ACTAAP

Arkansas Comprehensive Testing, Assessment, and Accountability Program

Teacher Handbook

Algebra I
End-of-Course Examinations

2011–2012 Administrations

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Arkansas Department of Education

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Introduction

The **Arkansas Comprehensive Testing, Assessment, and Accountability Program (ACTAAP)** includes Mid-Year and Spring Algebra End-of-Course Examinations for students completing Algebra I or the equivalent for high school graduation credit. In addition to the Mid-Year and Spring administrations, a Fall Algebra I End-of-Course Examination and Fall and Spring administrations of the Online Alternative Test for Algebra I were offered for students who were retesting in Algebra I. The examinations consist of questions that directly assess student knowledge. The fall, mid-year, and spring examinations consist of both multiple-choice and open-response questions while the online examinations consist of only multiple-choice questions. The *Arkansas Algebra I Mathematics Curriculum Framework* is the basis for the development of the Algebra I End-of-Course Examinations.

In January or May 2012, all students who had completed or were completing the required course work for Algebra I for high school graduation credit participated in the Mid-Year or Spring Algebra I End-of-Course Examination. Students retesting in Algebra I were also provided the opportunity to test with the Fall, Mid-Year, and/or Spring Algebra I End-of-Course Examination and/or the Online Alternative Test for Algebra I. Results of the Algebra I End-of-Course Examination will be provided to all students, schools, and districts to be used as the basis for instructional change.

This handbook provides information regarding the scoring of student responses to the Algebra I open-response items. It describes the scoring procedures and the scoring criteria (rubrics) used to assess student responses. Copies of actual student responses are provided, along with scores given to those responses, to illustrate how the scoring criteria were applied to Algebra I open-response items.

Additional information about the Algebra I End-of-Course Examination is available through the Arkansas Department of Education. Questions can be addressed to the Office of Student Assessment at 501-682-4558.

Scoring Student Responses to Open-Response Items

The multiple-choice and open-response test items for the Algebra I End-of-Course Examination are developed with the assistance and approval of the Algebra I Content Advisory Committee. This committee is comprised of active Arkansas educators with expertise in Mathematics education. The Algebra I Content Advisory Committee develops and reviews multiple-choice and open-response items to ensure that they reflect the *Arkansas Algebra I Mathematics Curriculum Framework*.

While multiple-choice items are scored by machine to determine if the student chose the correct answer from four options, open-response items must be scored by trained "readers" using a pre-established set of scoring criteria.

Reader Training

Readers are trained to score only one content area. Qualified readers for the Arkansas scoring will be those with a four-year college degree in English, language arts, education, mathematics, science, or related fields.

Before readers are allowed to begin assigning scores to any student responses, they go through intensive training. The first step in that training is for the readers to read the Algebra I open-response items as they appear in the test booklet and to respond—just as the student test takers are required to do. This step gives the readers some insight into how the students might have responded. The next step is the readers' introduction to the scoring rubric. All of the specific requirements of the rubric are explained by the Scoring Director who has been specifically trained to lead the scoring group. Then responses (anchor papers) that illustrate the score points of the rubric are presented to the readers and discussed. The goal of this discussion is for the readers to understand why a particular response (or type of response) receives a particular score. After discussion of the rubric and anchor papers, readers practice scoring sets of responses that have been pre-scored and selected for use as training papers. Detailed discussion of the responses and the scores they receive follows.

After three or four of these practice sets, readers are given "qualifying rounds." These are additional sets of pre-scored papers, and, in order to qualify, each reader must score in exact agreement on at least 80% of the responses and have no more than 5% non-adjacent agreement on the responses. Readers who do not score within the required rate of agreement are not allowed to score the Algebra I End-of-Course Examination responses.

Once scoring of the actual student responses begins, readers are monitored constantly throughout the project to ensure that they are scoring according to the criteria. Daily and cumulative statistics are posted and analyzed, and Scoring Directors or Team Leaders reread selected responses scored by the readers. These procedures promote reliable and consistent scoring. Any reader who does not maintain an acceptable level of agreement is dismissed from the project.

Scoring Procedures

All student responses to the Algebra I End-of-Course Examination open-response test items are scored independently by two readers. Those two scores are compared, and responses that receive scores that are non-adjacent (a "1" and a "3," for example) are scored a third time by a Team Leader or the Scoring Director for resolution.

On the following pages, open-response items are presented as they appeared in the *2012 Mid-Year* and *Spring Algebra I End-of-Course Examinations*. The specific scoring rubric for each item and annotated responses for each score point of the rubric follows. The goal is for classroom teachers and their students to understand how responses are scored. It is hoped that this understanding will help students see what kind of performance is expected of them on the Algebra I End-of-Course Examination.

ALGEBRA I RESPONSES

A. Roger has a lawn care business and charges a flat fee of $20 dollars plus x dollars per hour to mow yards. It takes Roger 3 hours to mow one yard, 2 hours to mow a second yard, 1 hour to mow a third yard, and 4 hours to mow a fourth yard.

1. Write four different expressions, each expression representing Roger's charge for one of the yards.

2. Using the four different expressions from Part 1, write an expression that represents the sum of the charges for the four different yards. Show your work.

3. If Roger earns $175 mowing the four yards, how much does he charge per hour?

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

Item A Scoring Rubric—2012 Algebra I

Score	Description
4	The student earns 4 points. The response contains no incorrect work. Label of "$" is given with answer in Part 3
3	The student earns 3 – 3½ points.
2	The student earns 2 – 2½ points.
1	The student earns ½ – 1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank — No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

SOLUTION AND SCORING

4 points possible:

Part	Points
1	**2 points possible:** 2 points: 4 Correct expressions: $20+3x$ for 1st yard $20+2x$ for 2nd yard $20+x$ for 3rd yard $20+4x$ for 4th yard **OR** 1 point: 3 Correct expressions or 4 Correct equations or The correct expression for 1 specific yard written correctly 4 different ways
2	**1 point possible:** ½ point: Correct answer: $80+10x$ *or correct answer based on all 4 expressions or equations in Part 1* *Note: Do not give credit for an equation, if expressions are used in Part 1* **AND** ½ point: Correct procedure is shown and/or explained Give credit for the following or equivalent: Work may contain one calculation or copy error ● $20+3x+20+2x+20+x+20+4x=80+10x$
3	**1 point possible:** 1 point: Correct answer: ($) 9.50 *or correct answer based on an incorrect expression or equation in Part 2 truncated or rounded to the cent.*

SCORE POINT: 4

Part 1		**Points**
4 Correct expressions:	"1st yard - $\$20 + 3x$ 2nd yard - $\$20 + 2x$ 3rd yard - $\$20 + 1x$ 4th yard - $\$20 + 4x$ "	2

Part 2		**Points**
Correct answer:	$\$80 + 10x$	½
Correct procedure:	Finds the sum of Part 1 expressions	½

Part 3		**Points**
Correct answer:	$9.50	1
	Total Points	4

1.
1st yard - $20 + 3x
2nd yard - $20 + 2x
3rd yard - $20 + 1x
4th yard - $20 + 4x

2.
$20 + 3x - 1st lawn
$20 + 2x - 2nd lawn
$20 + 1x - 3rd lawn
+ $20 + 4x - 4th lawn
$80 + 10x ← Sum of all the expressions.

* Expressions don't have equal signs.

3. $80 + 10x = $175
-80 -80
10x = $95
10 10
x = $9.50

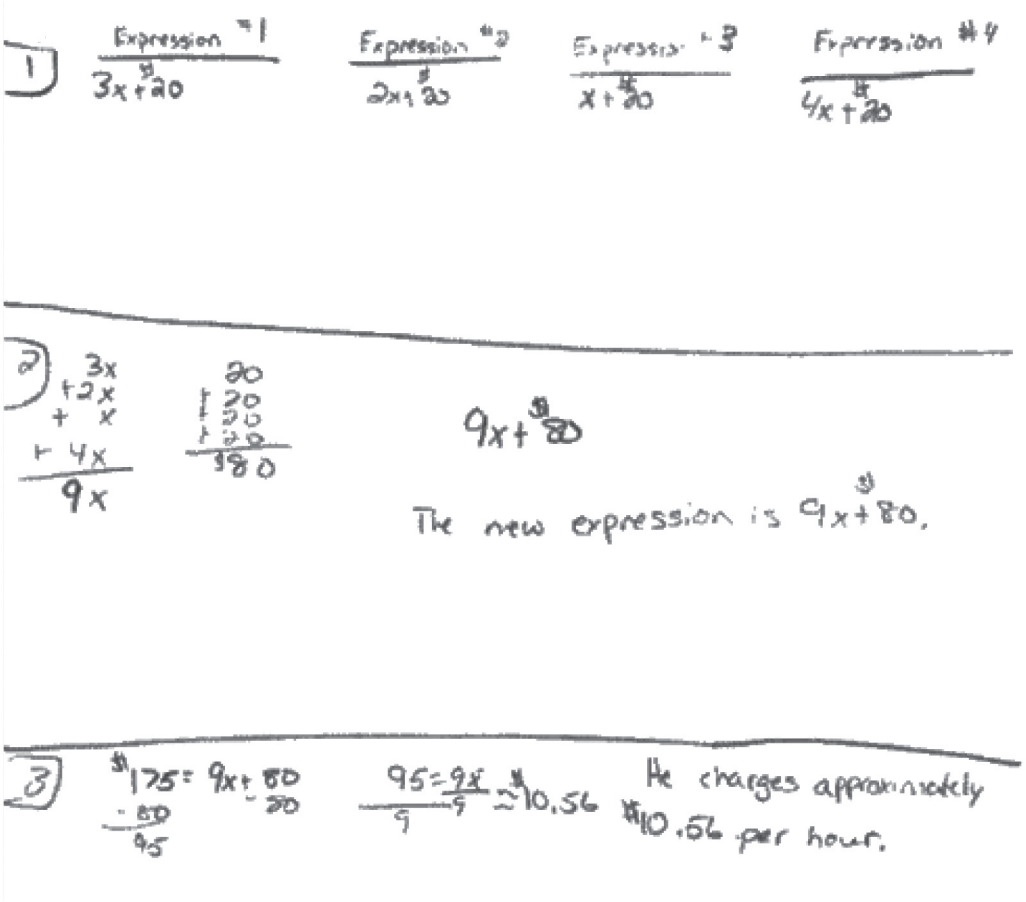
He charges $9.50 per hour.

SCORE POINT: 3

Part 1		**Points**
4 Correct expressions:	"Expression #1 $3x + \$20$" , etc…	2

Part 2		**Points**
Incorrect answer:	$9x + \$80$	-
Correct procedure, with 1 calculation error:	$3x + 2x + x + 4x = 9x$ (*calc. error*) $20 + 20 + 20 + 20 = 80$	½

Part 3		**Points**
Correct answer, based on Part 2 expression:	\$10.56	1
	Total Points	3½



SCORE POINT: 2

Part 1		**Points**
4 Correct expressions:	Expressions are not identified, but are in correct order from top to bottom	2

Part 2		**Points**
Incorrect answer:	$8x+80$	-
Correct procedure, with 1 calculation error:	$3x+20$ $+2x+20$ $+1x+20$ $+4x+20$ $8x+20$ (*calc.*)	½

Part 3		**Points**
Incorrect answer:	$11.90	-
	Total Points	2½

① $3x+20$
$2x+20$
$1x+20$
$4x+20$

② $3x+20$
$+2x+20$
$1x+20$
$+4x+20$
$8x+80$

③ 175
− 80
11.90
× 8
95
+80
$175

Roger Charges $11.90 an hour.

SCORE POINT: 1

Part 1		**Points**
4 Incorrect expressions:	"$20 + hx$", etc…	-

Part 2		**Points**
Incorrect answers:	"1st yard - $20 + 3x$", etc…	-
Missing procedure:		-

Part 3		**Points**
Correct answer:	\$9.50	1
	Total Points	1

1. $20+hx$
$20+h\cdot x$
$(h\cdot x)+20$
$20+x(h)$

2. 1st yard - $20+3x$
2nd yard - $20+2\cdot x$
3rd yard - $(1\cdot x)+20$
4th yard - $20+x(4)$

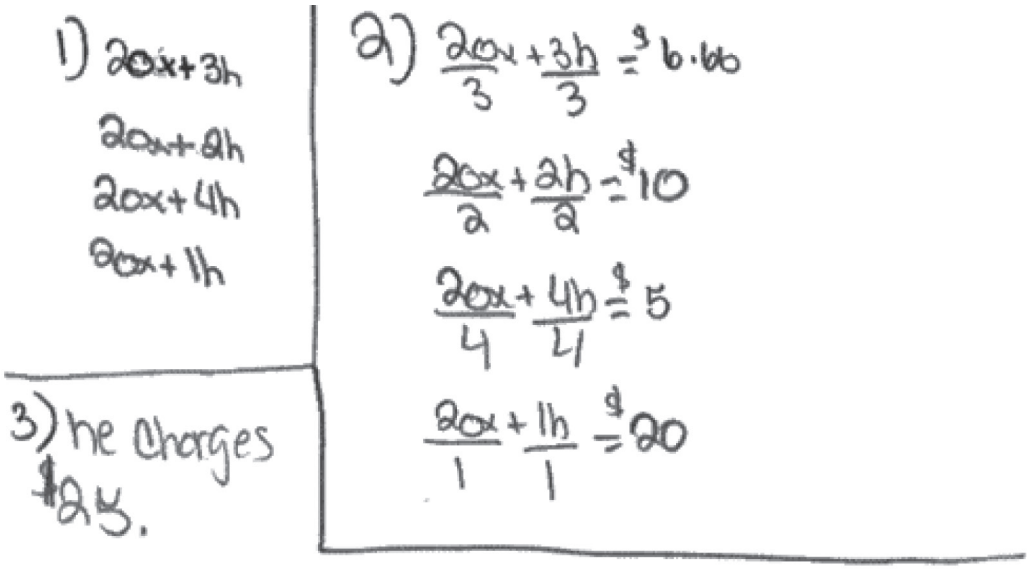
3.
$175=(20+3x)+(20+2\cdot x)+((1\cdot x)+20)+(20+x(4))$
$175=\underset{\text{fee}}{80}+\underset{\text{hours}}{10x}$
$175-80=10x$
$95=10x$
$\frac{95}{10}=x$
$\boxed{9.5=x}$
he charges \$9.50/hour

SCORE POINT: 0

Part 1		**Points**
4 Incorrect expressions:	"$20x + 3h$", etc…	-

Part 2		**Points**
Incorrect answers:	"$\frac{20x}{3} + \frac{3h}{3} = \$6.66$", etc…	-
Incorrect procedure:	Divides by coefficient of h	-

Part 3		**Points**
Incorrect answer:	$25	-
	Total Points	0



B. The nutrition facts for three different brands of chocolate cookies are listed below.

Nutrition Facts Serving Size 2 cookies	
Amount Per Serving	
Calories	130
Calories from Fat	50
Total Fat	6 g
Sodium	80 mg

Cookie #1

Nutrition Facts Serving Size 2 cookies	
Amount Per Serving	
Calories	130
Calories from Fat	40
Total Fat	4.5 g
Sodium	80 mg

Cookie #2

Nutrition Facts Serving Size 2 cookies	
Amount Per Serving	
Calories	160
Calories from Fat	63
Total Fat	7 g
Sodium	190 mg

Cookie #3

A marketing company wants to create a matrix that will compare the calories, calories from fat, total fat, and the sodium per serving for the three brands of cookies.

1. Construct one matrix that includes the data from all three nutrition tables. Be sure to include all labels.

2. The marketing company decides to compare Cookie #2 with Cookie #3. The company wants a matrix that shows the differences in calories, calories from fat, total fat, and the sodium per serving. Construct a matrix that displays these data. Be sure to include all labels.

