

Algebra 1 Unit 4 Common Assessment

Quadratic Functions

Answers and Directions Sheet

Teacher Directions:

- Print two test booklets:
 - a. Part I is made up of questions 1-12. A Data Director answer sheet will be used for this part. See the next two pages for directions on Data Director. Print a class set of assessments for #1-12 and do not allow students to write in this booklet. Make scrap paper available to students to work out any problems.
 - b. Part II is made up of questions 13-15. Data Director will not be used for this part. Print assessments so that each student has their own and have them record their answers and work in this booklet.
- Students may use a calculator on both parts of the assessment.
- Encourage students to carefully and thoroughly read the directions. Failure to do so may result in a loss of points on several problems, particularly items 13, 14, 15.
- The test has a total of 26 possible points.

Directions to Students:

- Do not write on Part I of the assessment. Record your answers on the provided answer sheet. Scrap paper is available for you to use. You may write on Part II of the assessment only.
- A calculator is available for both parts of this assessment.
- You will have the entire hour to complete the test.
- Please use your best test taking strategies when answering the questions

Printing Answer Documents with DataDirector

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- _____ Go to the Intranet

- _____ On the left-hand column under *"Interactive Tools"* click *"Data Director"*

- _____ Enter your User Name (first initial of first name followed by your last name) and Password if you forgot your password, select the link below the *"Login"* key

- _____ Select the paper and pencil icon titled *"Assessments"*. You will find it in the lower left hand corner of the screen.

- _____ Enter *"88621"* in the *"Search by Assessment ID"* Box. Make sure the year selected is 2012-2013.

- _____ Select the *"Shared Assessments"* folder

- _____ Select the file *"2012-2013, HLW, Algebra 1, Unit 4 Quadratic Functions"*

- _____ Scroll down to the bottom of the screen. Select the PDF file in the Downloadable Assessment Materials box titled *"with student names"*

- _____ In the first box titled *"Print answer sheets for individual or multiple classes"* select *"Continue to next step"*.

- _____ Choose your name, the correct semester, and the periods you are printing answer sheets for. To select multiple periods, hold down the CTRL key. **Do not select a grade** as it is possible you have students from multiple grades inside your class. To deselect a grade, hold down the CTRL key and select the grade. Click *"Generate Report"*.

- _____ Follow directions on page for printing.

Printing Reports with DataDirector

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- _____ Follow directions by your scanner to scan your bubble sheets.

- _____ Click on the Intranet

- _____ On the left-hand column under *"Interactive Tools"* click *"Data Director"*

- _____ Enter your User Name (first initial of first name followed by your last name) and Password (if you forgot your password, select the link below the *"Login"* key

- _____ Select the paper and pencil icon titled *"Assessments"*. You will find it in the lower left hand corner of the screen.

- _____ Enter *"88621"* in the *"Search by Assessment ID Box."* Make sure the year selected is 2012-2013.

- _____ Select the *"Shared Assessments"* folder

- _____ Select the file *"2012-2013, HLW, Algebra 1, Unit 4 Quadratic Functions"*

- _____ Select *"Classroom Assessment Report."* You will find it on the far right side of the screen under *"Reports related to this assessment."*

- _____ Click the PDF Icon to open the file

- _____ Print

Abbreviations: see page 27 of the [hyperlinked document](#) for a detailed explanation of the following codes

SR – Selected Response
 ER – Extended Response
 CR- Constructed Response

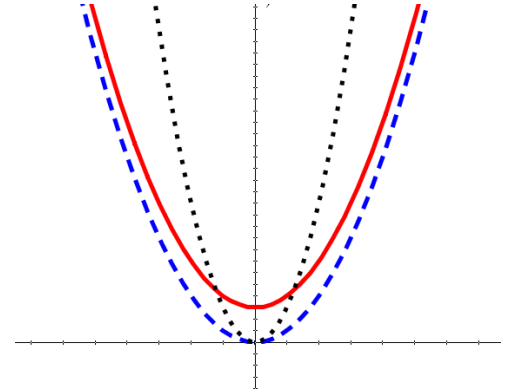
Part I				
Item No.	Item Type	Points	Answer	Standard
1	SR	1	c	F-BF.3
2	SR	1	a	F-BF.3
3	SR	1	b	F-BF.3
4	SR	1	a	F-BF.3
5	SR	1	d	A-REI.4b
6	SR	1	c	A-REI.4b
7	SR	1	c	F-IF.9
8	SR	1	c	A-SSE.2 A-SSE.3a
9	SR	1	b	A-SSE.2 A-SSE.3a
10	SR	1	d	A-SSE.2 A-SSE.3a
11	SR	1	d	A-REI.7
12	SR	1	c	A-REI.7
		12 Total Points		




