Algebra 1 Cumulative Test **Name _____**
Part A (45 min.) School _____

Each problem is worth 3 points. Points will be assigned based on work shown. Show all work on the test and circle all of your final answers.

1. Solve the equation for *N:* $5N - 7(3 - 2N) = 36$

2. A reception cost $225 plus $6 for each person making reservations. The total bill is $1011. Show **a variable equation to model this problem** if ***x*** is the number of people making the reservation. Then **solve** the equation and state the number of people who made a reservation.

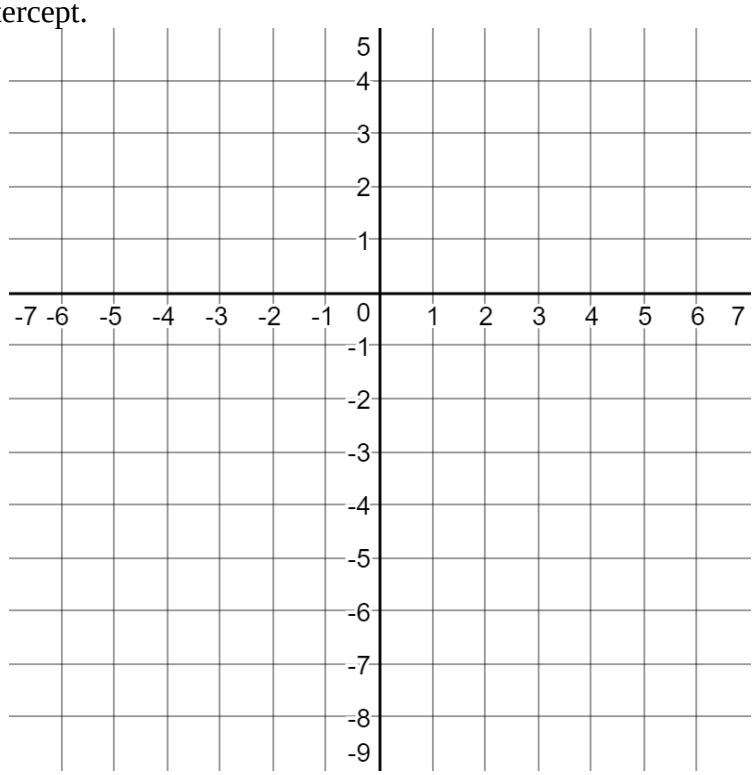
3. Show that $x = -6$ is a solution of the inequality: $23 - 3x \geq 18 + 4x$.

4. A rectangle is three times as long as it is wide and we have used ***w*** to represent the shorter side. If the perimeter of this rectangle is 101.68 cm, what are the dimensions of the rectangle? Use the perimeter to write an equation or system and solve to find the dimensions.

5. In this linear relation, find the *rate of change* between the two points(x, y): (4, 36) and (8, 108).

6. Write the equation in slope-intercept form and sketch the line. Carefully label the *x*-intercept and the *y*-intercept.