3. The marketing company decides to also compare Cookie #2 with Cookie #3 for the differences in calories, calories from fat, total fat, and the sodium per cookie. Construct a matrix that displays these data. Be sure to include all labels.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

Item B Scoring Rubric—2012 Algebra I

Score	Description
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 – 3½ points.
2	The student earns 2 – 2½ points.
1	The student earns ½ – 1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank — No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

SOLUTION AND SCORING

4 points possible:

<table>
<tr><th>Part</th><th>Points</th></tr>
<tr><td>1</td><td>

2 points possible:

2 points: Correct and complete matrix:

$$\begin{array}{l|ccc|} & \textbf{\#1} & \textbf{\#2} & \textbf{\#3} \\ \textbf{Calories} & 130 & 130 & 160 \\ \textbf{Calories from Fat} & 50 & 40 & 63 \\ \textbf{Total Fat} & 6 & 4.5 & 7 \\ \textbf{Sodium} & 80 & 80 & 190 \end{array}$$

or

$$\begin{array}{c|cccc|} & \textbf{Calories} & \textbf{Cal. from Fat} & \textbf{Total Fat} & \textbf{Sodium} \\ \textbf{\#1} & 130 & 50 & 6 & 80 \\ \textbf{\#2} & 130 & 40 & 4.5 & 80 \\ \textbf{\#3} & 160 & 63 & 7 & 190 \end{array}$$

OR

1 point: Matrix contains 1 copy error but is otherwise correct

or

1 or more labels are missing, but matrix is otherwise correct

</td></tr>
<tr><td>2</td><td>

1 point possible:

1 point: Correct and complete matrix:

$$\begin{array}{l|c|} & \textbf{Diff. per Serving} \\ \textbf{Calories} & 30 \\ \textbf{Cal. From Fat} & 23 \\ \textbf{Total Fat} & 2.5 \\ \textbf{Sodium} & 110 \end{array}$$

or

$$\begin{array}{c|cccc|} & \textbf{Calories} & \textbf{Cal. from Fat} & \textbf{Total Fat} & \textbf{Sodium} \\ \textbf{Diff. per Serving} & 30 & 23 & 2.5 & 110 \end{array}$$

or

$$\begin{array}{l|cc|} & \textbf{Diff. per Serving} & \\ & \textbf{\#2} & \textbf{\#3} \\ \textbf{Calories} & 130 & 160 \\ \textbf{Cal. from Fat} & 40 & 63 \\ \textbf{Total Fat} & 4.5 & 7 \\ \textbf{Sodium} & 80 & 190 \end{array}$$

</td></tr>
</table>

Part	Points
	or **Diff. per Serving** **Calories** / **Cal. from Fat** / **Total Fat** / **Sodium** **#2** 130 40 4.5 80 **#3** 160 63 7 190 **OR** ½ point: 1 or more labels are missing, but matrix is otherwise correct or 1 element in matrix is incorrect but labels are correct
3	**1 point possible:** 1 point: Correct and complete matrix: *or correct matrix based on matrix given in Part 2* **Diff. per Cookie** **Calories** 15 **Cal. From Fat** 11.5 **Total Fat** 1.25 **Sodium** 55 or **Calories** / **Cal. From Fat** / **Total Fat** / **Sodium** **Diff. per Cookie** 15 11.5 1.25 55 or **Diff. per Cookie** **#2** / **#3** **Calories** 65 80 **Cal. from Fat** 20 31.5 **Total Fat** 2.25 3.5 **Sodium** 40 95 or **Diff. per Cookie** **Calories** / **Cal. from Fat** / **Total Fat** / **Sodium** **#2** 65 20 2.25 40 **#3** 80 31.5 3.5 95 **OR** ½ point: 1 or more labels are missing, but matrix is otherwise correct or 1 element in matrix is incorrect but labels are correct

SCORE POINT: 4

Part 1		**Points**
Correct answer:	Correct matrix appropriately labeled	2

Part 2		**Points**
Correct answer:	Correct matrix appropriately labeled Finds difference in nutrition facts per serving for cookies 2 and 3	1

Part 3		**Points**
Correct answer:	Correct matrix appropriately labeled Finds difference in nutrition facts per cookie for cookies 2 and 3	1
	Total Points	4

1.

$$\begin{array}{r} \\ \text{Calories} \\ \text{Cal from fat} \\ \text{Total fat} \\ \text{Sodium} \end{array} \begin{array}{c} \text{Cookie } \#1 \ \#2 \ \#3 \\ \begin{bmatrix} 130 & 130 & 160 \\ 50 & 40 & 63 \\ 6 & 4.5 & 7 \\ 80 & 80 & 190 \end{bmatrix} \end{array}$$

2.

$$\begin{array}{r} \\ \text{Calorie} \\ \text{Cal Fat} \\ \text{Total fat} \\ \text{sodium} \end{array} \begin{array}{c} \#3 \quad \#2 \\ \begin{bmatrix} 160 - 130 \\ 63 - 40 \\ 7 - 4.5 \\ 190 - 80 \end{bmatrix} \end{array} = \begin{array}{r} \\ C \\ CF \\ TF \\ S \end{array} \begin{array}{c} \text{Total Dif. per serv.} \\ \begin{bmatrix} 30 \\ 23 \\ 2.5 \\ 110 \end{bmatrix} \end{array}$$

3.

$$\begin{array}{r} \\ C \\ CF \\ TF \\ S \end{array} \begin{array}{c} \#3 \quad \#2 \\ \begin{bmatrix} 80 - 65 \\ 31.5 - 20 \\ 3.5 - 2.25 \\ 95 - 40 \end{bmatrix} \end{array} = \begin{array}{r} \\ C \\ CF \\ TF \\ S \end{array} \begin{array}{c} \text{Total Dif per Cookie} \\ \begin{bmatrix} 15 \\ 11.5 \\ 1.25 \\ 55 \end{bmatrix} \end{array}$$

SCORE POINT: 3

Part 1		**Points**
Correct answer:	Correct matrix appropriately labeled	2

Part 2		**Points**
Incorrect answer:	Incorrect matrix Per serving difference for cookies 1 and 2 are used	-

Part 3		**Points**
Correct answer:	Correct matrix appropriately labeled Finds difference in nutrition facts per cookie for cookies 2 and 3	1
	Total Points	3

1.

$$\begin{array}{r} \\ \text{calories} \\ \text{calories from fat} \\ \text{Total fat} \\ \text{sod. iron} \end{array} \begin{array}{c} \begin{array}{ccc} \text{cookie Brand 1} & \text{cookie Brand 2} & \text{cookie Brand 3} \end{array} \\ \begin{bmatrix} 130 & 130 & 160 \\ 50 & 40 & 63 \\ 6 & 4.5 & 7 \\ 80 & 80 & 190 \end{bmatrix} \end{array}$$

2.

$$\begin{array}{r} \\ C \\ CFF \\ TF \\ S \end{array} \begin{array}{c} \#1 \\ \begin{bmatrix} 130 \\ 50 \\ 6 \\ 80 \end{bmatrix} \end{array} - \begin{array}{r} \\ C \\ CFF \\ TF \\ S \end{array} \begin{array}{c} \#2 \\ \begin{bmatrix} 130 \\ 40 \\ 4.5 \\ 80 \end{bmatrix} \end{array} = \begin{array}{r} \\ C \\ CFF \\ TF \\ S \end{array} \begin{array}{c} \text{difference} \\ \begin{bmatrix} 0 \\ 10 \\ 1.5 \\ 0 \end{bmatrix} \end{array}$$

3.

$$\begin{array}{r} \\ C \\ CFF \\ TF \\ S \end{array} \begin{array}{c} \#3 \\ \begin{bmatrix} 80 \\ 31.5 \\ 3.5 \\ 95 \end{bmatrix} \end{array} - \begin{array}{r} \\ C \\ CFF \\ TF \\ S \end{array} \begin{array}{c} \#2 \\ \begin{bmatrix} 65 \\ 20 \\ 2.25 \\ 40 \end{bmatrix} \end{array} = \begin{array}{r} \\ C \\ CFF \\ TF \\ S \end{array} \begin{array}{c} \text{difference} \\ \begin{bmatrix} 15 \\ 11.5 \\ 1.25 \\ 55 \end{bmatrix} \end{array}$$

SCORE POINT: 2

Part 1		**Points**
Correct answer:	Correct matrix appropriately labeled	2

Part 2		**Points**
Partially correct answer:	Partially correct matrix All elements are correct. “Difference” label is missing	½

Part 3		**Points**
Incorrect answer:	Incorrect matrix Difference in per serving for cookies 1 and 2 is given	-
	Total Points	2½

1)

	cal.	cal. from f	tot. f(g)	sod. (mg)
C1	130	50	6	80
C2	130	40	4.5	50
C3	160	63	7	190

2)

cal	cal from f.	tot. f	sod.
30	23	2.5	110

3)

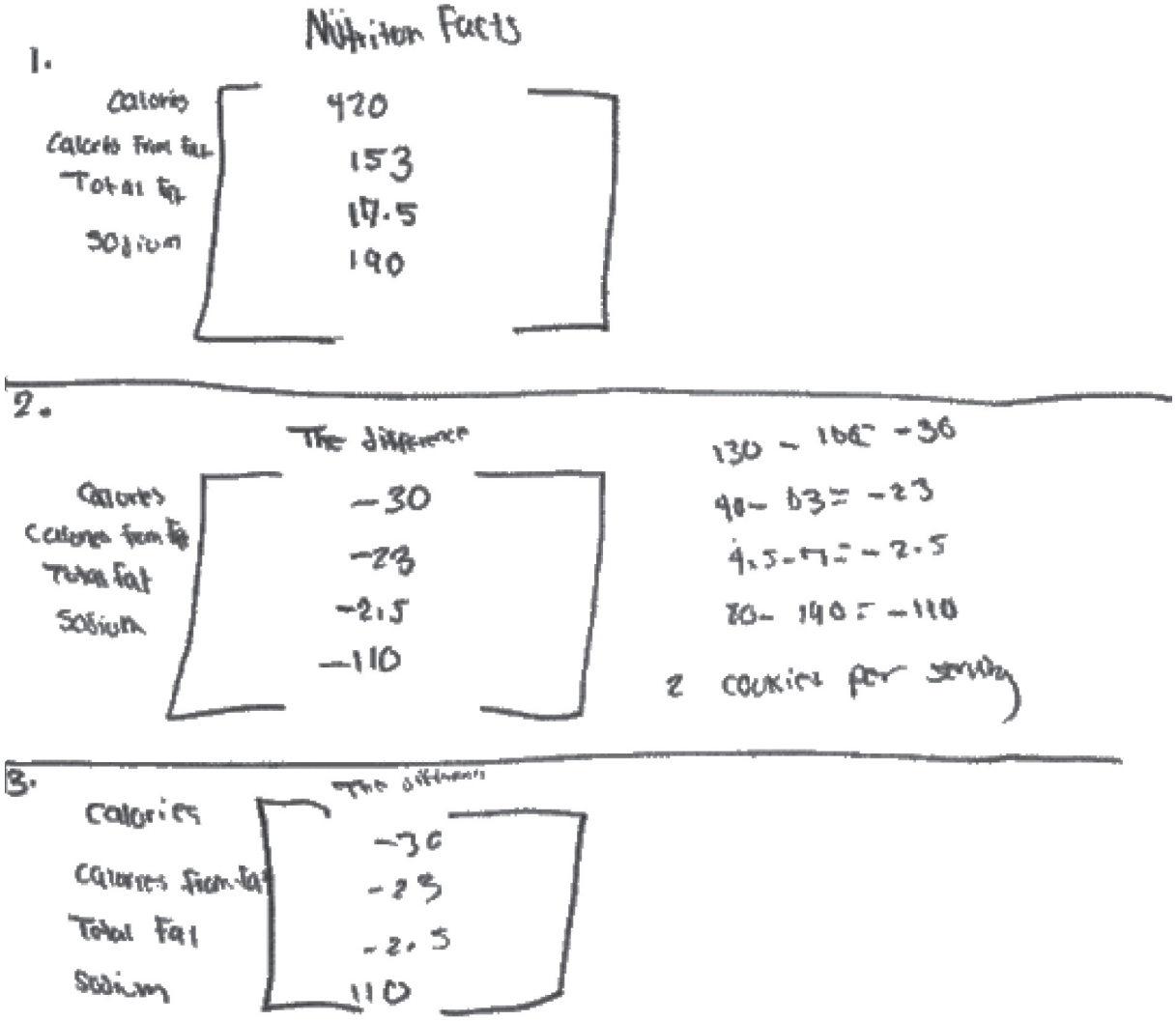
cal	cal. from f	tot. f	sod
0	10	1.5	0

SCORE POINT: 1

Part 1		**Points**
Incorrect answer:	Incorrect matrix 1st 3 elements are sums of nutrition facts per serving for all 3 cookies. 4th element is sodium content of cookie 3	-

Part 2		**Points**
Correct answer:	Correct matrix appropriately labeled Finds difference in nutrition facts per serving for cookies 2 and 3	1

Part 3		**Points**
Incorrect answer:	Incorrect matrix Difference in per serving rather than per cookie matrix is given	-
	Total Points	1



SCORE POINT: 0

Part 1		**Points**
Incorrect answer:	No matrices given in any part	-

Part 2		**Points**
Incorrect answer:		-

Part 3		**Points**
Missing answer:		-
	Total Points	0

1) calories - 420
calories from fat - 153
total fat - 17.5
sodium - 350

2) calories - 290
calories from fat - 103
total fat - 11.5
sodium - 270

3)

C. Copy the table below into your answer document.

x	y
–2	
–1	
0	
1	
2	

1. Complete the table in your answer document using values from the equation $y = -x^2 + 1$.

2. On the grid provided in your answer document, graph the function containing the points in the table.

3. What is the vertex of the function? Show your work or explain your answer.

4. If the function were reflected over the x-axis, what would be the coordinates of the new vertex? Show your work or explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1, 2, 3, AND 4.

Item C Scoring Rubric—2012 Algebra I

Score	Description
4	The student earns 5 points. The response contains no incorrect work.
3	The student earns 3½ – 4½ points.
2	The student earns 2 – 3 points.
1	The student earns ½ – 1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank — No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

SOLUTION AND SCORING

5 points possible:

<table>
<tr><th>Part</th><th>Points</th></tr>
<tr><td>1</td><td>

1 point possible:

1 point: Correct table, as shown below:

x	y
–2	–3
–1	0
0	1
1	0
2	–3

OR

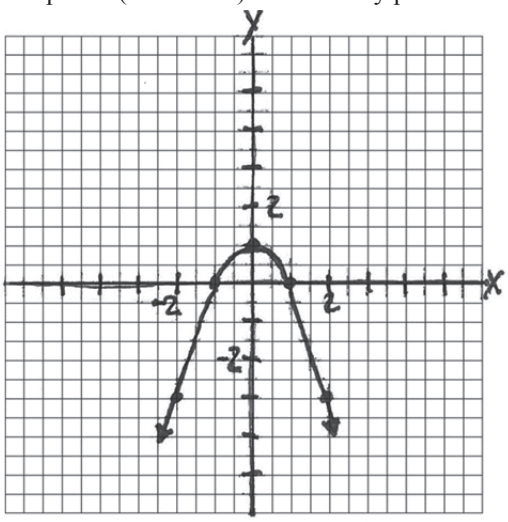
½ point: Table contains 4 correct values of y and 1 incorrect value of y

</td></tr>
<tr><td>2</td><td>

2 points possible:

2 points: Correct graph, as shown below:

Graph must include:
- Arrows on the parabola
- Consistent intervals on both axes
- All points (from table) are correctly plotted and connected by a curve



OR

1 point: A partially correct graph with 1 or 2 errors
Ex: 1 point plotted incorrectly and arrows missing. (2 errors)
Inconsistent interval on 1 axis. (1 error)

</td></tr>
</table>

Part	Points
	or A non-linear graph of Part 1 table points correctly plotted and connected, no other errors *Note: No credit is given for the graph of a line, line segment, or plotted linear points.*
3	**1 point possible:** 1 point: Correct answer: (0,1) *or correct answer based on the graph in Part 2* Correct explanation is given: Give credit for the following or equivalent: ● "It's the highest point on the graph." ● "Because there is no "x" term, in the function, the y value is whatever the constant in the function is." **OR** ½ point: Correct answer: (0,1) *or correct answer based on the graph in Part 2* Work or explanation is incorrect, incomplete, vague or missing Ex: "It's the center of the parabola"
4	**1 point possible:** 1 point: Correct answer: (0,-1) *or correct answer based on the graph in Part 2* Correct explanation is given: Give credit for the following or equivalent: ● "I just changed the sign on the y value" ● "The x-coordinate stays the same but the sign of the y value changes." **OR** ½ point: Correct answer: (0,-1) *or correct answer based on the graph in Part 2* Work or explanation is incorrect, incomplete, vague or missing Ex: "I just flipped it over."