Part II				
Item No.	Item Type	Points	Answer	Standard
13	CR	4	<p>Part a is worth 2 points; $f(x) = (x + 1)(x - 3)$. It is not necessary for students to use $f(x)$. If student only lists the zeros (i.e., $x=-1$ and $x=3$), then provide 1 point.</p> <p>Part b is worth 2 points; $f(x) = (x - 1)^2 - 4$. It is not necessary for students to use $f(x)$. Students may obtain this function in several ways; completing the square, observing the graph, or using $x = -\frac{b}{2a}$. If student only provides the vertex, then provide 1 point.</p>	F-IF.8a A-REI.4a A-CED.4
14	CR	4	<p>Part a is worth 2 points; Equation has axis of symmetry at $x=3$. Evidence may vary. Provide 1 point if student correctly chooses the equation but provides evidence with minor errors in reasoning.</p> <p>Part b is worth 2 points; Equation has no zeros. Evidence may vary. Provide 1 point if student correctly chooses the equation but provides evidence with minor errors in reasoning.</p>	F-IF.9 A-SSE.1a A-CED.1
15	CR	10	<p>Graph is worth 5 points; to earn 5 points students to label the axes, scale the axes, and accurately label points and accurately sketch the graph (i.e., is the graph a parabola).</p> <p>Part a is worth 2 points: $0 \leq t \leq 5.46$ and $0 \leq h(t) \leq 192$. Award full credit if students are providing a domain and range similar to that provided above. Students may use any notation for domain and range.</p> <p>Part b is worth 1 point: y-intercept represents launching point; dorm room window</p> <p>Part c is worth 1 point; x-intercept represents the point the balloon hits the ground</p> <p>Part d is worth 1 point; maximum height is 192 feet</p>	F-IF.4 F-IF.5 F-IF.7a A-REI.10 A-SSE.1a
		14 Total Points		

Unit 4 Common Assessment – Quadratic Functions

Part I Directions: Read directions carefully. Do not write on part I of this assessment. Calculators are permitted. **All multiple choice questions are worth 1 point each.**

The three graphs to the right show the functions $y = x^2$, $y = x^2 + 3$, and $y = 3x^2$. **FOR NUMBERS 1-3, MATCH THE EQUATION WITH THE GRAPH IT REPRESENTS**



1. $y = x^2$ a. 
 2. $y = x^2 + 3$ b. 
 3. $y = 3x^2$ c. 
4. When the function $f(x) = x^2$ has been changed to $g(x) = (x - 4)^2$, what transformation has occurred?
 - a. The vertex of the graph will shift to the right four units
 - b. The vertex of the graph will shift to the left four units
 - c. The vertex of the graph will shift up four units
 - d. The vertex of the graph will shift down four units
 5. Solve $4x^2 - 10x + 6 = 0$
 - a. $x = -\frac{1}{2}$ or $x = 3$
 - b. $x = \frac{3}{2}$ or $x = -1$
 - c. $x = \frac{3}{4}$ or $x = 2$
 - d. $x = \frac{3}{2}$ or $x = 1$
 6. Solve $x^2 - 81 = 0$
 - a. $-\sqrt{9}, \sqrt{9}$
 - b. $-81, 81$
 - c. $-9, 9$
 - d. No real solutions
 7. Which function has x-intercepts of -3 and 1 ?
 - a. $h(x) = (x - 1)(x - 3)$
 - b. $h(x) = (x + 1)(x + 3)$
 - c. $h(x) = (x - 1)(x + 3)$
 - d. $h(x) = (x + 1)(x - 3)$

