Algebra I Geometry Summer Work

This work must be completed and turned in to Ms. Garbutt the first day of class in the fall. Please attach all work, labeled, and write your answer on the problem sheet.

Do your best! The expectation and requirement is that you look up things you don't know or remember online or use Kahn Academy for a refresher.

Factoring or solving.

Factor the polynomial expressions or equations below. If it is an equation, remember that to solve by factoring, you must first make the equation equal zero, then factor, then by the zero product property you may solve for all solutions.

1. $x^2 + 5x + 6$
2. $x^2 + 7x + 6$
3. $x^2 + 15x + 56$
4. $x^2 + 5x + 4 = 0$
5. $x^2 + 6x + 9 = 0$

6. $x^2 - 4x + 4 = 0$
7. $25x^2 + 10x + 1$
8. $4x^2 - 20x + 25$
9. $100x^2 - 140x + 49$
10. $x^2 + 12x + 36 = 0$

11. $x^2 - 1$
12. $x^2 - 16$
13. $x^2 - 49 = 0$
14. $25x^2 - 9y^2$
15. $9x^2 - 105 = -5$

Solving equations.

Solve for the variable. If there is no correct answer, write "no solution". Express any answer that is a fraction in lowest terms.

16. $\frac{1}{2}x + 13 = 17$
17. $\frac{5}{7}x - 4 = 21$
18. $16x + 42 - 13x = 24$
19. $23x - 14 - 7x = 82$
20. $17 - (6x + 3) = -16$
21. $3(7x + 9) = -15$
22. $-30x = 12$

Graphing Lines

Graph the following lines or inequalities – use graph paper. One sheet attached.

23. $y = 2x + 4$
24. $y = \frac{1}{4}x + 2$
25. $y = -x$
26. $y = \frac{3}{4}x$
27. $y > x - 2$
28. $y \geq -2x - 3$
29. $y \leq \frac{4}{3}x + 3$
30. $x = 5$
31. $y = -\frac{2}{3}x - 1$
32. $y < 3$

Distributive Property

Multiply the following polynomials and express in standard form, then identify and label the leading coefficient and the degree of the polynomial.

33. $(7x + 6)(x - 5)$
34. $(x + 6)(x - 6)$
35. $(x + 6)(2x + 3)$
36. $(x - 1)(x - 4)$
37. $(2x + 2)(3x - 3)$

Rewriting equations.

Find the equation of the line described in slope-intercept form. If an equation of a line is given, rearrange it so that it is expressed in slope-intercept form $y = mx + b$.

38. $2x - 3y = 12$
39. $x - y = 6$
40. A horizontal line that passes through (4,5)
41. A line parallel to $y = 2x - 4$ but passing through (3,1)
42. A line perpendicular to $y = -\frac{2}{3}x + 1$ and passing through (2,-4)