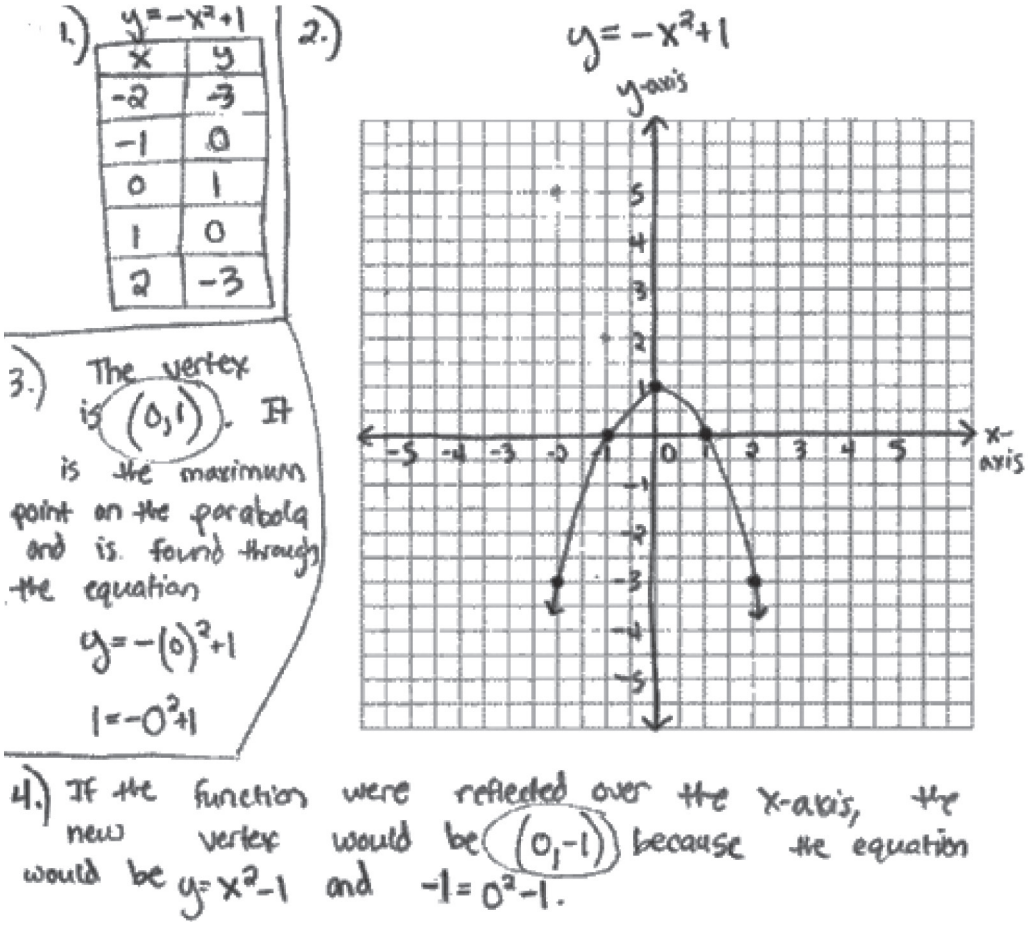
SCORE POINT: 4

Part 1		**Points**
Correct table:	5 correct values for y: {-3, 0, 1, 0, -3}	1

Part 2		**Points**
Correct graph:	Consistent intervals. Table points correctly plotted and connected by curve. Arrows included.	2

Part 3		**Points**
Correct vertex with correct explanation:	(0,1), "It is the maximum point on the parabola…"	1

Part 4		**Points**
Correct vertex with correct explanation:	(0,-1), "the equation would be $y = x^2 - 1$ and $-1 = 0^2 - 1$."	1
	Total Points	5



SCORE POINT: 3

Part 1		**Points**
Correct table:	5 correct values for y: {-3, 0, 1, 0, -3}	1

Part 2		**Points**
Correct graph:	Default intervals. Table points correctly plotted and connected by curve. Arrows included.	2

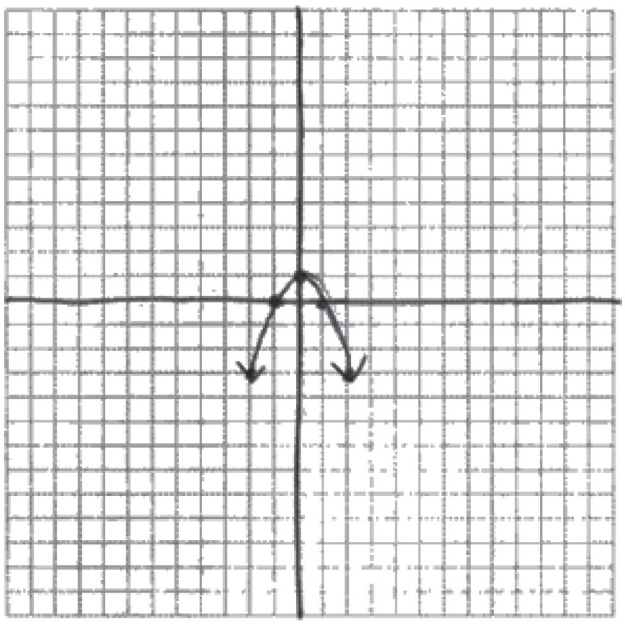
Part 3		**Points**
Correct vertex with missing explanation:	(0,1)	½

Part 4		**Points**
Incorrect vertex:	(-2,1)	-
	Total Points	3½

1.)

X	Y
-2	-3
-1	0
0	1
1	0
2	-3

$y = -x^2 + 1$



3.) The vertex of the function is (0,1)

4. The new vertex would be (-2,1) if it was reflected over the y-axis

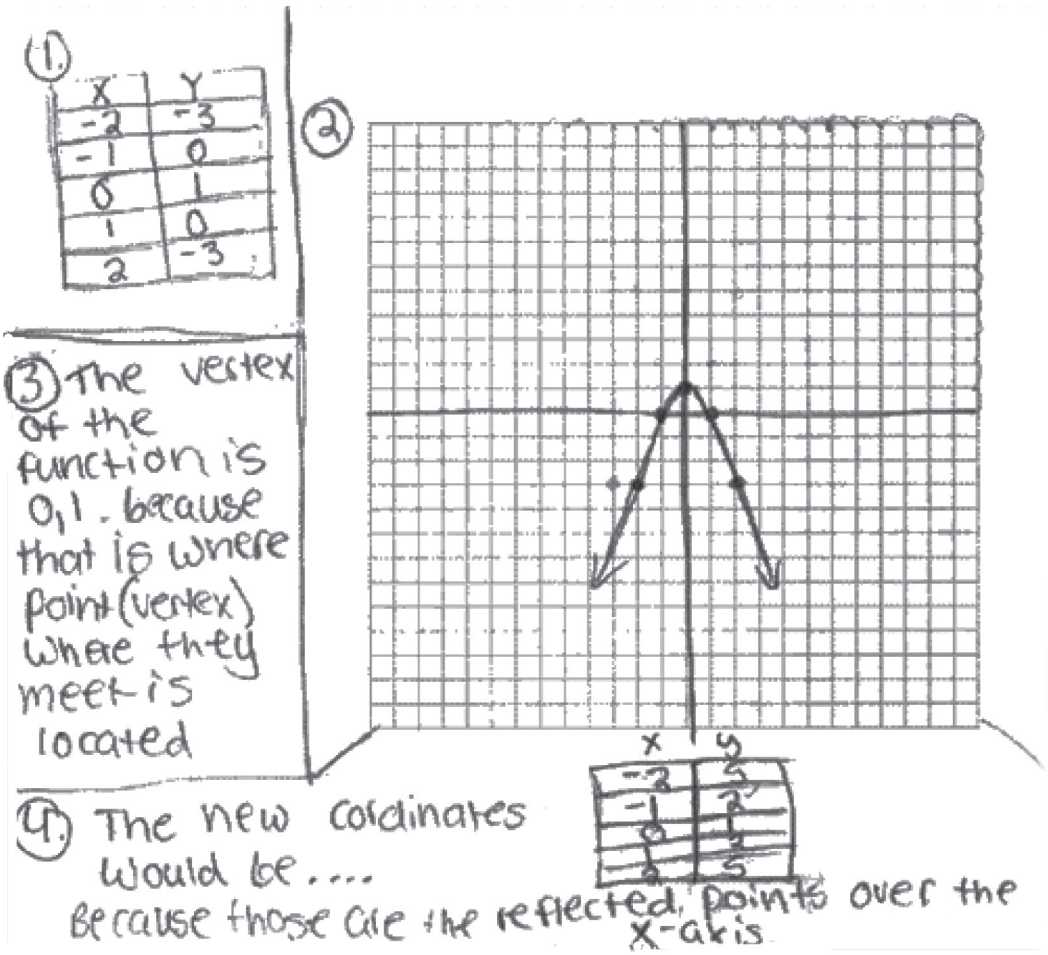
SCORE POINT: 2

Part 1		**Points**
Correct table:	5 correct values for y: {-3, 0, 1, 0, -3}	1

Part 2		**Points**
Correct graph:	Default intervals. Table points correctly plotted and connected by curve. Arrows included.	2

Part 3		**Points**
Incorrect vertex:	0,1 *is not in ordered pair form*	-

Part 4		**Points**
Incorrect vertex:	Table of multiple incorrect answers	-
	Total Points	3



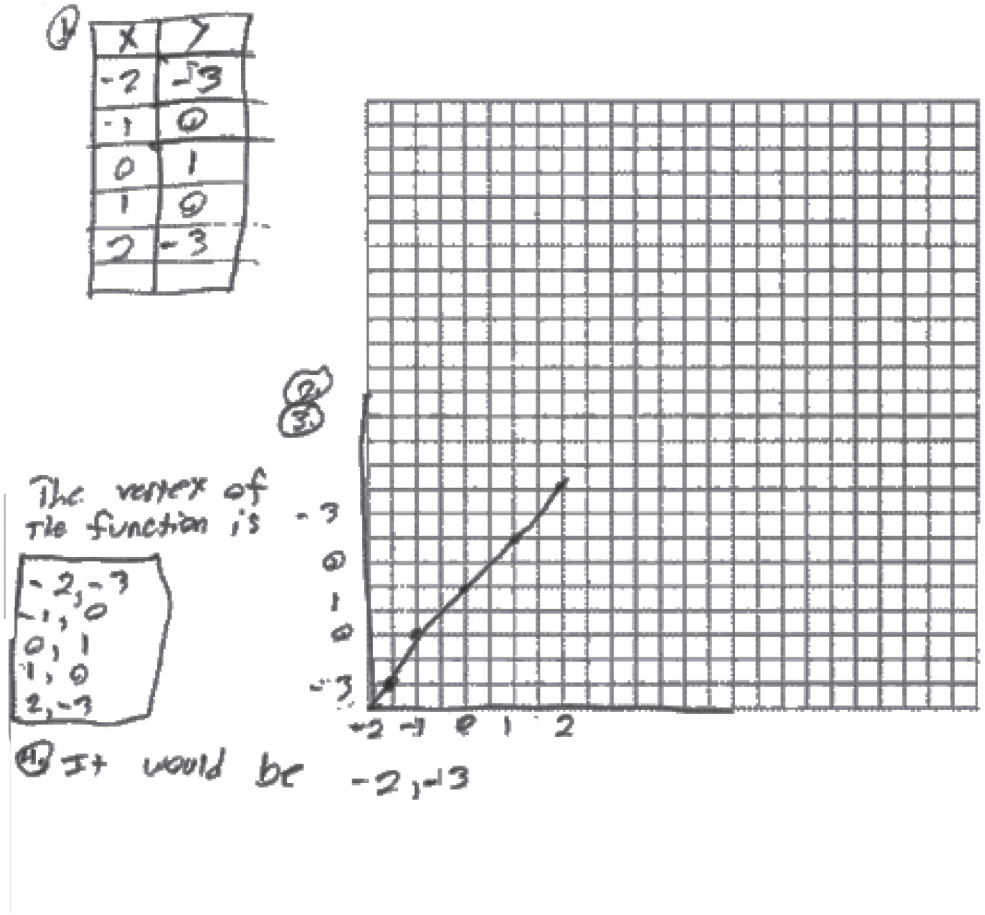
SCORE POINT: 1

Part 1		**Points**
Correct table:	5 correct values for y: {-3, 0, 1, 0, -3}	1

Part 2		**Points**
Incorrect graph:		-

Part 3		**Points**
Incorrect vertex:	Multiple incorrect answers not in ordered pair form	-

Part 4		**Points**
Incorrect vertex:	Incorrect values not in ordered pair form	-
	Total Points	1



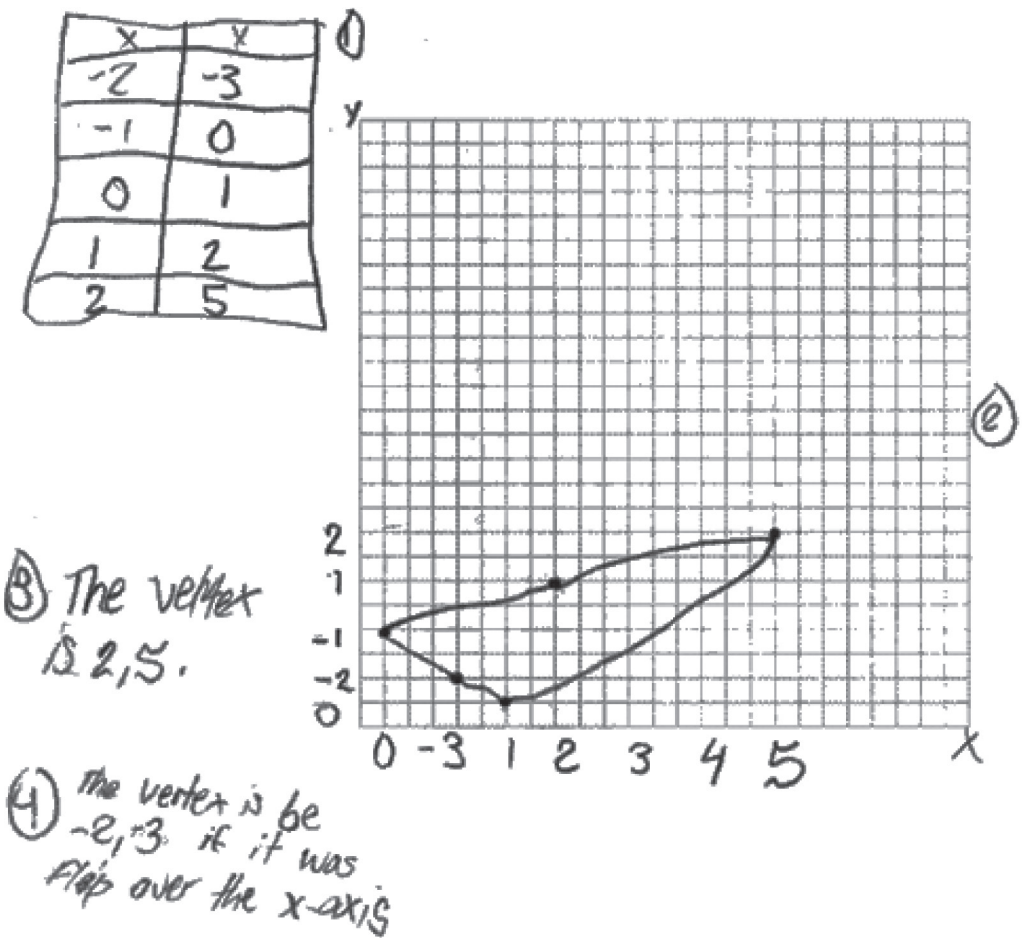
SCORE POINT: 0

Part 1		**Points**
Incorrect table:	2 incorrect values for y {-3,0,1,**2,5**}	-

Part 2		**Points**
Incorrect graph:		-

Part 3		**Points**
Incorrect vertex:	Incorrect values not in ordered pair form	-

Part 4		**Points**
Incorrect vertex:	Incorrect values not in ordered pair form	-
	Total Points	0



D. A restaurant charges a reservation fee of $15 for its party room, plus $21.50 per person.

1. Write an equation in slope-intercept form showing what the total cost, y, would be for a group of x number of people to hold a party there.

2. On the grid in your answer document, graph the equation from Part 1.

3. If the bill was $445, how many people were at the party? Show your work or explain your answer.

4. Describe how the graph from Part 2 would change if the reservation fee were raised to $25.

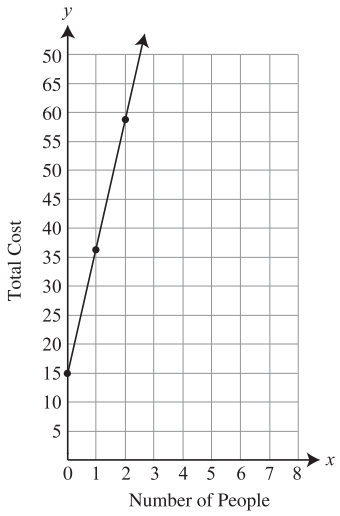
BE SURE TO LABEL YOUR RESPONSES 1, 2, 3, AND 4.