$$3x - 2y = 12$$

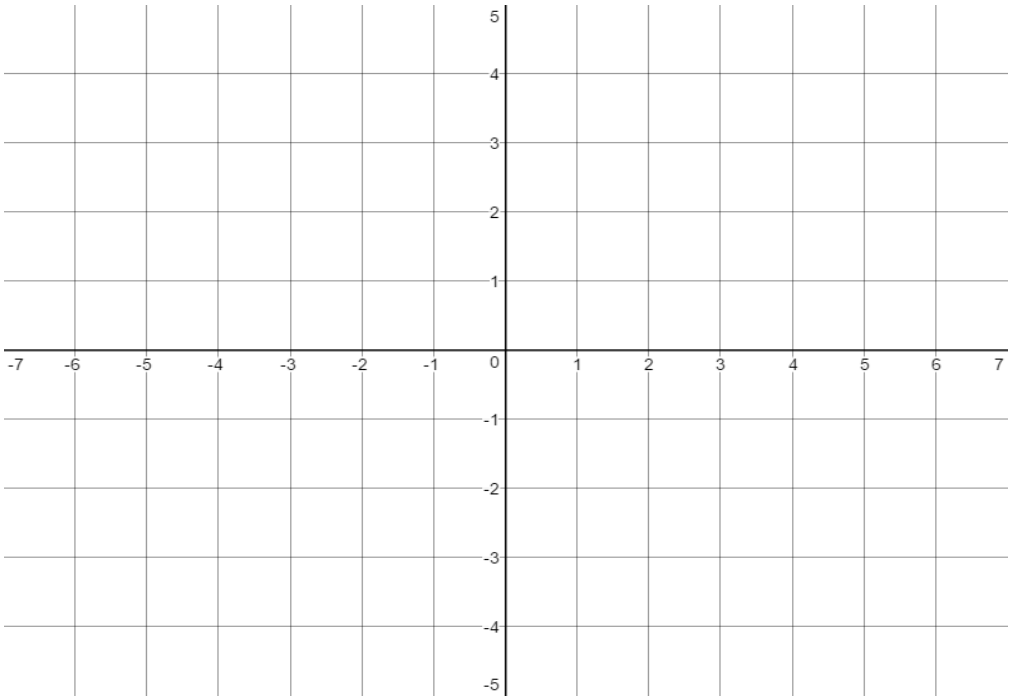


7. Write the equation of the line passing through (-5, 4) and (7, -2).(show all of your work)

8. Use substitution to complete this table and sketch the graph of the function:

$$f(x) - 3 = -|x - 2|$$

x	-3	-2	-1	0	1	2	3	4
f(x)								

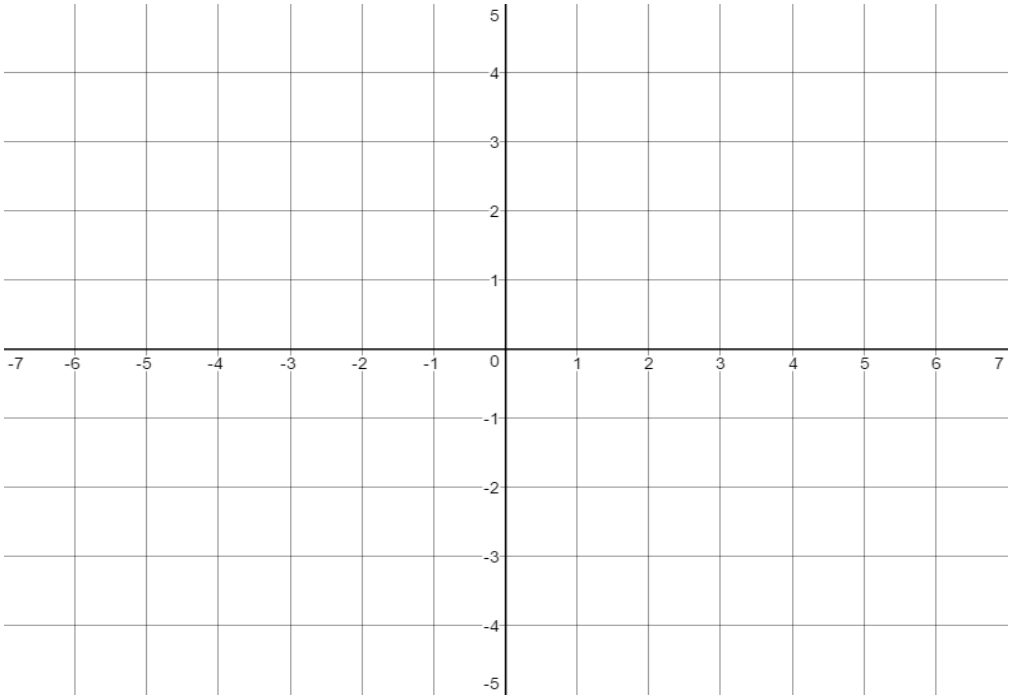


9. A heat exchanger is bought by a company for $180,000. It is considered to depreciate over 10 years to a scrap value of $10,000. Assuming **a linear model** for depreciation, write the equation of its value, V (in dollars), when *t* years have elapsed after the purchase. Then find the value of the exchanger after 3 years have passed.

$$y \le \frac{1}{5}x + \frac{12}{5}$$

10. Sketch the graph of system of linear inequalities. $y \ge -x$

$$y \ge 2x - 3$$



11. Show your work to solve this system of equations:

$$3x - 5y = 6$$

$$-6x + 15y = -18$$

12. Simplify: $\left(-3x^2\right)^4 \left(-\frac{1}{27x^3}\right)^2$

Part B (45 min.)