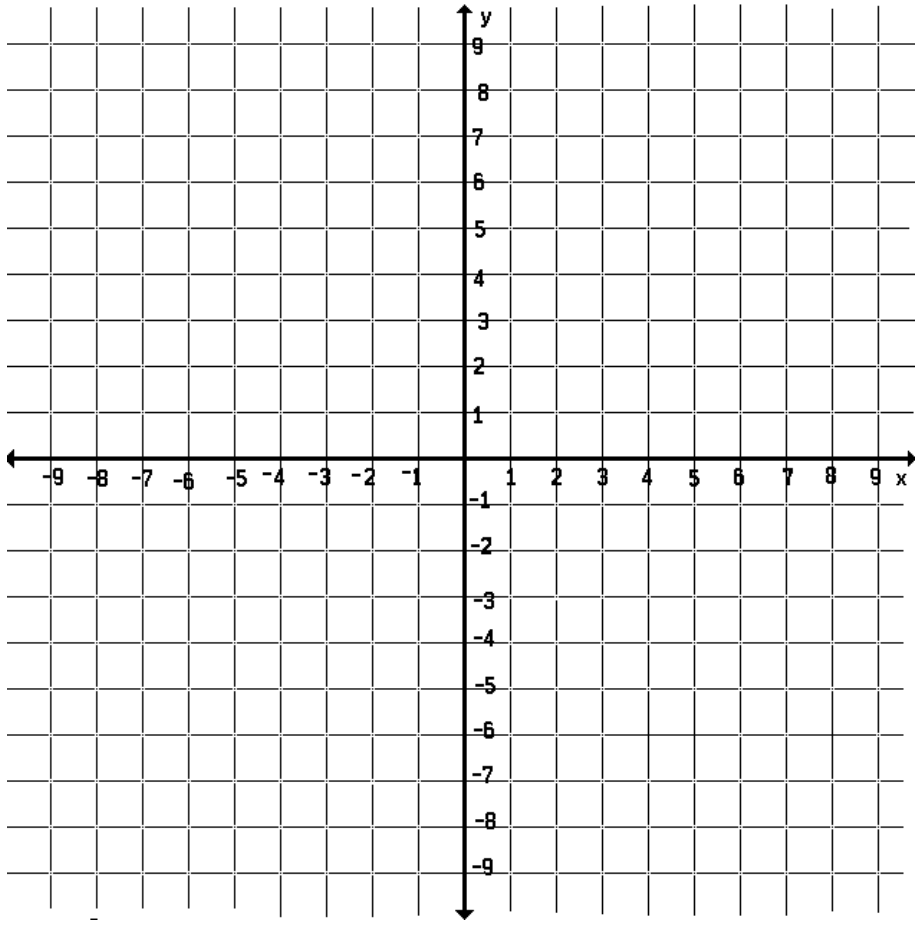
Application problems

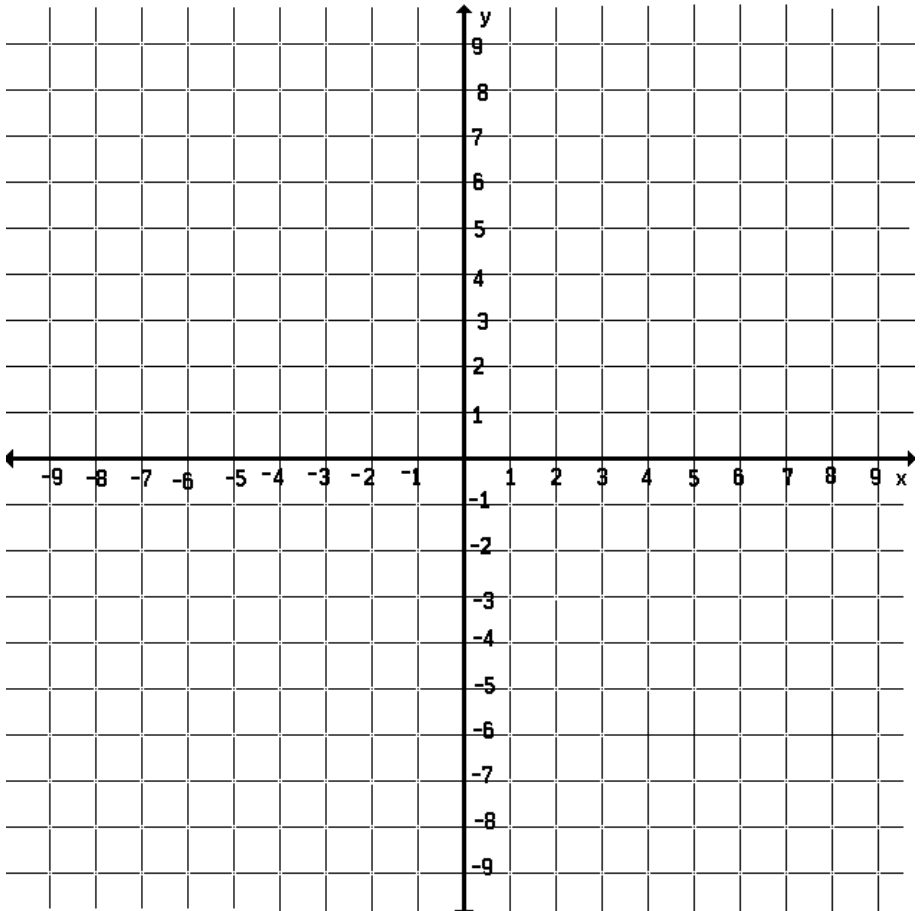
Draw the rectangle described on a blank sheet, use a ruler to measure and to draw straight lines, label the sides, and calculate the perimeter and area.

39. Length= 10 cm and Width=5 cm

40. Length=4 inches and Width = 3 inches

41. Think about it: Can you find the length and width of a rectangle whose area and perimeter are the same number? What are the dimensions?


y
x
9
8
7
6
5
4
3
2
1
-1
-2
-3
-4
-5
-6
-7
-8
-9
-9 -8 -7 -6 -5 -4 -3 -2 -1 1 2 3 4 5 6 7 8 9


y
x
9
8
7
6
5
4
3
2
1
-1
-2
-3
-4
-5
-6
-7
-8
-9
-9 -8 -7 -6 -5 -4 -3 -2 -1 1 2 3 4 5 6 7 8 9

MORE Practice. If you want more practice, do these! This part is not required.

Factor or solve.

1. $x^2 + 8x + 6 = -1$
2. $x^2 + 9x + 20 = 2$
3. $x^2 + 8x + 16$
4. $x^2 + 7x + 12$

5. $100x^2 - 60x + 9 = 0$
6. $169x^2 + 104x + 10 = -6$
7. $9m^2 + 12mn + 4n^2$
8. $64x^2 - 48xy + 9y^2$
9. $81x^4 + 36x^2 + 4$

10. $121x^2 - 144$
11. $49x^4 - 4y^6$
12. $x^2 - 25 = 0$
13. $9x^2 - 1$
14. $4x^2 - 25y^2$

Solve

15. $28x + 39 + 7x = 319$
16. $-25x - 17 - 18x = 284$
17. $4(2x + 7) = 108$
18. $8(3x + 1) = 128$
19. $35 - 5(2x + 3) = 20$
20. $\frac{x}{5} - 9 = 7$
21. $\frac{4x}{3} + 25 = 33$
22. $-17x - 22 - 8x = 128$