Item D Scoring Rubric—2012 Algebra I

Score	Description
4	The student earns 4 points. The response contains no incorrect work. Graph is titled in Part 2.
3	The student earns 3 – 3½ points.
2	The student earns 2 – 2½ points.
1	The student earns ½ – 1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank — No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

SOLUTION AND SCORING

4 points possible:

Part	Points
1	**1 point possible:** 1 point: Correct equation: $y = 21.50x + 15$ *or equivalent* **OR** ½ point: Correct expression in terms of *x:* $21.50x + 15$
2	**1 point possible:** 1 point: Correct graph *or correct graph of incorrect linear equation in Part 1*  Graph must include: ● Consistent intervals on both axes ● Points plotted in the appropriate interval ● Ray or segment is drawn, or discreet points are plotted ● All points must be in the 1st quadrant *Note: Graph title is required to a receive a score of "4"* **OR** ½ point: Graph contains 1 or 2 errors but is otherwise correct Ex. Points or arrow extending line into 2nd or other quadrants 1 point plotted incorrectly Inconsistent interval(s) on 1 axis (1 error) or both axes (2)

Part	Points
3	**1 point possible:** ½ point: Correct answer: 20 *or correct answer based on an incorrect linear equation in Part 1* **AND** ½ point: Correct procedure shown and/or explained Work may contain a calculation or copy error Give credit for the following or equivalent: • $21.5x + 15 = 445$ $21.5x = 430$ $x = \#$
4	**1 point possible:** 1 point: Correct explanation Give credit for the following or equivalent: • "The graph with shift up 10 units." • "The y-intercept would now be $(0, 25)$ instead of $(0,15)$" **OR** ½ point: Incomplete explanation Ex. "The graph will shift up" "The graph would be farther over to the left"

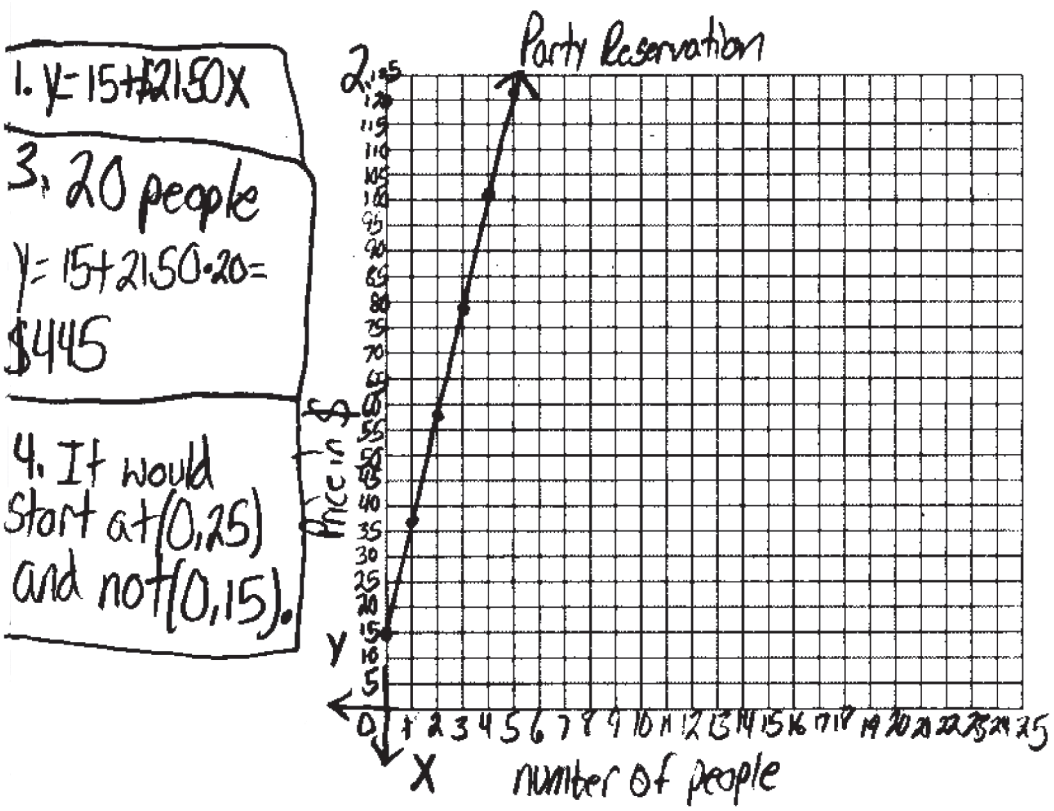
SCORE POINT: 4

Part 1		**Points**
Correct answer:	$y = 15 + 21.50x$	1

Part 2		**Points**
Correct graph:	Consistent intervals, all points plotted correctly in 1st quadrant and connected by a ray, graph is titled	1

Part 3		**Points**
Correct answer:	20 people	½
Correct procedure:	$y = 15 + 21.50 \bullet 20 = 445$ (*Guess and Check*)	½

Part 4		**Points**
Correct answer:	"it would start at (0,25) and not (0,15)."	1
	Total Points	**4**



SCORE POINT: 3

Part 1		**Points**
Correct answer:	$y = 21.50x + 15$	1

Part 2		**Points**
Incorrect graph:	Single point plotted	-

Part 3		**Points**
Correct answer:	20 people were at the party	½
Correct procedure:	Subtracts the reservation fee from $445, then divides the difference by the per person charge of $21.50	½

Part 4		**Points**
Correct answer:	"…instead of crossing the y-axis at 15 it would now cross at 25. It would change the y-intercept."	1
	Total Points	**3**

y = mx+b

① y = 21.50x + 15

y = total cost
x = per person

③ Total cost = $445

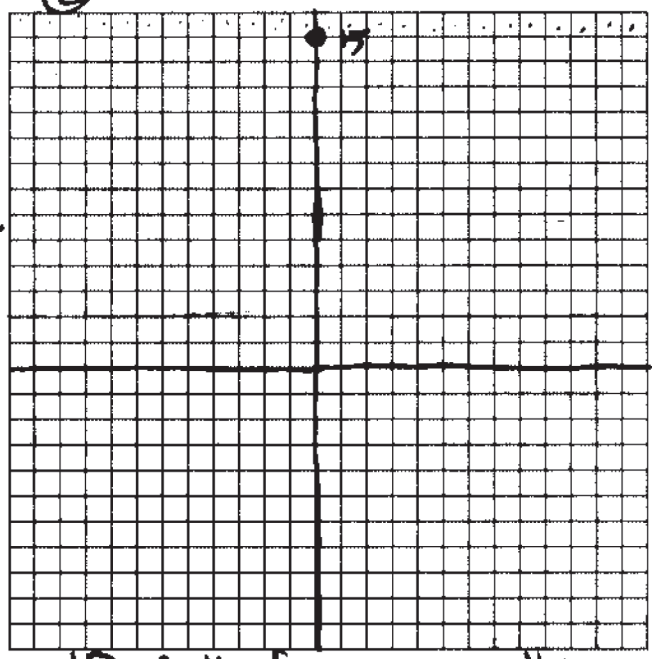
$445
$ - 15
$430

20 people
21.50) 43000

20 people were at the party

$21.50 per person
$15.00 for a party room.

②



④ If the fee were raised to $25 it would change the graph because instead of crossing the y-axis at 15 it would now cross at 25. It would change the y-intercept.

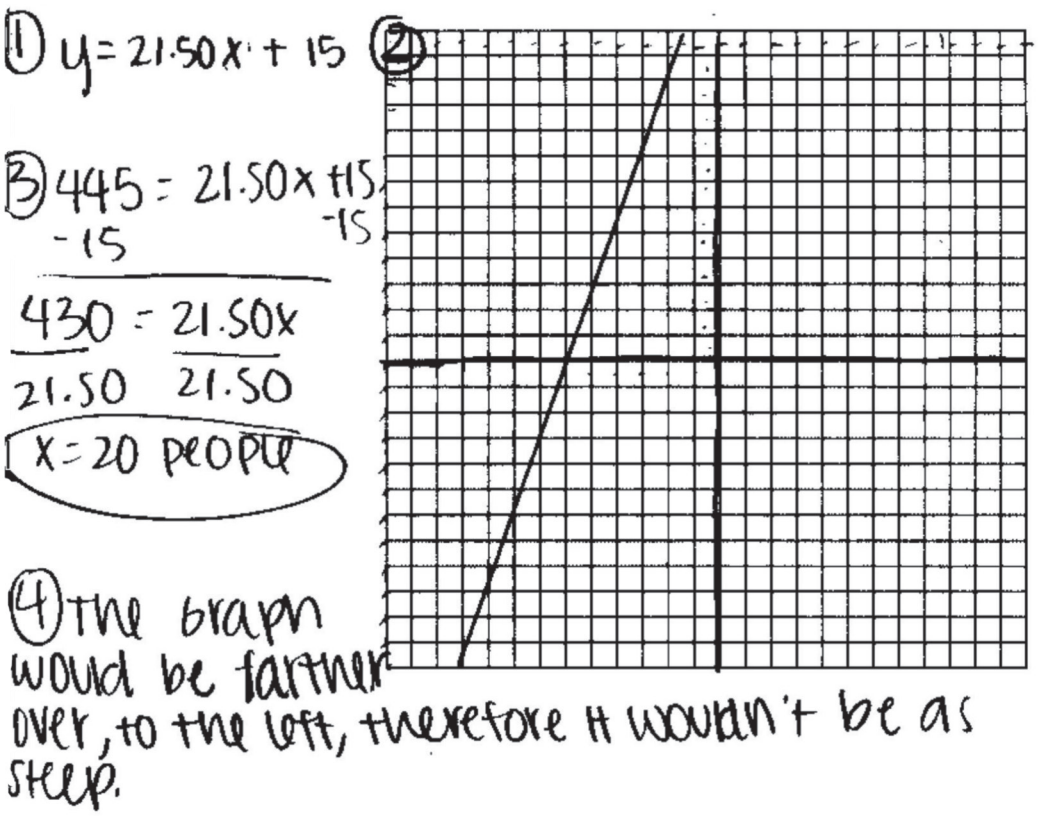
SCORE POINT: 2

Part 1		**Points**
Correct answer:	$y = 21.50x + 15$	1

Part 2		**Points**
Incorrect graph:	Unknown intervals, graph entirely in 2nd and 3rd quadrants and incorrect based on default intervals	-

Part 3		**Points**
Correct answer:	x=20 people	½
Correct procedure:	Sets equation, from Part 1, equal to 445 and solves for x	½

Part 4		**Points**
Incorrect answer:	"…therefore it wouldn't be as steep."	-
	Total Points	**2**



SCORE POINT: 1

Part 1		**Points**
Correct answer:	$y = 21.50x + 15$	1

Part 2		**Points**
Incorrect graph:	Unknown intervals, incorrect based on default intervals	-

Part 3		**Points**
Incorrect answer:	21 people	-
Incorrect procedure:	$445 \div 21.50$	-

Part 4		**Points**
Correct answer:	"…the graph line would only get steeper."	-
	Total Points	**1**

1.) y= mx+b

y = 21.50x + 15

cost per person people room

3.) Bill $445

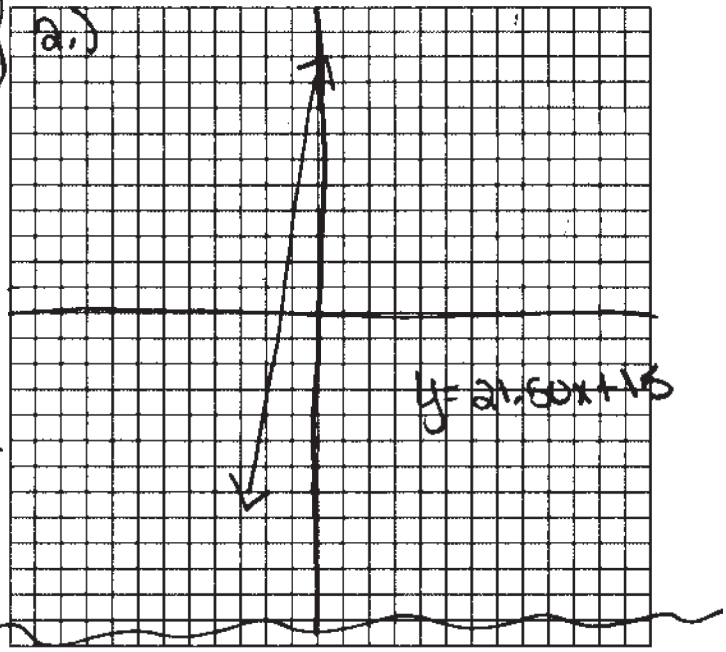
445÷21.50

= 21

There were 21 people at the party.

4. If the reservation was changed to $25 the graph line would only get steeper. because the cost would also get higher. but not by much.

2.)



SCORE POINT: 0

Part 1		**Points**
Incorrect answer:	$15x + 21.50$	-

Part 2		**Points**
Incorrect graph:	All points plotted incorrectly	-

Part 3		**Points**
Incorrect answer:	6696.50	-
Incorrect procedure:	$15(445) + 21.50$	-

Part 4		**Points**
Incorrect answer:	"It would increase…"	-
	Total Points	**0**

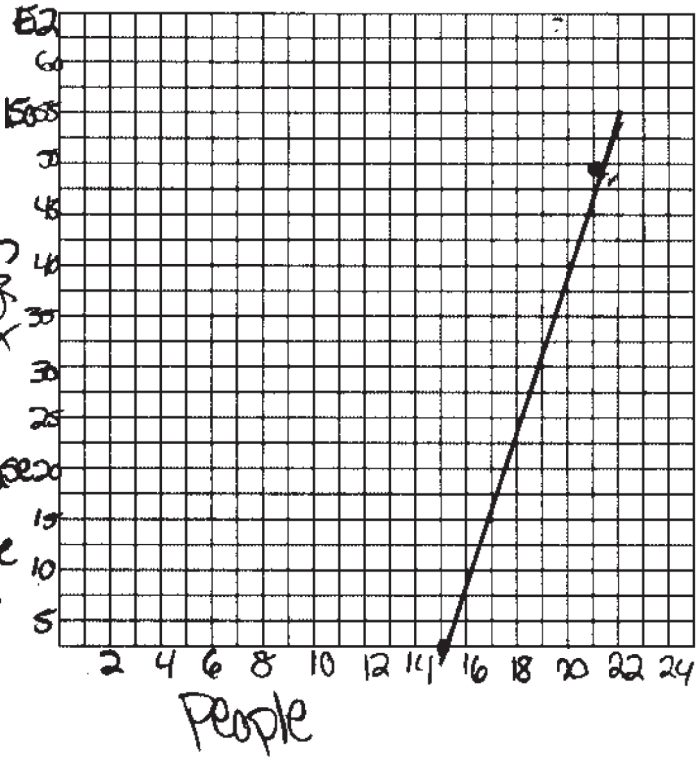
1. 15(x)+21.50

E3. 15(445)+21.50

6675 + 21.50

6696.50

E4. It would increase because there would be more people.



E. The formula $s = \sqrt{30df}$ is used to find how fast a car was traveling before an accident, where s = speed (in mph), d = the length (in feet) of the skid mark left by the car, and f = the coefficient of friction (road condition). Sophie, a police officer, must decide if the driver in a car accident was speeding in a 35 mph speed zone. The car's skid-mark length (d) is 76 feet. The coefficient of friction (f) is 0.80.

1. Write the equation Sophie needs to use, substituting in the values of d and f, to determine the speed of the car before the accident.

2. Solve the equation in Part 1. Round your answer to the nearest tenth.

3. Was the driver speeding in the 35 mph speed zone? Show your work and/or explain your answer.

4. If the skid mark had been 4 times longer, how many times as fast would the driver have been going as compared to the speed found in Part 2? Show your work and/or explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1, 2, 3, AND 4.

Item E Scoring Rubric—2012 Algebra I

Score	Description
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 – 3½ points.
2	The student earns 2 – 2½ points.
1	The student earns ½ – 1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank — No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

SOLUTION AND SCORING

4 points possible:

Part	Points
1	**½ point possible:** ½ point: Correct equation: $s = \sqrt{(30)(76)(0.80)}$ *or equivalent*
2	**1 point possible:** 1 point: Correct solution: 42.7 *Or correct solution to Part 1 equation that is incorrect due to* ***1 copy error*** **OR** ½ point: Solution is correct but is not rounded to nearest tenth or is left in radical form
3	**½ point possible:** *Note: Only give credit in Part 3 if some credit is received in Part 2* ½ point: Correct answer of "Yes," stated or implied with correct explanation Ex. 42.7>35 so yes the driver was speeding
4	**2 points possible:** 1 point: Correct answer: 2 times as fast or twice as fast *or correct answer based on incorrect speed from Part 2* **AND** 1 point: Correct procedure shown and/or explained Work may contain a calculation or copy error Give credit for the following: ● $\sqrt{(30)(4)(76)(.8)} = 2\sqrt{(30)(76)(.8)}$ or ● "Since he would leave a skid mark 4 times as long, I can take the square root of 4 to get my answer." or ● $\sqrt{(30)(4x76)(.8)} = \sqrt{7296} \doteq 85.4$ $\frac{85.4}{42.7} = \#$

SCORE POINT: 4

Part 1		**Points**
Correct answer:	$s = \sqrt{30 \bullet 76 \bullet .80}$	½

Part 2		**Points**
Correct answer:	42.7 MPH	1

Part 3		**Points**
Correct answer with explanation:	"Yes the driver was speeding. He was going at a pace of 42.7 in a 35 MPH zone."	½

Part 4		**Points**
Correct answer:	"…the car would have to go twice as fast…"	1
Correct procedure:	$76 \bullet 4 = 304$, $s = \sqrt{30 \bullet 304 \bullet .80}$ $s = 85.4166...$ $42.7 \bullet 2 = 85.4$	1
	Total Points	**4**

$s = \sqrt{30df}$

(1) $s = \sqrt{30 \cdot 76 \cdot .80}$

42.70831301

(2.) $s = 42.7$ MPH

(3.) Yes the driver was speeding. He was going at a pace of 42.7 MPH in a 35 MPH zone.

