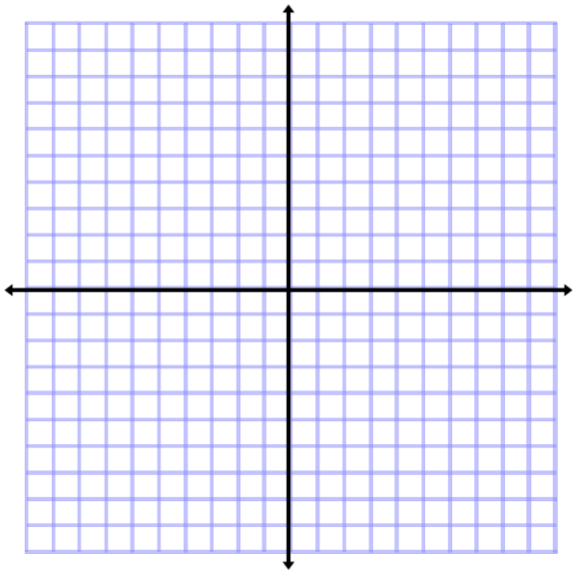
The following equations are in standard form. Solve for the x-intercept and y-intercept. Then graph the lines by plotting these points on the appropriate axes and connecting them.

122) $3x + y = 3$

To find the x-intercept, let $y = 0$ and solve for x.

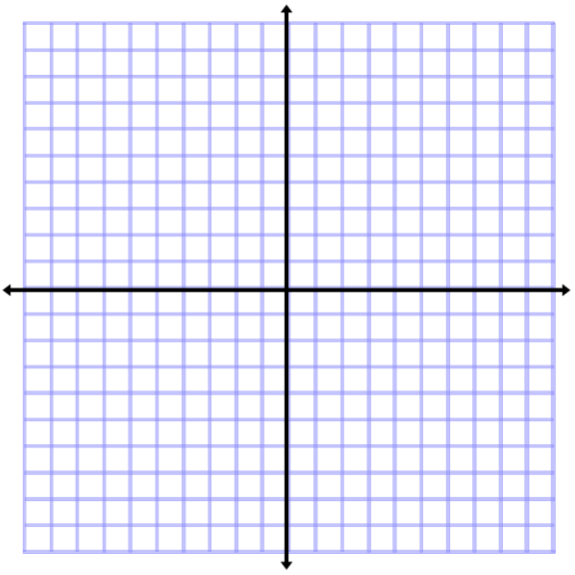
To find the y-intercept, let $x = 0$ and solve for y.



123) $-2x + 6y = 12$

To find the x-intercept, let $y = 0$ and solve for x.

To find the y-intercept, let $x = 0$ and solve for y.



124) Find the x-intercept of the equation $x + 5y = 20$.

125) Find the x- and y-intercepts of $3x - y = 6$.

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126) Find the slope of the line that contains the points $(6, 8)$ and $(2, 1)$.

127) Find the slope of the line that contains the points $(4, 5)$ and $(7, 11)$.

128) Find the distance between the points $A(6, 7)$ and $B(2, 4)$.

129) Find the distance between the points $A(5, 6)$ and $B(1, 3)$.

130) Find the coordinates of the midpoint of $\overline{AB}$ with endpoints $A(2, -6)$ and $B(-6, 2)$.

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131) Write an equation in point-slope form that describes the line with a slope of -3 that contains the point $(1, 2)$.

132) Write an equation in slope-intercept form for the line that passes through $(0, -1)$ and is perpendicular to the line described by $= \frac{1}{8}x + 4$.

133) Write an equation in slope-intercept form for the line that passes through $(-3, 2)$ and is perpendicular to the line described by $y = \frac{3}{2}x + 4$

134) Write an equation in slope-intercept form for the line that passes through $(24, 5)$ and is parallel to the line described by $= \frac{1}{8}x + 4$.

135) Write an equation in slope-intercept form for the line that passes through $(-4, -6)$ and is parallel to the line described by $y = \frac{3}{2}x + 4$