Algebra 1 - CCSS
Assessment A (Open-ended)

Name _____

Date _____ Pd _____

ALGEBRA 1 MATH ASSESSMENT

Solve the problems below, and be sure to show all work.

1. Factor the expression below.

$$3x^2 + 25x + 8$$

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2. Find the inverse function of $f(x) = -\frac{1}{2}x + 4$.

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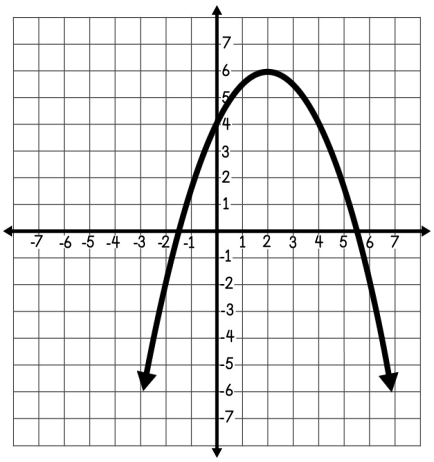
3. Determine if the table below shows y as a function of x. Explain.

x	-1.5	0	-1.5	-3	-6
y	7	12	17	22	27

4. The quadratic function f is shown below. Does the function have a maximum or minimum? Give the value.



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5. The two-way table shows the results of a survey where students were asked if their favorite subject was math or reading, and if they preferred to read books in print or on a digital device.

What percentage of the students surveyed chose math as their favorite subject and would rather read on a digital device?

	PRINT	DIGITAL	TOTAL
MATH	52	71	123
READING	80	47	127
TOTAL	132	118	250

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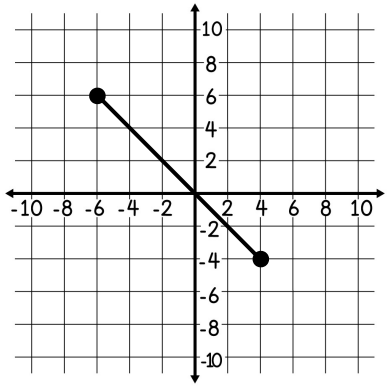
Solve the problems below, and be sure to show all work.

6. What is the domain of the function on the graph below?



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7. Premiere Paint Company has 15,000 gallons of paint in its warehouse. The amount of paint is decreasing at a rate of 15% each week. Write a function to represent the gallons of paint remaining after x number of weeks.

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8. The table represents points on the graph of a linear function. Write an equation in slope-intercept form to represent the relationship.

x	y
-6	-66
-4	-48
-2	-30
0	-12

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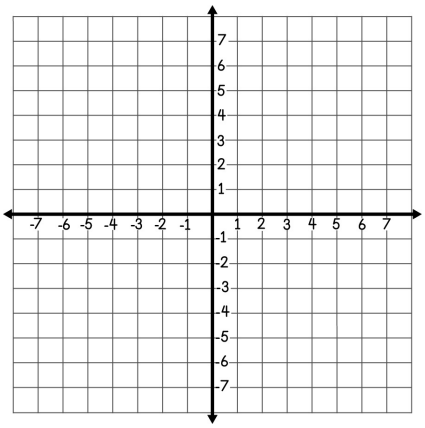
9. Solve the system of equations by graphing.

$2y + x = 6$

$y + 5 = \frac{1}{2}x$



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10. Solve the equation by factoring.

$$x^2 + 5x - 14 = 0$$

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11. The expression below simplifies to x^m. Find the value of m.

$$\frac{(x^2)^{-1} \cdot x^3 \cdot x^0}{x^{-18}}$$

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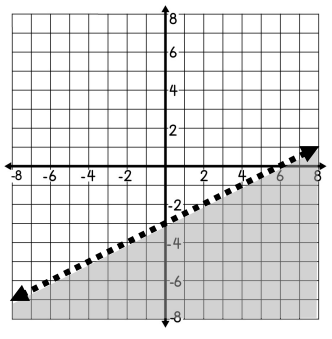
12. Write an inequality to represent the solution set shown on the graph.