(4) $76 \cdot 4 = 304$

$s = \sqrt{30 \cdot 304 \cdot .80}$ $s = 85.41662602$

$42.7 \cdot 2 = 85.4$ → This equation shows the car would have to go twice as fast to make skid mark 4 times as long

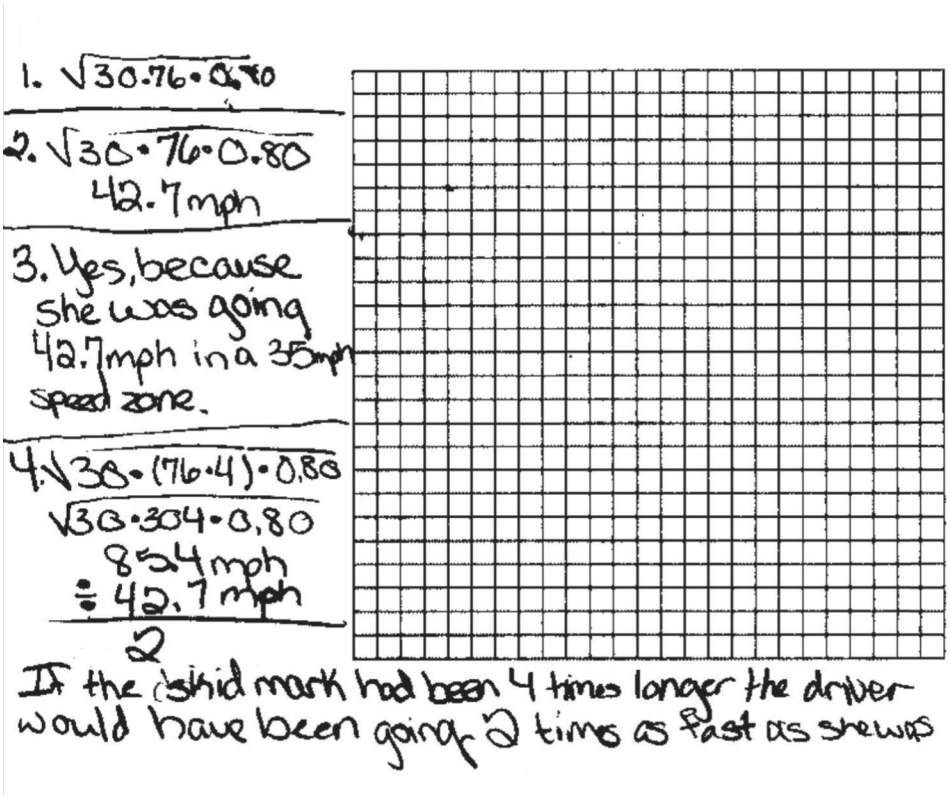
SCORE POINT: 3

Part 1		**Points**
Incorrect answer:	$\sqrt{30 \bullet 76 \bullet 0.80}$, (*expression receives no credit)*	-

Part 2		**Points**
Correct answer:	42.7 mph	1

Part 3		**Points**
Correct answer with explanation:	"Yes, because she was going 42.7mph in a 35mph speed zone."	½

Part 4		**Points**
Correct answer:	"…going 2 times as fast…"	1
Correct procedure:	Finds speed of vehicle leaving a skid mark 4 times as long, divides new speed by original speed	1
	Total Points	**3½**



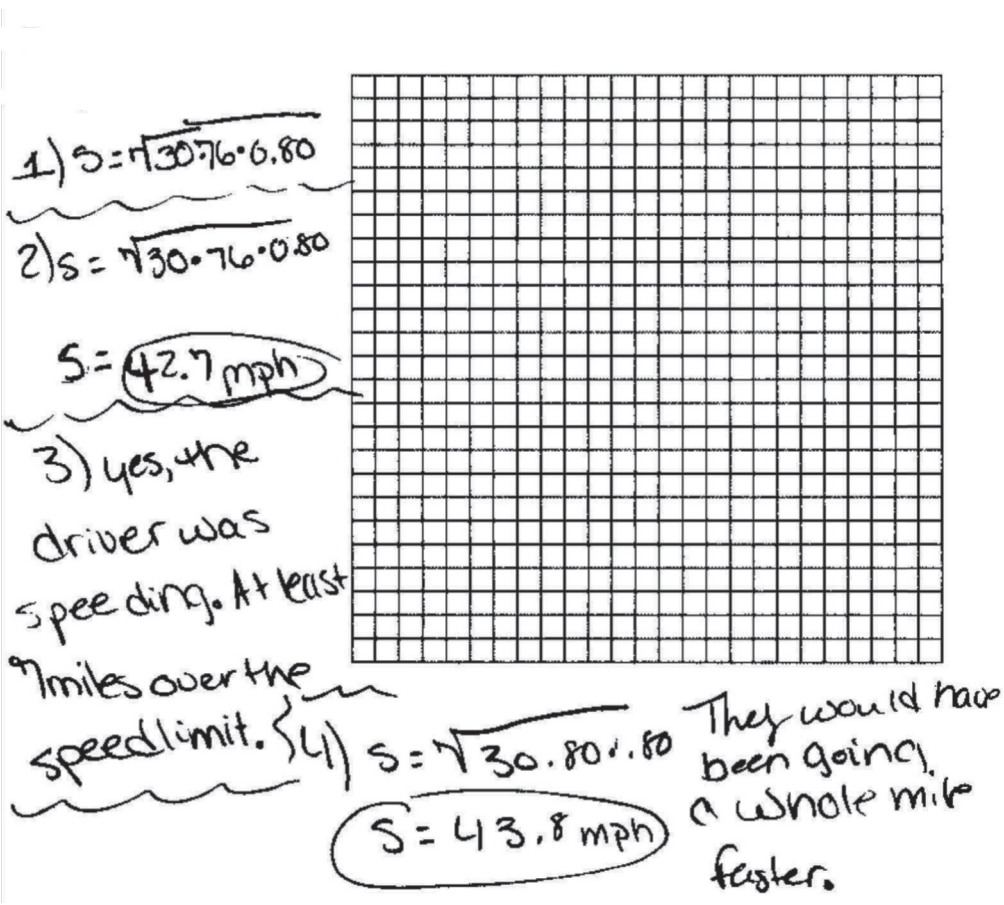
SCORE POINT: 2

Part 1		**Points**
Correct answer:	$s = \sqrt{30 \bullet 76 \bullet 0.80}$	½

Part 2		**Points**
Correct answer:	42.7 mph	1

Part 3		**Points**
Correct answer with explanation:	"yes, the driver was speeding. At least 7 miles over the limit."	½

Part 4		**Points**
Incorrect answer:	"…going a whole mile faster."	-
Incorrect procedure:	Finds speed of skid mark 4 feet longer not 4 times as long	-
	Total Points	**2**



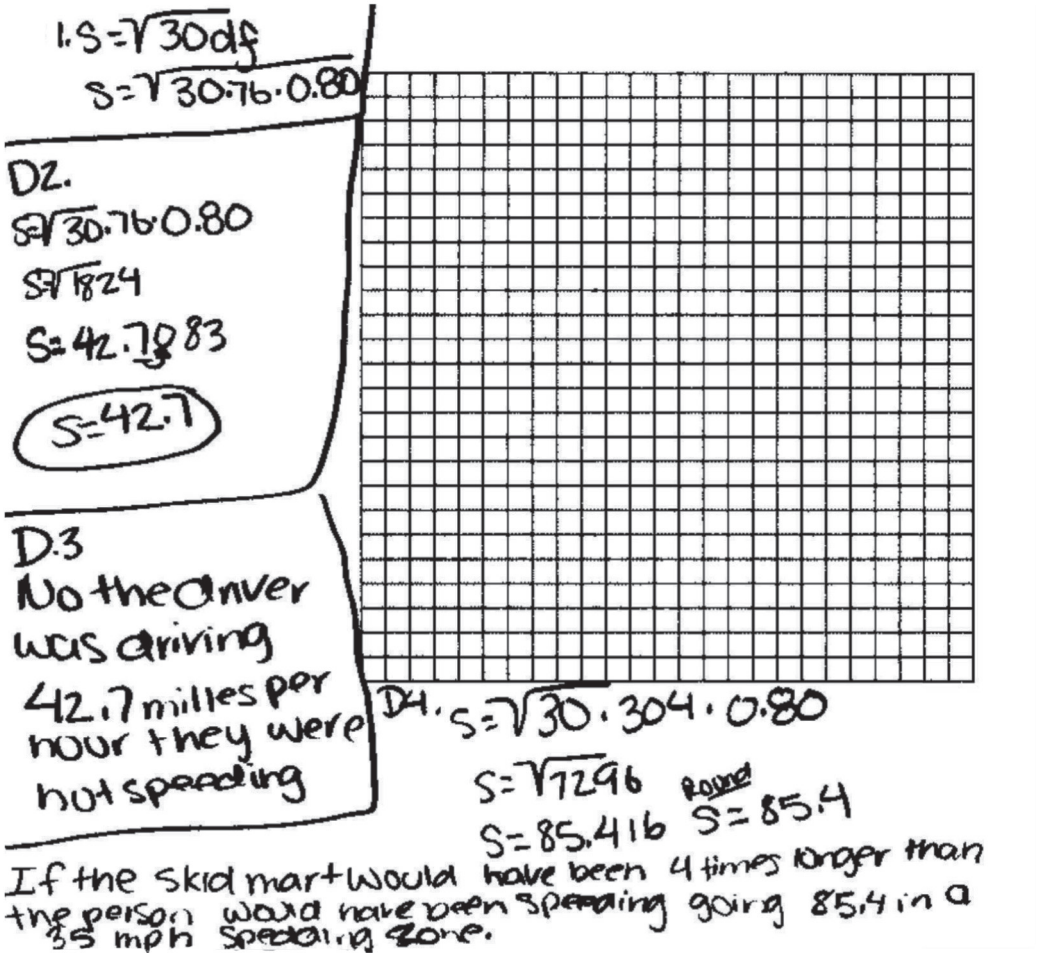
SCORE POINT: 1

Part 1		**Points**
Correct answer:	$s = \sqrt{30 \bullet 76 \bullet 0.80}$	½

Part 2		**Points**
Correct answer:	42.7	1

Part 3		**Points**
Incorrect answer:	"…they were not speeding"	-

Part 4		**Points**
Incorrect answer:	"…would have been speeding going 85.4 in a 35mph…"	-
Incomplete procedure:	Finds speed of vehicle leaving a skid mark 4 times as long	-
	Total Points	**1½**



SCORE POINT: 0

Part 1		**Points**
Incorrect answer:	$s = \frac{D}{F} = \frac{76\,ft}{0.80}$	-

Part 2		**Points**
Incorrect answer:	100mph	-

Part 3		**Points**
No credit:	No credit is awarded without some credit earned in Part 2	-

Part 4		**Points**
Incorrect answer:	"about 4 times faster."	-
Missing procedure:		-
	Total Points	**0**

1. G | F
D=76ft | $S = \frac{D}{F} = \frac{76ft}{0.80}$
f=0.80

2. 100mph

3. Yes the driver was speeding in the 35mph. Judging by the distance of the skid mark the driver must have been going anywhere 95 to 100mph.

4. about 4 times faster.

F. Dave has the following quiz grades in his math class:

Dave's Quiz Grades

Quiz #	1	2	3	4	5
Grade	84	74	82	90	80

Dave's teacher is allowing students to retake any one quiz to earn up to 5 more points. Dave can earn the full 5 points on any quiz.

1. Will an increase of 5 points on any of these grades have a greater effect on the mean than an increase of 5 points on one of the others? Explain your answer.

2. By how much will Dave's mean grade change if he earns 10 more points on one of the quizzes? Show your work or explain your answer.

BE SURE TO LABEL YOUR RESPONSES 1 AND 2.

Item F Scoring Rubric—2012 Algebra I

Score	Description
4	The student earns 4 points. The response contains no incorrect work.
3	The student earns 3 points.
2	The student earns 2 points.
1	The student earns 1 point, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank — No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

SOLUTION AND SCORING

4 points possible:

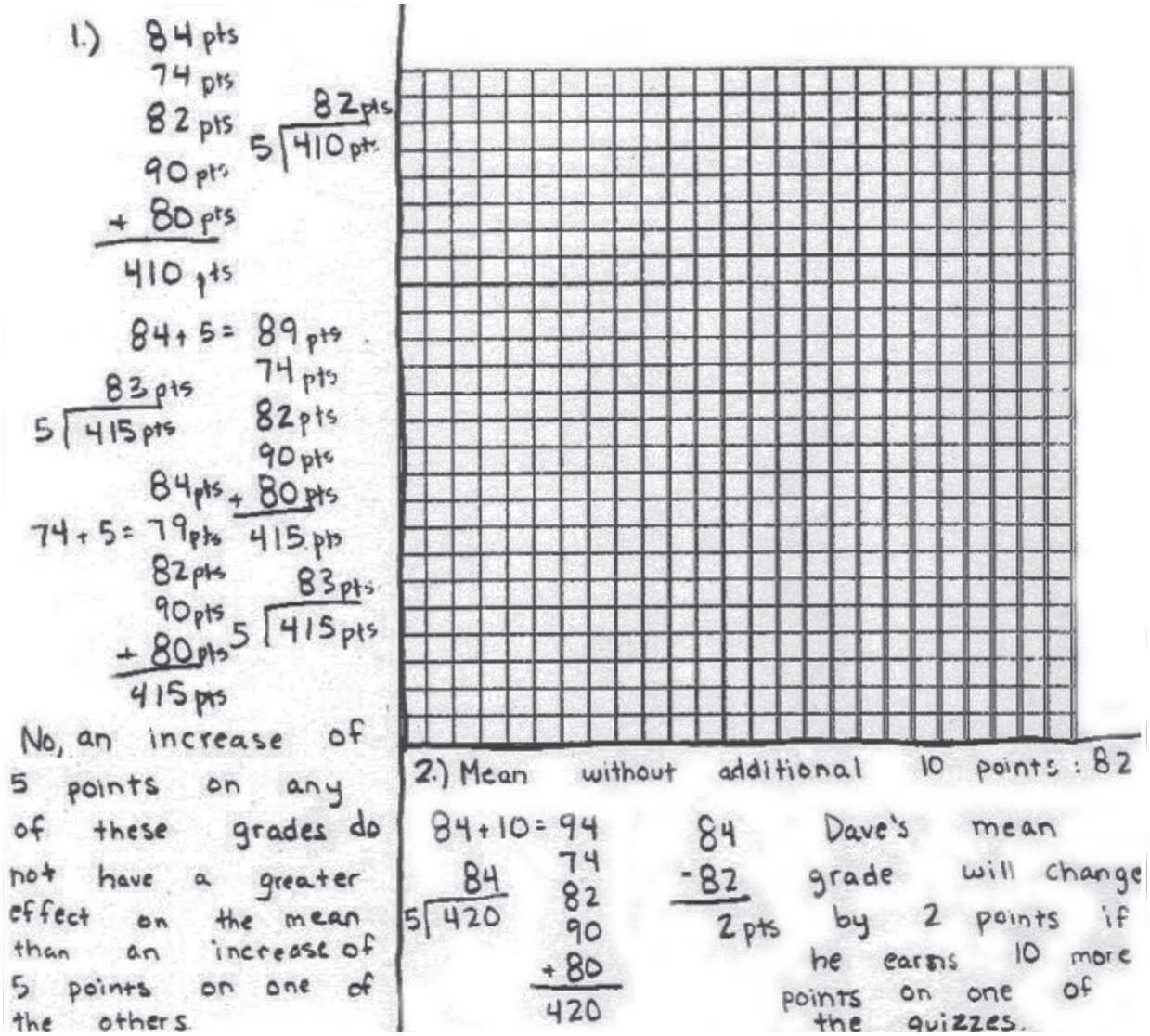
Part	Points
1	**1 point possible:** 1 point: Correct answer with correct explanation Give credit for the following or equivalent: *Note: The answer "No" may be stated or implied.* *Note: Examples may or may not be included. If examples are included, they must be correct.* *Note: No credit is given for "No" with vague or missing explanation.* Ex: "No. Five points on any quiz will increase the sum of the scores by 5 points and therefore have the same effect on the mean." Ex: "I'll increase the 1st score by 5: $89+74+82+90+80=415$ $415\div 5=83$ I'll increase the last score by 5: $84+74+82+90+85=415$ $415\div 5=83$ So the effect is the same." Ex: "If I add 5 points to the 1st score, I get 415 when I add up the 5 scores. If I add 5 points to the 2nd score, I still get 415, so I know that the mean will be the same for both."
2	**3 points possible:** 3 points: Correct change in mean: 2 Correct procedure is shown and/or explained: Give credit for the following or equivalent: ● Change is found by calculating both means: Ex: $\frac{84+74+82+90+80}{5}=82$ $\frac{84+74+82+90+90}{5}=84$ "So the change is 2 points." $(84-82=2)$ is not required *Note: "10" may be added to any score or added individually.* *Note: Work for the mean of 82 may be in Part 1.* ● Change is found by finding the difference of the means: Ex: $\left[\frac{(84+74+82+90+80+10)}{5}-\frac{(84+74+82+90+80)}{5}\right]=2$ ● Change is found by finding the average of the increase: Ex: "The only difference in the total is 10, so I can average the increase to find the amount that the mean will change. $10\div 5=2$." **OR**

Part	Points
	2 points: Amount of change is incorrect or not specified Correct and complete work is shown and/or explained Ex: $\frac{84+74+82+90+80}{5}=82$ $\frac{84+74+82+90+90}{5}=84$ Or Amount of change is incorrect due to 1 calculation or copy error Correct and complete procedure is shown and/or explained Or Correct change in mean: 2 Correct and complete procedure is shown and/or explained for one mean. For the other mean, procedure is missing or is incomplete, but not incorrect. Ex: 84+74+82+90+80 = 410, 410÷5, mean = 82, 84+74+82+90+80+10 = 420, mean = 84 (divide by 5 not shown). **OR** 1 point: Correct change is given Procedure is missing for both means or is incomplete for both means. *Note: If Part 2 is done using 5 more points instead of 10 more points, give credit. (The prompt header states "the teacher is allowing ... up to 5 more points".)* *Note: If Part 2 is done using 15 more points instead of 10 more points, give credit. (The prompt in Part 2 states "10 more points". This could be interpreted as 10 more than Part 1.)*

SCORE POINT: 4

Part 1		**Points**
Correct answer with correct explanation:	"No" Examples: Using quiz 1: 89+74+82+90+80 Using quiz 2: 84+79+82+90+80 Both sums 415, mean 415÷5=83	1

Part 2		**Points**
Correct answer with correct procedure:	"mean grade will change by 2 points" (from Part 1, 84+74+82+90+80, 410÷5=82), 84+10, 94+74+82+90+80, 420÷5=84, 84-82=2	3
	Total Points	**4**



SCORE POINT: 3

Part 1		**Points**
Correct answer with correct explanation:	"no" "can score 5 more points on any test and the mean still be the same" Example: Table shows all 5 possibilities all with mean 83.	1

Part 2		**Points**
Incorrect answer, due to calculation error, with correct procedure:	"change by 1 point ... 83 instead of 82" 84+74+82+90+80, 410÷5=82, 90+10=100, 84+74+82+100+80=420, 420÷5=83 (calc error)	2
	Total Points	**3**

1.