8. What is the **complete** factored form of $p^2 + 14p + 48$?

- a. $(p + 16)(p + 3)$
- b. $(p + 12)(p + 4)$
- c. $(p + 8)(p + 6)$
- d. $(p - 6)(p - 8)$

9. What is the complete factored form of $9q^2 + 12q + 4$?

- a. $(3q + 4)(3q + 1)$
- b. $(3q + 2)(3q + 2)$
- c. $(9q + 4)(1q + 1)$
- d. $(9q + 2)(1q + 2)$

10. What is the complete factored form of $2h^2 - 2$?

- a. $(h - 1)(h + 1)$
- b. $2(h^2 - 1)$
- c. $2(h - 1)(h - 1)$
- d. $2(h - 1)(h + 1)$

11. Which ordered pair is a solution to the system of equations shown below?

$$y = -2x + 4$$
$$y = 3x^2 - 5x - 2$$

- a. $(-\frac{1}{3}, 0)$
- b. $(0, 4)$
- c. $(0, -2)$
- d. $(2, 0)$

12. What are all the possible solutions to the system of equations shown below?

$$y = -x^2 + 5$$
$$y = -3x + 5$$

- a. $(0, 5)$
- b. $(-3, 4)$
- c. $(0, 5), (3 - 4)$
- d. $(0, 5) (-3, -4)$

Unit 4 Common Assessment – Quadratic Functions

Part II Directions: Read directions carefully. You may write on part II of this assessment. Calculators are permitted.

13. **4 POINTS:** Using the function $f(x) = x^2 - 2x - 3$
- Rewrite the function f in a way that shows the zeros of the function.

 - Rewrite the function f in a way that shows the vertex of the function.

14. **4 POINTS:** The table and the equation below **DESCRIBE TWO DIFFERENT** quadratic functions. Answer the questions that follow:

x	$h(x)$
-2	-6
-1	-1
0	2
1	3
2	2
3	-1

$$f(x) = (x - 3)^2 + 6$$

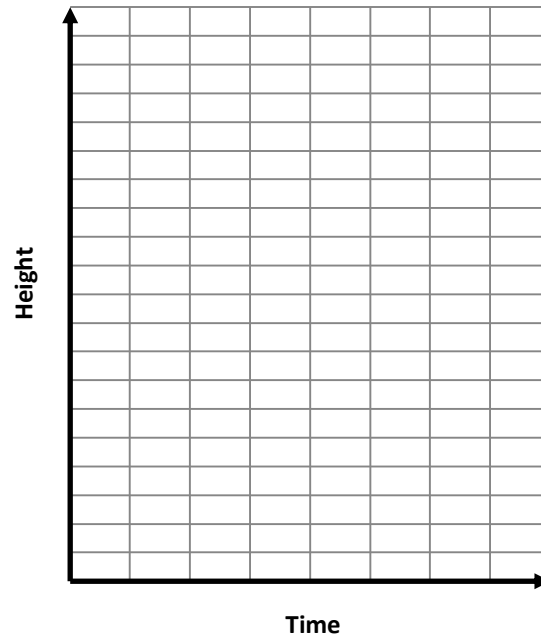
- Which representation, the table or the equation, describes a quadratic function with an axis of symmetry at $x = 3$? **PROVIDE EVIDENCE TO SUPPORT YOUR CLAIM.**

- Which representation, the table or the equation, describes a quadratic function with no zeros? **PROVIDE EVIDENCE TO SUPPORT YOUR CLAIM.**

15. **10 POINTS:** A water balloon is launched from a dorm room window. The height, in feet, after t seconds is given by the equation $h(t) = -16t^2 + 64t + 128$.

Complete a table and create a graph of the situation. ***IN ORDER TO EARN FULL CREDIT, YOU MUST LABEL YOUR AXIS AND INCLUDE A SCALE.***

t	$h(t)$
0	
1	
2	
3	
4	
5	
6	
7	



- What is the domain and range of this situation?
- What does the y-intercept represent in the context of this problem?
- What does the x-intercept represent in the context of this problem?
- What is the maximum height of the balloon?