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Solve the problems below, and be sure to show all work.

13. Glenda ordered four chairs and a table for her new apartment. The price of each chair, c, was \$25 less than $\frac{1}{5}$ the price of the table, t. If Glenda spent a total of \$800, find the price of each chair.

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14. Kevin created a graph of $y = 12(0.75)^x$. Find the y-intercept of the graph.

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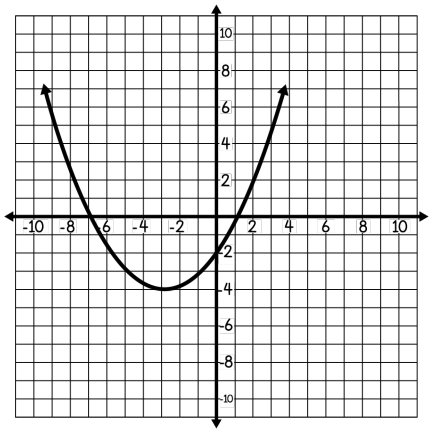
15. The graph shows the quadratic function b(x). For which values of x is b(x) decreasing?



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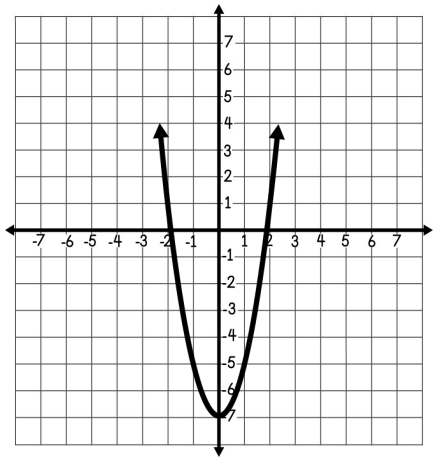
16. The graph of quadratic function g is shown on the grid. Find the domain of the function.



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17. Two students multiplied binomials as shown. Which student(s) multiplied correctly?

AMELIA

$(5x + 10)(3x - 4) = 15x^2 + 30x - 40$

MIRANDA

$(x - 12)(x + 3) = x^2 - 9x - 36$

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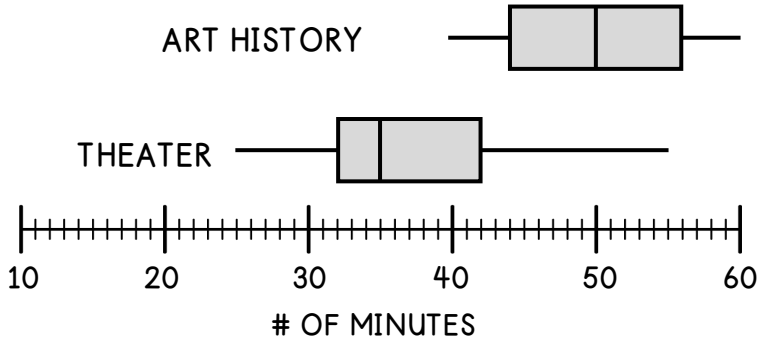
18. The box plots represent the amount of time it took students at Milner High School to complete two exams. Which box plot has greater variability in the time it took to complete the exam?



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Solve the problems below, and be sure to show all work.

19. Given the function $g(x) = -4(x^2 + 3) - 16$, find $g(6)$.

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20. Write an equation in slope-intercept form of the line that passes through the points (-6, 14) and (5, -41).

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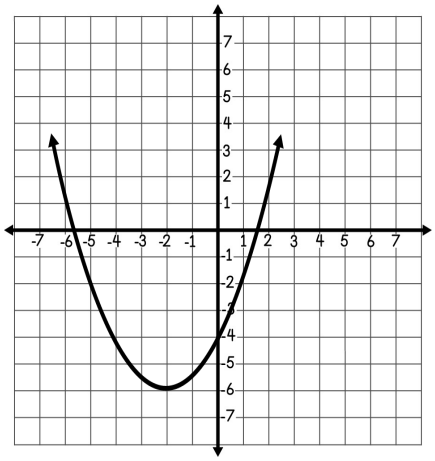
21. The graph of a quadratic function is shown below. Write an equation for the axis of symmetry.