Quiz #/Grade	Add 5 points	Mean
1. 84	89	83
2. 74	79	83
3. 82	87	83
4. 90	95	83
5. 80	85	83

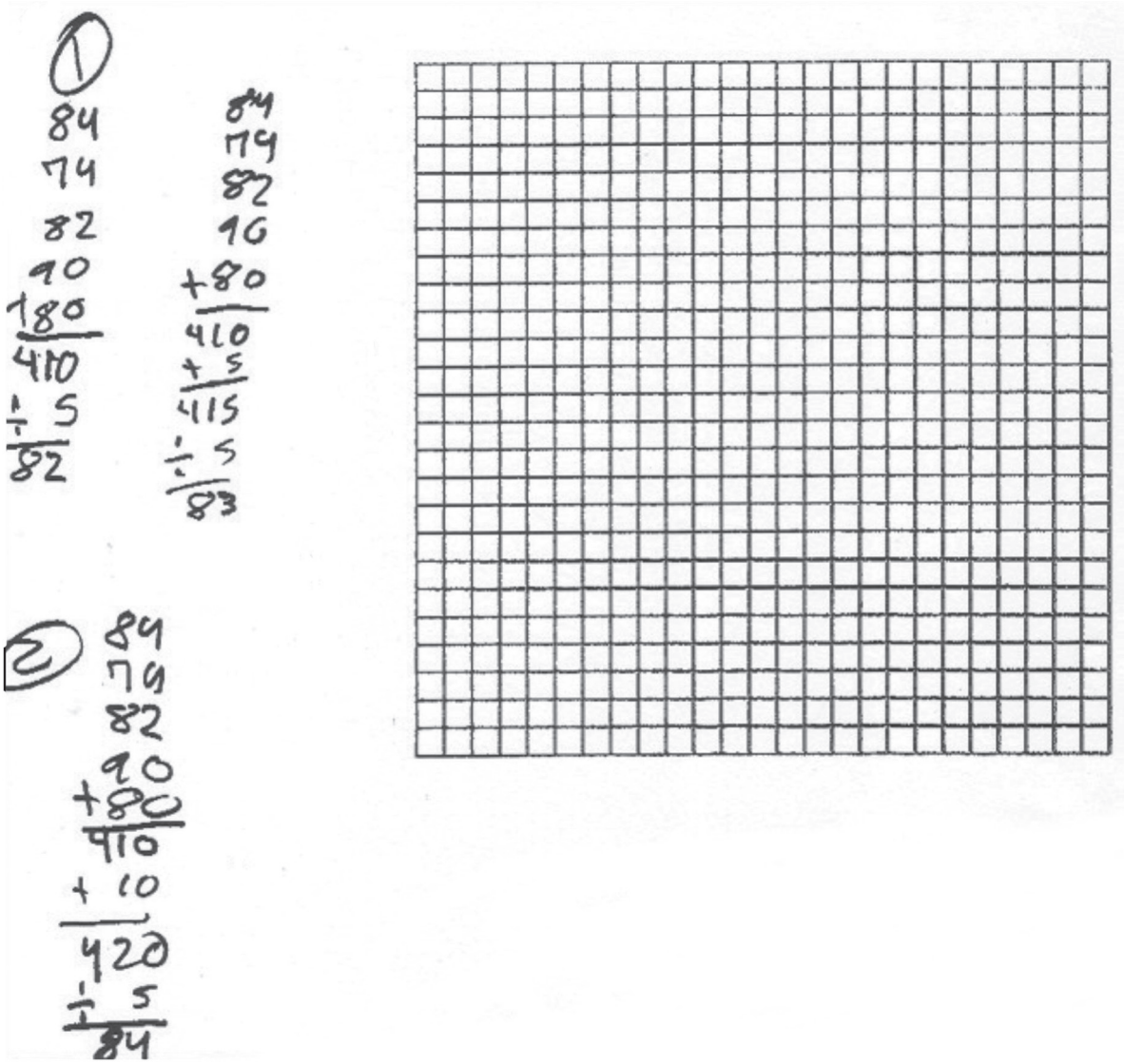
No, He can score 5 more points on any test and the mean still be the same.

2. 84+74+82+90+80=410
410÷5=82 Mean=82
90+10=100 (10 extra pts)
84+74+82+100+80=420
420÷5=83 His mean grade will change by 1 point. It will be 83 instead of 82.

SCORE POINT: 2

Part 1		**Points**
Missing answer with incomplete explanation:	Example: 84+74+82+90+80=410, 410+5=415, 415÷5=83	-

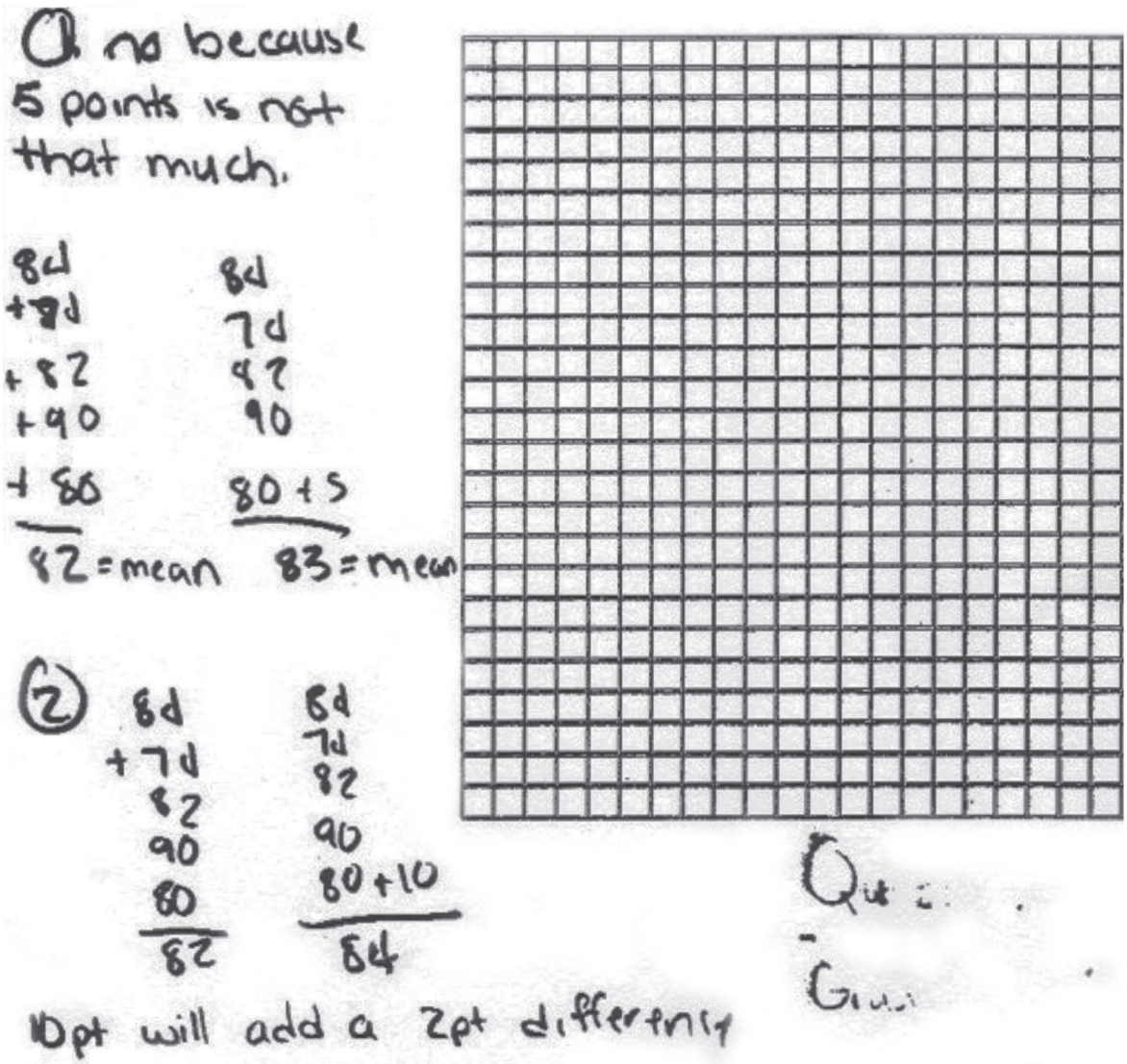
Part 2		**Points**
Missing answer with correct procedure:	(from Part 1, 84+74+82+90+80=410, 410÷5=82), 84+74+82+90+80=410, 410+10=420, 420÷5=84	2
	Total Points	**2**



SCORE POINT: 1

Part 1		**Points**
Correct answer with incorrect explanation:	"No" "because 5 points is not that much". Shows one example → 5 points added to Quiz 5.	-

Part 2		**Points**
Correct answer with incomplete procedure for both means:	"2 pt difference" Division by 5 not shown. 84+74+82+90+80=82 84+74+82+90+(80+10)=84	1
	Total Points	**1**



SCORE POINT: 0

Part 1		Points
Incorrect answer with incorrect explanation:	"Yes" "test 2 is his lowest grade"	-

Part 2		Points
Incorrect answer with Incorrect procedure:	"increase 10 points more" 84+74+82+90+80=410, 410÷5=82, 82+10=92 (incorrect procedure).	-
	Total Points	**0**

1. Yes because test 2 is the lowest grade he got so 5 points will increase Dave's Quiz grades.

2. 84
74
82
90
+ 80
410 ÷ 5 = 82 + 10 pts. = 92 pts.

Quiz	1	2	3	4	5	6
Grade	84	74	82	90	80	85

+5 pts

It will increse 10 pts more 88 more pts.

G. Use the quadratic equation below to answer the following questions.

$$y = x^2 - 2x - 8$$

1. Express the equation in factored form.

2. For which values of x does the equation equal zero?

3. Copy the table below in your answer document. Complete the table.

x	y
–2	
–1	
0	
1	
2	

4. Using the grid provided, sketch a graph of this equation. Use all appropriate graphing techniques.

BE SURE TO LABEL YOUR RESPONSES 1, 2, 3, AND 4.

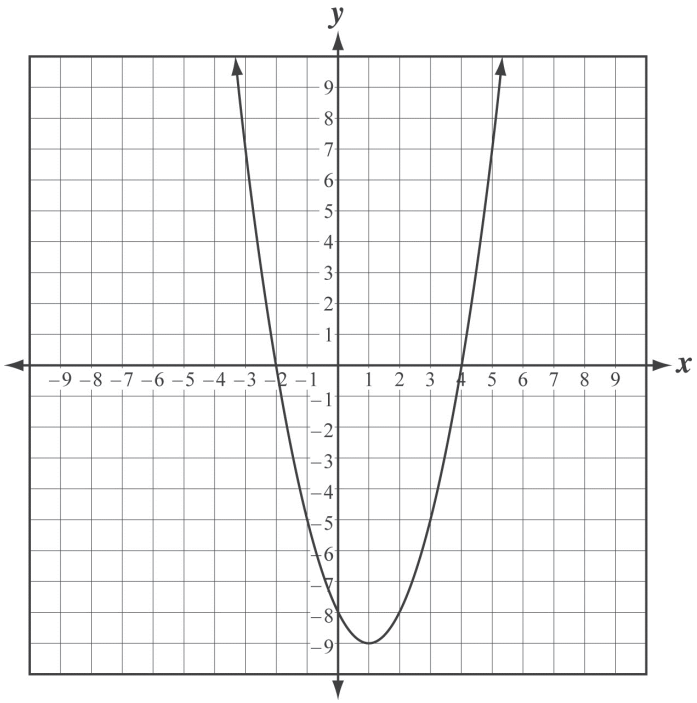
Item G Scoring Rubric—2012 Algebra I

Score	Description
4	The student earns 5 points. The response contains no incorrect work.
3	The student earns 3½ – 4½ points.
2	The student earns 2 – 3 points.
1	The student earns ½ – 1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank — No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

SOLUTION AND SCORING

5 points possible:

1	**1 point possible:** 1 point: Correct equation: $y = (x+2)(x-4)$ **OR** ½ point: 2 correct factors: (x + 2) *and* (x – 4) Give credit for expression '(x+2)(x-4)' or expression '(x-4)(x+2)'.
2	**1 point possible:** 1 point: 2 correct values: -2 *and* 4 (with no incorrect values included) (or correct values based on an incorrectly factored quadratic equation in Part 1) **OR** ½ point: 1 correct value (with no incorrect values included)
3	**1 point possible:** 1 point: Correct and complete table, as shown below: (or correct values based on an incorrect quadratic equation in Part 1) (5 correct values for *y*.) ***x*** ***y*** -2 0 -1 -5 0 -8 1 -9 2 -8 **OR** ½ point: Partially correct table with 4 correct values for *y*

Part	Points
4	**2 points possible:** 2 points: Correct and complete parabolic graph, as shown below: Graph may be based on Parts 1,2,3.  **OR** 1½ points: A partially correct parabolic graph with one error: Ex: Missing arrows on the parabola Ex: One point plotted incorrectly Ex: Inconsistent intervals on <u>one</u> axis **OR** 1 point: A partially correct parabolic graph with two errors: Ex: One point plotted incorrectly and inconsistent intervals on one axis. or A non-parabolic graph with the Part 3 table points correctly plotted and with the points connected.