13. Use the quadratic formula to solve the equation. Give the exact answer in simplest form. Then give an approximate answer rounding your result to two decimal places.

$$x^2 + 2x - 5 = 0$$

14. Find the product in simplest form: a. $(3x - 5)(2x + 3)$

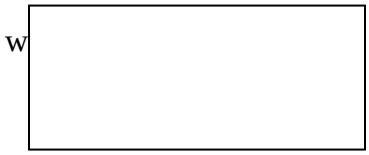
b. $(2x + 3)^2$

15. Factor the expression completely: $2x^2 - 16xy + 32y^2$

16. Solve this equation for ***a***: $s = \frac{1}{2}n(a + b)$

17. Solve the proportion for ***x***: $\frac{7}{x-3} = \frac{4}{x}$

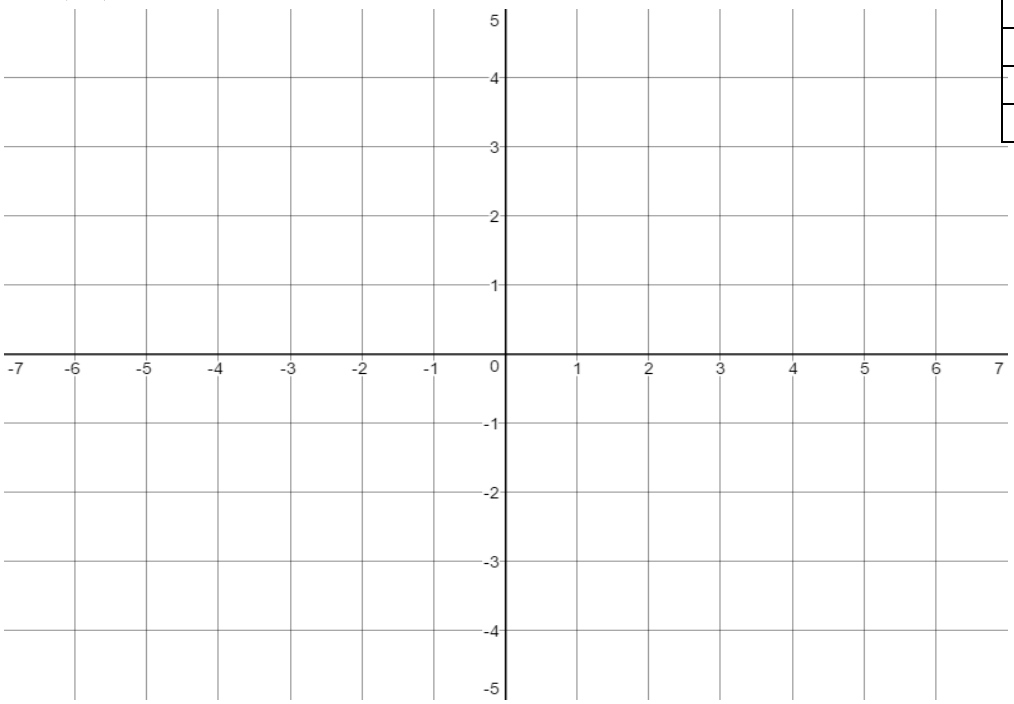
18. Model using the variable *w* for the width of a garden that has a length that is 25 feet longer than the width. If this rectangle has an area of 2600 ft^2, use your model to write an equation for the rectangle. Solve your sentence and give the dimensions of the rectangle.



19. Fill in the table and sketch the graph of the function.

$$f(x) = -x^2 + 2x + 3$$

x	f(x)
-2	
-1	
0	
1	
2	
3	
4	

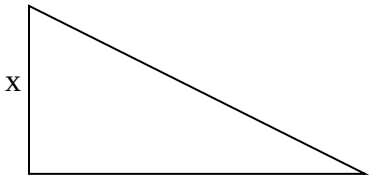


20. Simplify this radical expression: $4\sqrt{3} - 2\sqrt{27}$

21. At which points does the graph of $f(x) = 2x^2 + 6x + 4$ intersect the y axis?

22. If a sports league has *t* teams and each team plays all the other teams twice, the total number of games, *g*, is given by the function. $g = t^2 - t$ The summer softball league plays a total of 72 games, with all the teams playing each other twice. How many teams are in the league?

23. The longer leg of a right triangle is 3 inches longer than *x*, the length of the shorter leg. The hypotenuse is 15 inches long. Write an equation showing the relationship and then solve to find the length for the sides of the triangle.



24. A cylindrical can of popped corn has a volume of 6760π cubic centimeters . The height of the can is 40 centimeters. If $V = \pi r^2 h$, find the radius of the can.

25. The number of pieces of mail processed by a machine in the post office is directly proportional to the number of minutes that the machine runs. The machine processes 2700 pieces of mail in 60 minutes of continuous running. How many pieces would the machine process in 25 minutes of continuous running?

26. If the distance between two points on a coordinate plane can be found by: $d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$. Find the exact distance in simplest form for the linear function with coordinates f(1) = 5 and f(-3) = 9.

Teacher administering Test: Please sign and give your recommendation for Algebra 1 or Geometry. Thank you for your help in this important matter.

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Signature _____