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22. Find the solution set to the inequality below.

$$8(-w + 3) > 3(2 - 2w)$$

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23. Fitness Fanatics is an exercise company that hosted a live workout customers could stream from any device. The function $f(x) = 1{,}250(0.84)^x$ can be used to show the number of viewers x minutes since the livestream began. At what rate is the number of viewers increasing or decreasing each minute?

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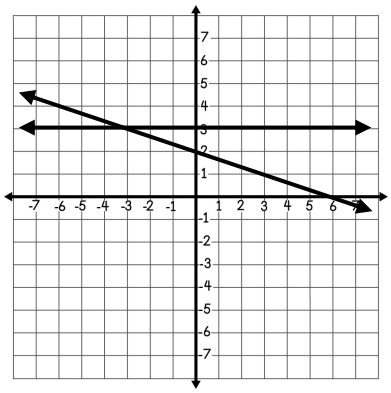
24. Write the system of equations represented on the graph.



25. Use the discriminant to determine the number of solutions to the equation below.

$$4x^2 + 12x + 9 = 0$$

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Solve the problems below, and be sure to show all work.

26. The height of a falling acorn can be represented by $y = -5t^2 + 45$, where t is the time in seconds and y is the height of the acorn in meters. Write and solve an equation to find the number of seconds it will take for the acorn to reach the ground.

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27. Three functions are represented in the tables shown below. Which table(s) represents a linear function?

f(x)

x	f(x)
12	8
15	10.5
24	18
27	20.5

j(x)

x	j(x)
-1	$-0.\overline{3}$
0	-1
1	-3
2	-9

k(x)

x	k(x)
-6	13
-5	9.5
-1	-4.5
0	-8

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28. Simplify the expression below.

$$3r^2 - (5r^2 + 4r + 1) + 12r$$

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29. Consuelo created a graph that passed through the points (-4, 25) and (2, 13). What was the slope of the graph?

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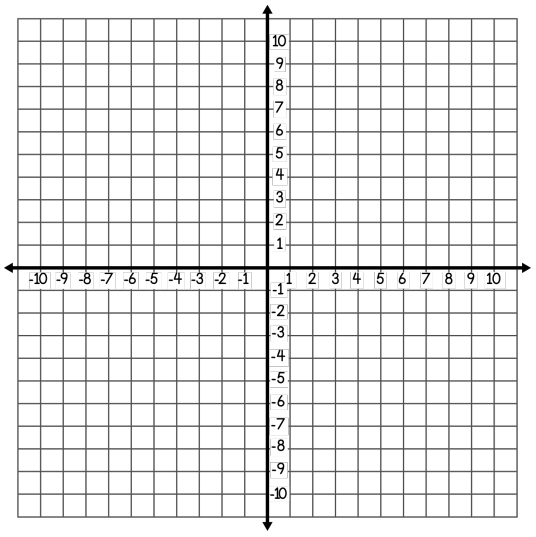
30. Jaxon is going to create a graph of the linear equation $3y - x = 12$. List the statement(s) that will be true about Jaxon's graph.

I. The y-intercept will be located at (0, 4).
II. The line passes through the point (3, 5).
III. The slope of the line is $\frac{1}{3}$.



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Solve the problems below, and be sure to show all work.

31. The numbers below represent a sequence. Write a formula to represent the sequence.

-3, 6, -12, 24,...

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32. Factor the expression $49x^2 - 225$.

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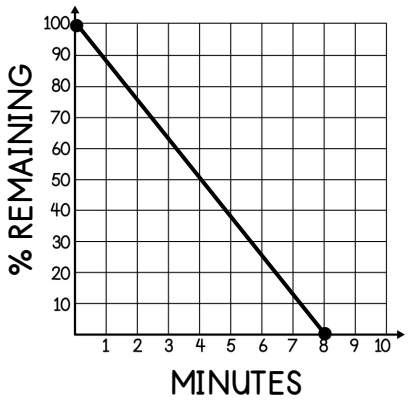
33. Amanda watched a cookie decorating video tutorial. The graph represents the percentage of the video remaining as a linear function of x, the number of minutes Amanda had been watching the video. What is the range of the function?