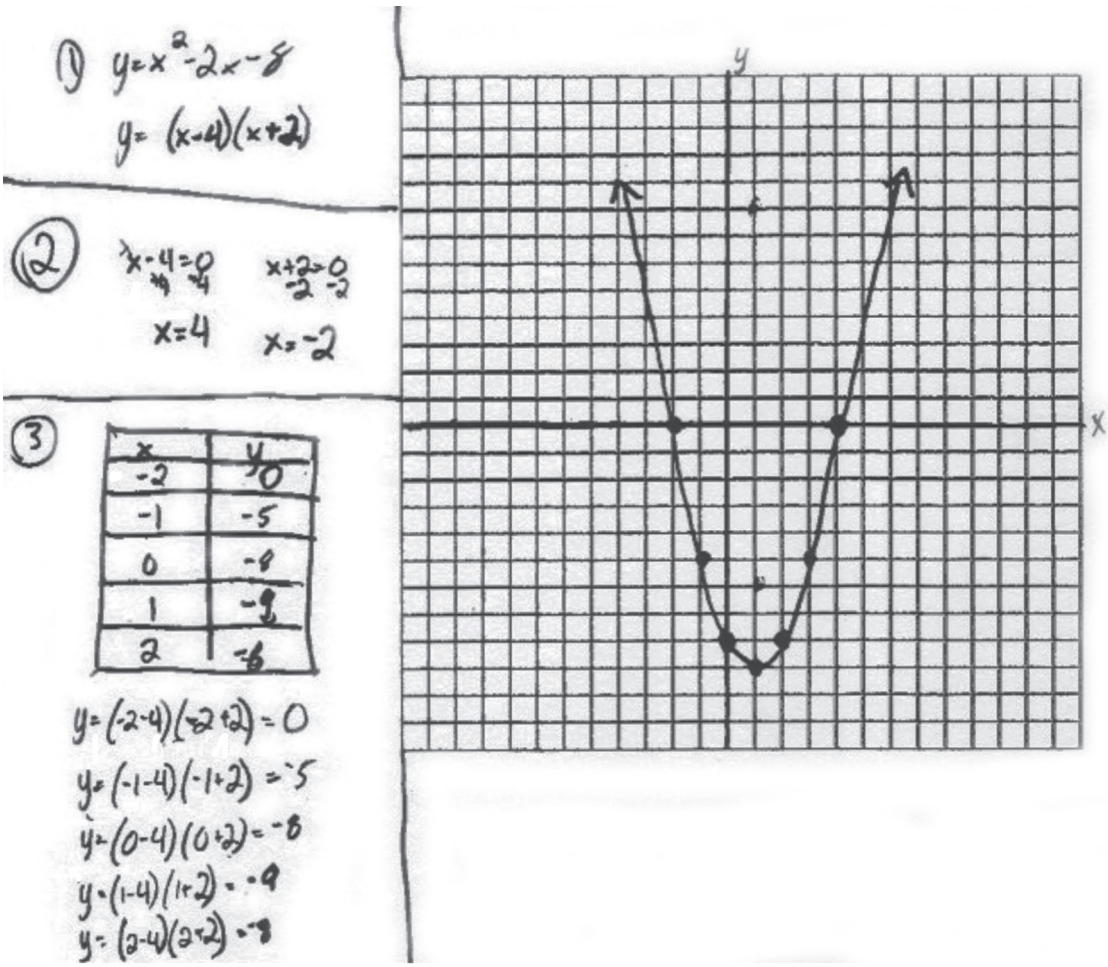
SCORE POINT: 4

Part 1		**Points**
Correct equation:	y = (x-4)(x+2)	1

Part 2		**Points**
2 correct answers:	x = 4, x = -2	1

Part 3		**Points**
Correct table:	y values 0,-5,-8,-9,-8	1

Part 4		**Points**
Correct graph:	Intercepts (-2,0), (0,-8), (4,0), and points (-1,-5), (1,-9), (2,-8). Default intervals ok. Arrows.	2
	Total Points	**5**



SCORE POINT: 3

Part 1		**Points**
Correct equation:	y = (x-4)(x+2)	1

Part 2		**Points**
Incorrect answer:	"The values of x are -2, -6." No credit for one correct and one incorrect value.	-

Part 3		**Points**
Correct table:	y values 0,-5,-8,-9,-8	1

Part 4		**Points**
Correct graph:	Intercepts (-2,0), (0,-8), (4,0), and points (-1,-5), (1,-9), (2,-8). Consistent intervals and arrows included.	2
	Total Points	**4**

1. $y=(x-4)(x+2)$

$y=x^2-2x-8$

$y=(x-4)(x+2)$

4,2

2. The values of x are -2, -6.

-2,-6

$=-2^2-2(-6)-8$

$=-4--12-8$

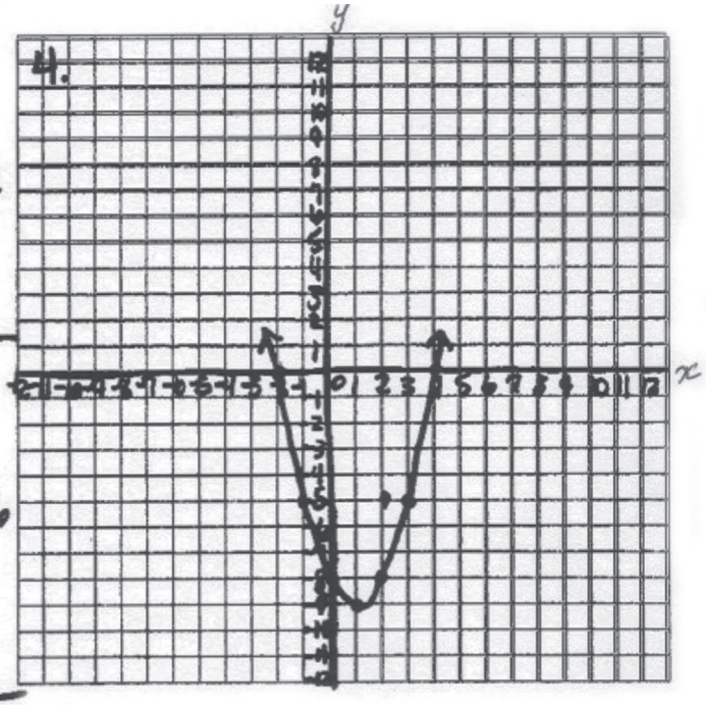
$=8-8$

$=0$

3.

x	y
-2	0
-1	-5
0	-8
1	-9
2	-8

4.



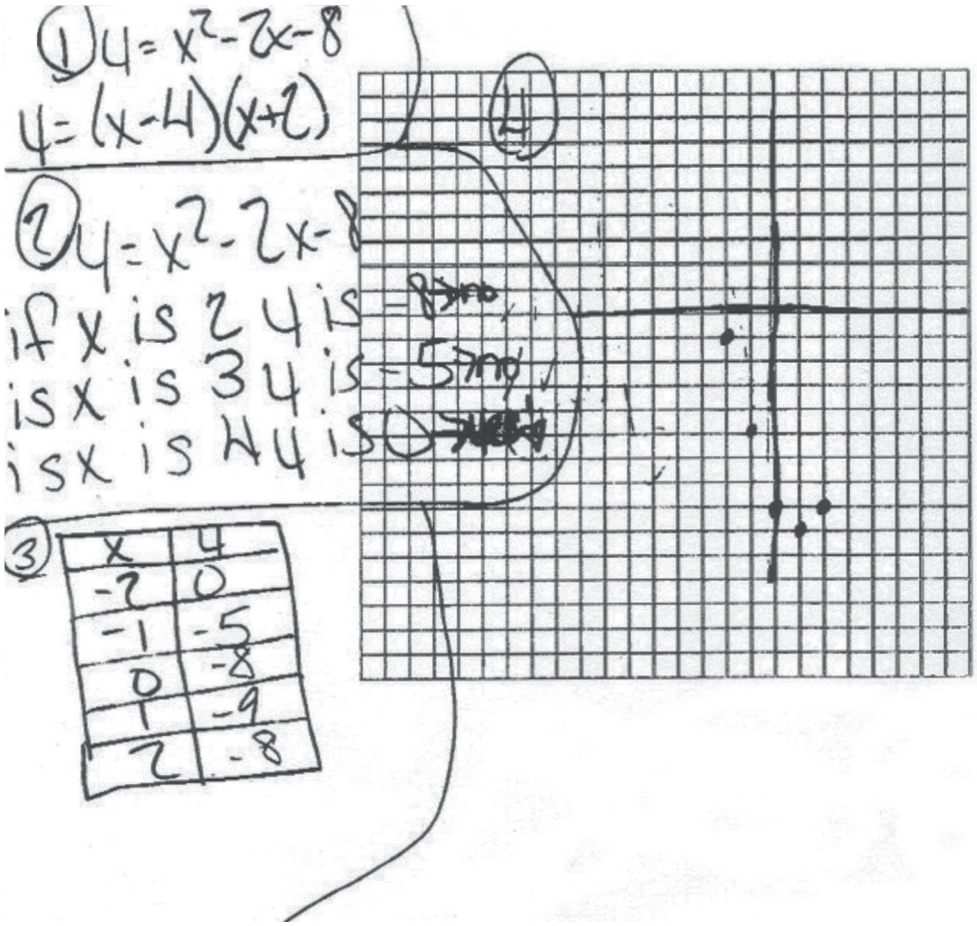
SCORE POINT: 2

Part 1		**Points**
Correct equation:	y = (x-4)(x+2)	1

Part 2		**Points**
1 correct answer:	"x is 4 y is 0 → yes" One correct value is given as an answer.	½

Part 3		**Points**
Correct table:	y values 0,-5,-8,-9,-8	1

Part 4		**Points**
Incorrect graph:	4 points are plotted correctly but parabola is not drawn. Point (-2,-1) is incorrect.	-
	Total Points	**2½**



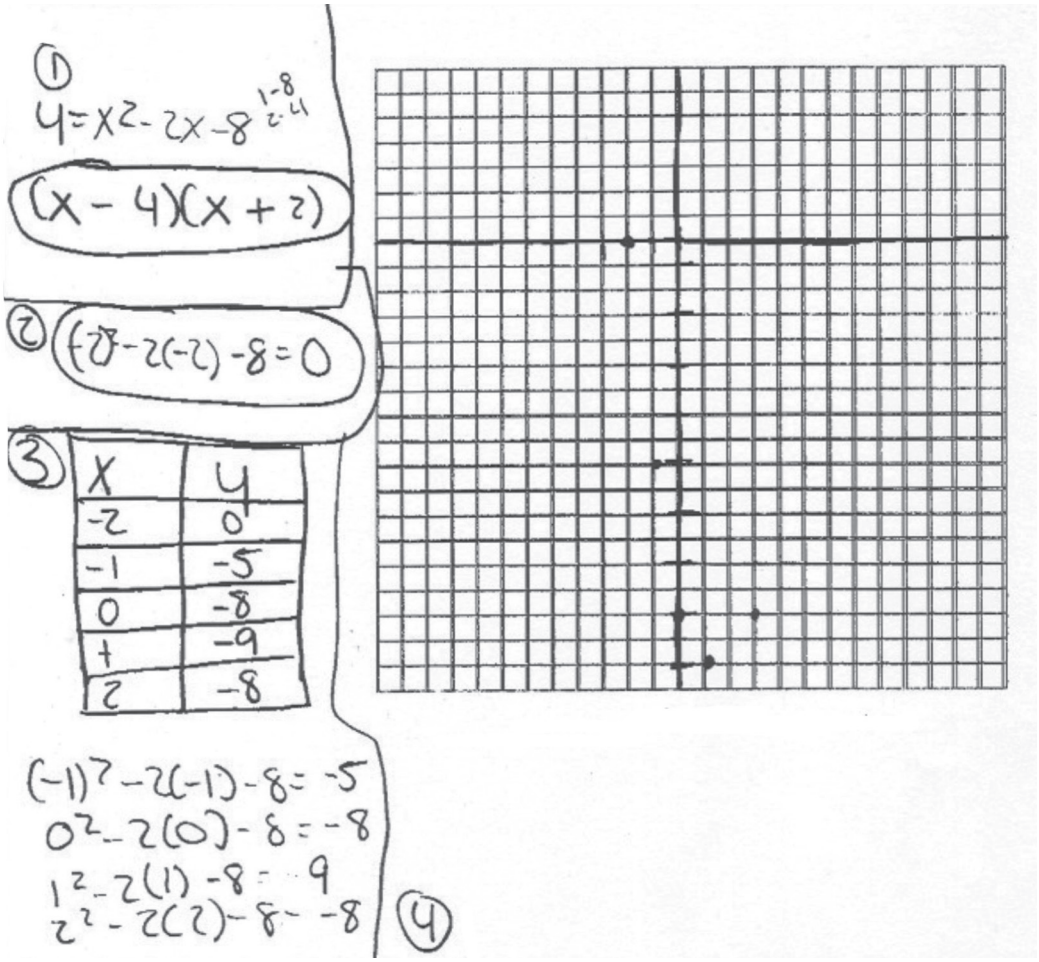
SCORE POINT: 1

Part 1		**Points**
Correct factors:	(x-4)(x+2)	½

Part 2		**Points**
Missing answers:	Checks value -2: $(-2)^2-2(-2)-8=0$ but doesn't state an answer.	-

Part 3		**Points**
Correct table:	y values 0,-5,-8,-9,-8	1

Part 4		**Points**
Incorrect graph:	Plots points but does not draw graph. Intervals are inconsistent.	-
	Total Points	**1½**



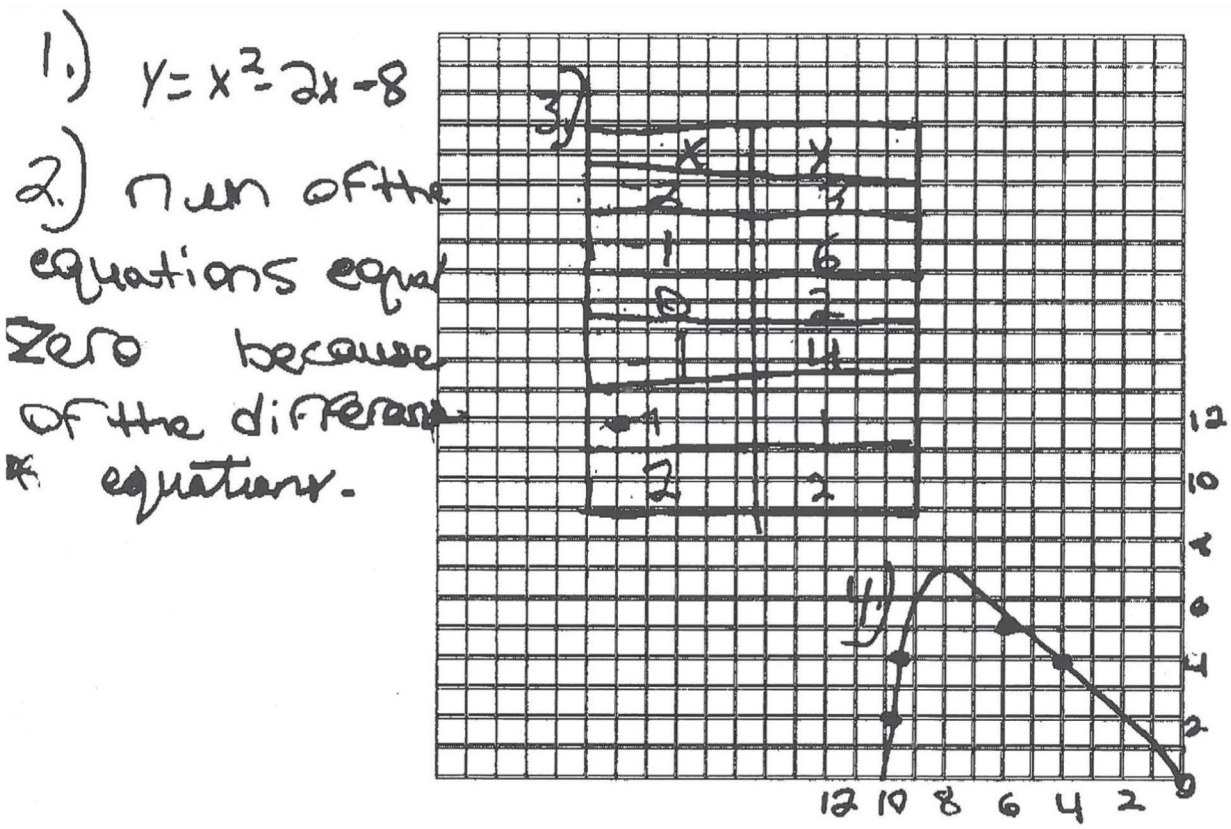
SCORE POINT: 0

Part 1		Points
Incorrect equation:	Repeats equation from the prompt.	-

Part 2		Points
Incorrect answer:	"nun of the equations equal zero…"	-

Part 3		Points
Incorrect table:	All of the y values are incorrect.	-

Part 4		Points
Incorrect graph:	Inverted x-axis. The plotted points are not the expected and are not from Part 3.	-
	Total Points	**0**



H. Meg paid $26.00 for 2 books and 2 games.

Meg's sister paid $28.00 for 4 books and 1 game.

Each book cost the same amount. Each game cost the same amount.

1. Write two equations that represent the situation stated above. Remember to define your variables.

2. Solve your system of equations from Part 1 using elimination or substitution. Show all of your work or explain how you found your answer.

3. Tyrone wants to buy 3 books and 2 games. What would be the **total** cost? Show all of your work or explain how you found your answer.

BE SURE TO LABEL YOUR RESPONSES 1, 2, AND 3.

Item H Scoring Rubric—2012 Algebra I

Score	Description
4	The student earns 4 points. The response contains no incorrect work. The label of "$" is included with Part 3 answer.
3	The student earns 3 – 3½ points.
2	The student earns 2 – 2½ points.
1	The student earns ½ – 1½ points, or some minimal understanding is shown.
0	The student earns 0 points. No understanding is shown.
B	Blank — No Response. A score of "B" will be reported as "NA." (No attempt to answer the item. Score of "0" is assigned for the item.)