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34. Write the equation of the line that is parallel to $y = \frac{2}{3}x + 9$ and passes through the point (15, -2).

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35. Solve the equation.

$$-1.25(8m - 16) = 2(10 - 5m)$$

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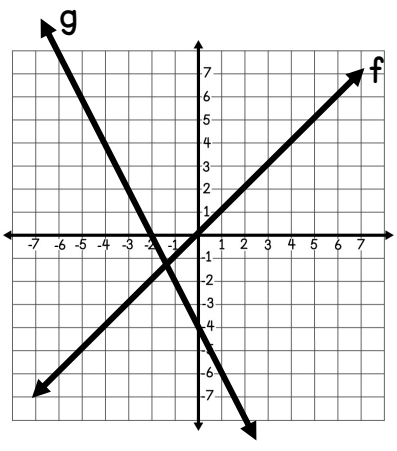
36. The graphs of linear functions f and g are shown. Given $f(x) = x$ and $g(x) = af(x + 2)$, find the value of a.



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37. Solve the system of equations.

$$x + y = 3$$

$$2x - 3y = 31$$

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Solve the problems below, and be sure to show all work.

38. Find the range of $f(x) = -2(x - 6)^2 + 32$.

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39. The table shows some of the points on the graph of an exponential function. Write a function to represent the relationship in the table.

x	y
-1	18
0	12
1	8
2	$5.\overline{3}$

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40. The parent function $f(x) = x^2$ was transformed to create the graph of m(x). If the vertex of m(x) is 6.5 units to the right of the vertex of f(x), write a function to represent m(x).

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ASSESSMENT A – OPEN-ENDED

ANSWER KEY

QUESTION #	STANDARD	ANSWER
1	A.SSE.2	$(3x + 1)(x + 8)$
2	F.BF.4A	$f^{-1}(x) = -2x + 8$
3	F.IF.1	No; the input of -1.5 has more than one output.
4	F.IF.4	Maximum; 6
5	S.ID.5	28.4%
6	F.IF.5	$-6 \leq x \leq 4$
7	F.BF.1	$f(x) = 15{,}000(0.85)^x$
8	A.CED.2	$y = 9x - 12$
9	A.REI.6	(8, -1)
10	A.SSE.3	$x = -7$ and $x = 2$
11	A.SSE.2	$m = 19$
12	A.REI.12	$y < \frac{1}{2}x - 3$
13	A.REI.6	$75
14	F.IF.8B	(0, 12)
15	F.IF.4	$x < -3$
16	F.IF.5	All real numbers
17	A.APR.1	Miranda
18	S.ID.2, S.ID.3	Theater
19	F.IF.2	$g(6) = -172$
20	F.LE.2	$y = -5x - 16$
21	F.IF.4	$x = -2$

QUESTION #	STANDARD	ANSWER
22	A.REI.3	$w < 9$
23	F.LE.5	Decreasing 16% each minute
24	A.CED.3	$y = 3$ and $y = -\frac{1}{3}x + 2$
25	A.REI.4	One solution
26	A.REI.4	3 seconds
27	F.LE.1	$f(x)$ and $k(x)$
28	A.SSE.2	$-2r^2 + 8r - 1$
29	F.LE.2	-2
30	F.IF.4	I, II and III
31	F.BF.2	$a_n = -3(-2)^{n-1}$
32	A.SSE.3	$(7x + 15)(7x - 15)$
33	F.IF.1	$0 \leq y \leq 100$
34	G.GPE.5	$y = \frac{2}{3}x - 12$
35	A.REI.3	All real numbers
36	F.BF.3	-2
37	A.REI.6	(8, -5)
38	F.IF.1	$y \leq 32$
39	F.LE.2	$f(x) = 12(\frac{2}{3})^x$
40	F.BF.3	$m(x) = f(x - 6.5)$