SOLUTION AND SCORING

4 points possible:

Part	Points
1	**1 point possible:** 1 point: Correct and Complete Answer: 2 correct equations with variables defined Give credit for the following or equivalent: ● x = cost of a book y = cost of a game $2x + 2y = 26$ $4x + 1y = 28$ **OR** ½ point: Incomplete Answer: ● 2 correct equations Variables are not defined or ● 1 equation is correct 1 equation is missing or incorrect due to a copy error Variables are defined
2	**2 points possible:** 2 points: Correct solution: $x = 5$ and $y = 8$ (or correct solution based on incorrect linear equation(s) in Part 1) Correct procedure shown and/or explained Give credit for the following or equivalent: ● Using Elimination: $2[26 = 2x + 2y] \rightarrow 52 = 4x + 4y$ $52 = 4x + 4y$ $-(28 = 4x + y)$ $24 = 3y$ $8 = y$ x: $26 = 2x + 2(8)$ $10 = 2x$ $5 = x$ ● Using Substitution: $2x = 26 - 2y$ $x = 13 - y$ $28 = 4(13 - y) + y$ $28 = 52 - 4y + y$ $3y = 24$ $y = 8$ $26 = 2x + 2(8)$ $10 = 2x$ $5 = x$

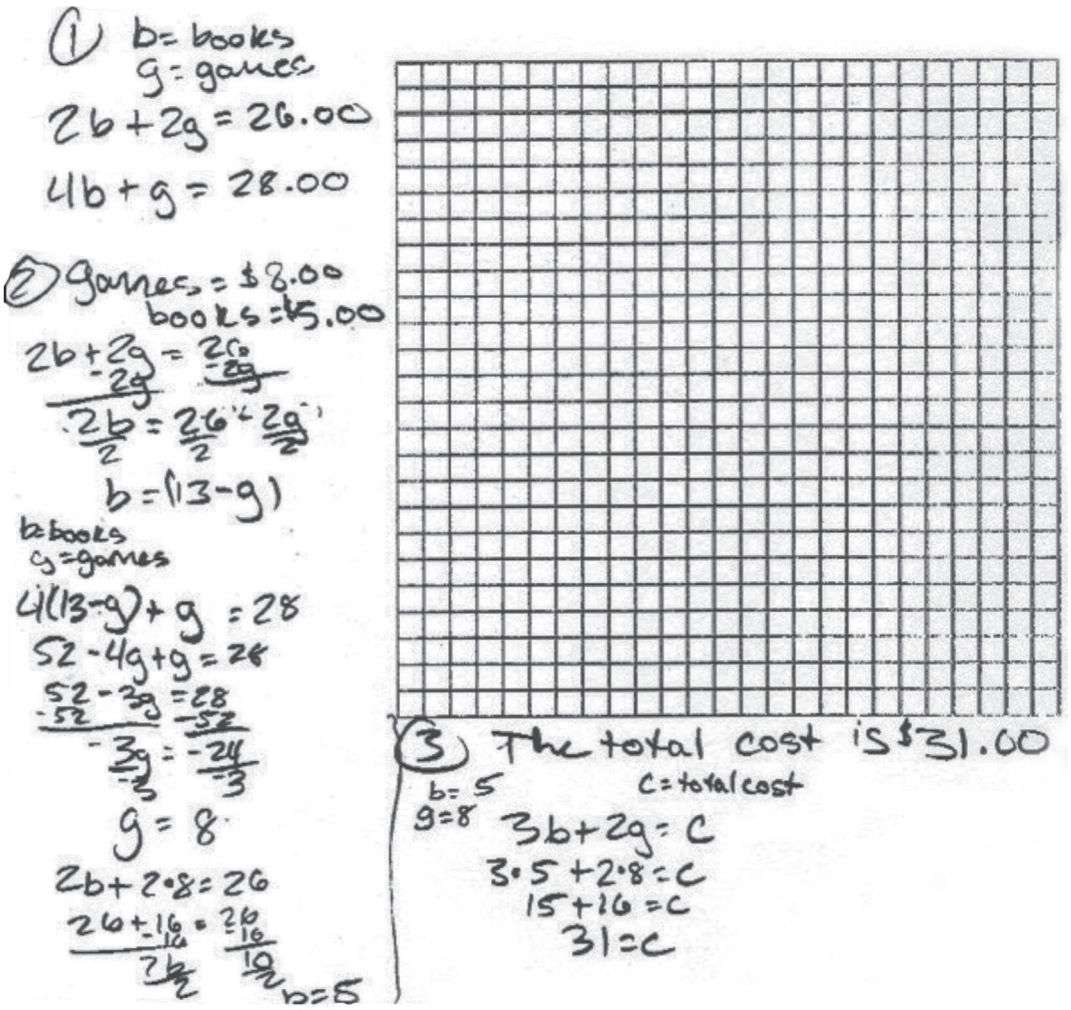
Part	Points
	OR 1 point: ● Correct solution: $x = 5$ and $y = 8$ Work is incomplete or missing or ● Solution is incorrect due to 1 calculation or copy error Correct procedure is shown and/or explained
3	**1 point possible:** 1 point: Correct cost: $31.00 (or correct cost based on incorrect *x and/or y* values in Part 2) Correct procedure is shown and/or explained Give credit for the following or equivalent: ● $3(\$5.00) + 2(\$8.00) = \$31.00 **OR** ½ point: ● Correct cost: $31.00 Work is incomplete or missing or ● Cost is incorrect due to 1 calculation, copy or rounding error Correct procedure is shown and/or explained

SCORE POINT: 4

Part 1		**Points**
Correct answer:	2b+2g=26.00 4b+g=28.00 b=books, g=games	1

Part 2		**Points**
Correct solution with correct procedure:	g = 8, b = 5 Substitutes variable b b = (13-g) 4(13-g) + g = 28 etc…	2

Part 3		**Points**
Correct answer with correct procedure:	$31.00 3 • 5 + 2 • 8	1
	Total Points	**4**

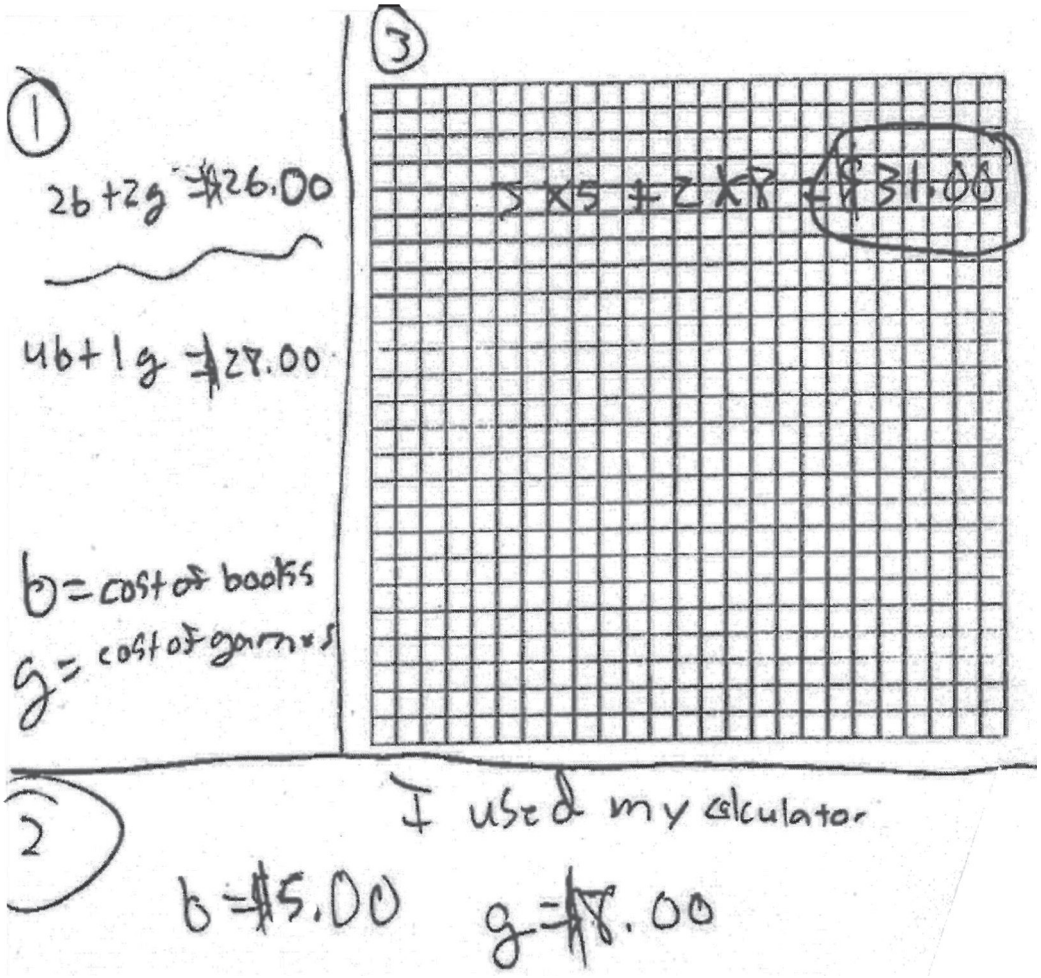


SCORE POINT: 3

Part 1		**Points**
Correct answer:	2b+2g = $26.00 4b+1g = $28.00 b=cost of books, g=cost of games	1

Part 2		**Points**
Correct solution with insufficient procedure:	b=$5.00, g=$8.00 "I used my calculator"	1

Part 3		**Points**
Correct answer with correct procedure:	$31.00 3×5 + 2×8	1
	Total Points	**3**

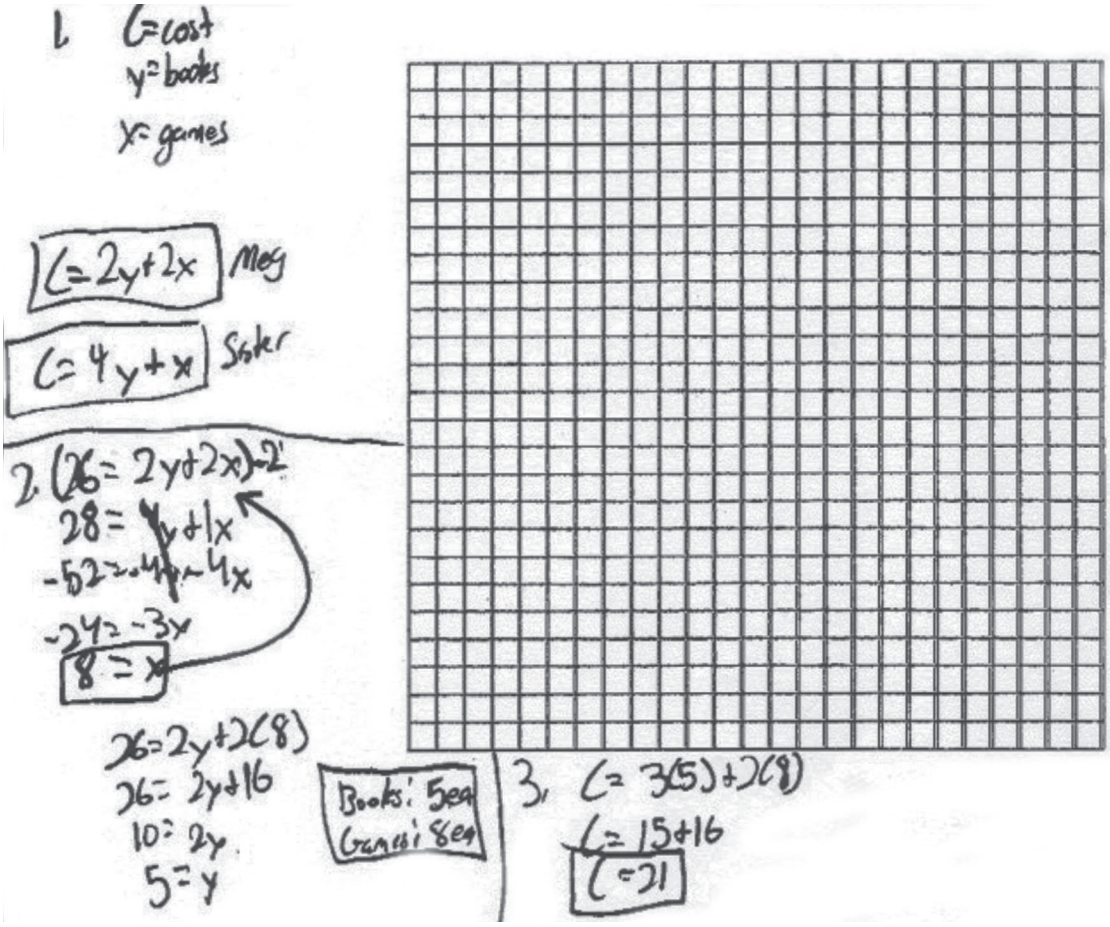


SCORE POINT: 2

Part 1		**Points**
Incorrect answer:	C = 2y + 2x C = 4y + x C=cost, y=books, x=games Need to show $26 and $28.	-

Part 2		**Points**
Correct solution with correct procedure:	8 = x, 5 = y Eliminates variable y, solves for x 28 = 4y + x -52 = -4y – 4x etc…	2

Part 3		**Points**
Incorrect answer, due to calculation error, with correct procedure:	C = 21 3(5) + 2(8) 15+16=21 (calc err)	½
	Total Points	**2½**

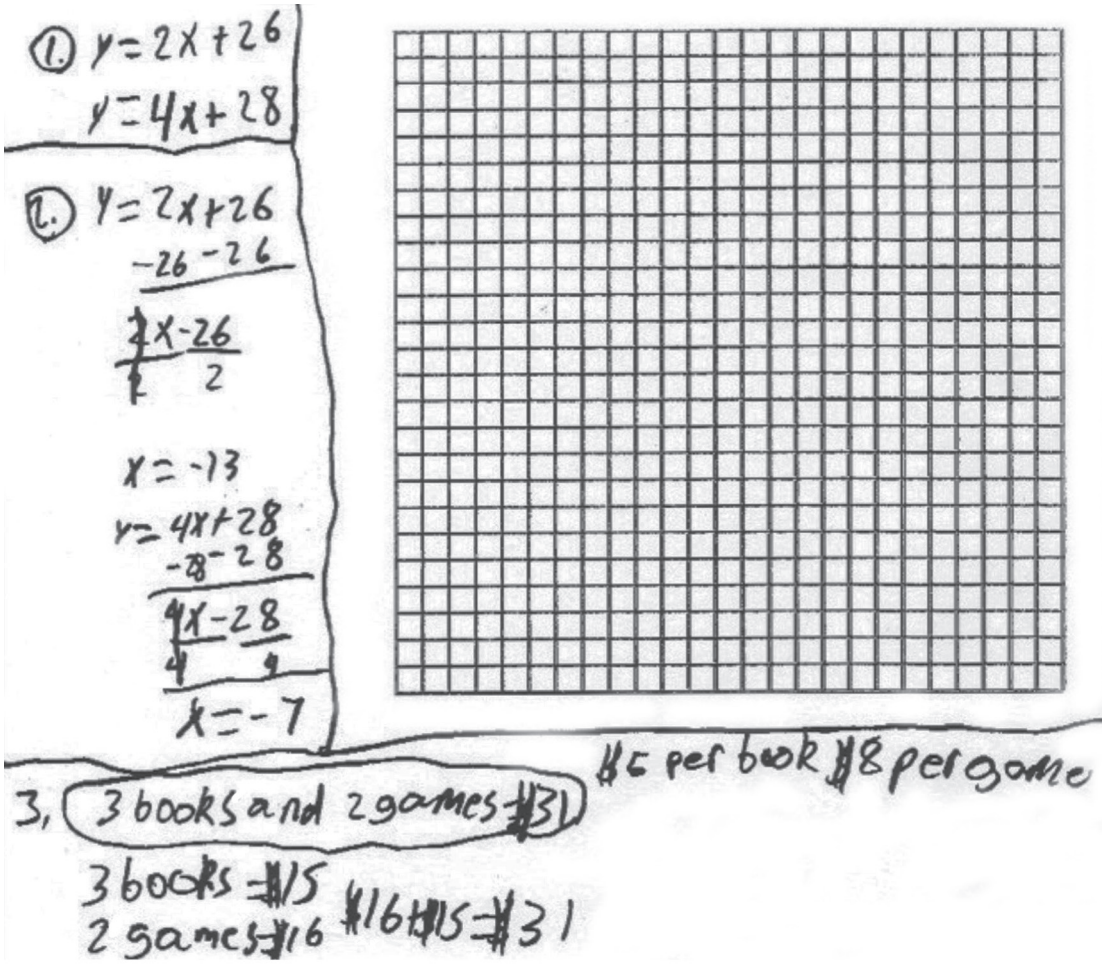


SCORE POINT: 1

Part 1		**Points**
Incorrect answer:	Y = 2X + 26 Y = 4X + 28	-

Part 2		**Points**
Incorrect solution with incorrect procedure:	X = -13 X = -7 Sets Y=0 and solves each equation separately.	-

Part 3		**Points**
Correct answer with correct procedure:	$31 Expected values $5 per book and $8 per game. 3 books=$15, 2 games=$16, 16+15	1
	Total Points	**1**



SCORE POINT: 0

Part 1		**Points**
Incorrect answer:	2b+2g = $26.00 4b + 1 = 28.00 (missing the g)	-

Part 2		**Points**
Missing solution with missing procedure:		-

Part 3		**Points**
Incorrect answer with missing procedure:	38.00	-
	Total Points	**0**

1. 2b + 2g = $26.00

4b + 1 = 28.00

2.

3. 3b + 2g = 38.00

because [illegible] book

will [illegible] like 5 to 10

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