The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

ALGEBRA I (Common Core)

Thursday, June 16, 2016 — 9:15 a.m. to 12:15 p.m., only

Student Name:_____

School Name:_____

The possession or use of any communications device is strictly prohibited when taking this examination. If you have or use any communications device, no matter how briefly, your examination will be invalidated and no score will be calculated for you.

Print your name and the name of your school on the lines above.

A separate answer sheet for Part I has been provided to you. Follow the instructions from the proctor for completing the student information on your answer sheet.

This examination has four parts, with a total of 37 questions. You must answer all questions in this examination. Record your answers to the Part I multiple-choice questions on the separate answer sheet. Write your answers to the questions in Parts II, III, and IV directly in this booklet. All work should be written in pen, except for graphs and drawings, which should be done in pencil. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale.

The formulas that you may need to answer some questions in this examination are found at the end of the examination. This sheet is perforated so you may remove it from this booklet.

Scrap paper is not permitted for any part of this examination, but you may use the blank spaces in this booklet as scrap paper. A perforated sheet of scrap graph paper is provided at the end of this booklet for any question for which graphing may be helpful but is not required. You may remove this sheet from this booklet. Any work done on this sheet of scrap graph paper will *not* be scored.

When you have completed the examination, you must sign the statement printed at the end of the answer sheet, indicating that you had no unlawful knowledge of the questions or answers prior to the examination and that you have neither given nor received assistance in answering any of the questions during the examination. Your answer sheet cannot be accepted if you fail to sign this declaration.

Notice…

A graphing calculator and a straightedge (ruler) must be available for you to use while taking this examination.

DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.

Part I

Answer all 24 questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For each statement or question, choose the word or expression that, of those given, best completes the statement or answers the question. Record your answers on your separate answer sheet. [48]

Use this space for computations.

1 The expression $x^4 - 16$ is equivalent to

(1) $(x^2 + 8)(x^2 - 8)$

(2) $(x^2 - 8)(x^2 - 8)$

(3) $(x^2 + 4)(x^2 - 4)$

(4) $(x^2 - 4)(x^2 - 4)$

2 An expression of the fifth degree is written with a leading coefficient of seven and a constant of six. Which expression is correctly written for these conditions?

(1) $6x^5 + x^4 + 7$

(2) $7x^6 - 6x^4 + 5$

(3) $6x^7 - x^5 + 5$

(4) $7x^5 + 2x^2 + 6$

3 The table below shows the year and the number of households in a building that had high-speed broadband internet access.

Number of Households	11	16	23	33	42	47
Year	2002	2003	2004	2005	2006	2007

For which interval of time was the average rate of change the *smallest*?

(1) 2002 – 2004

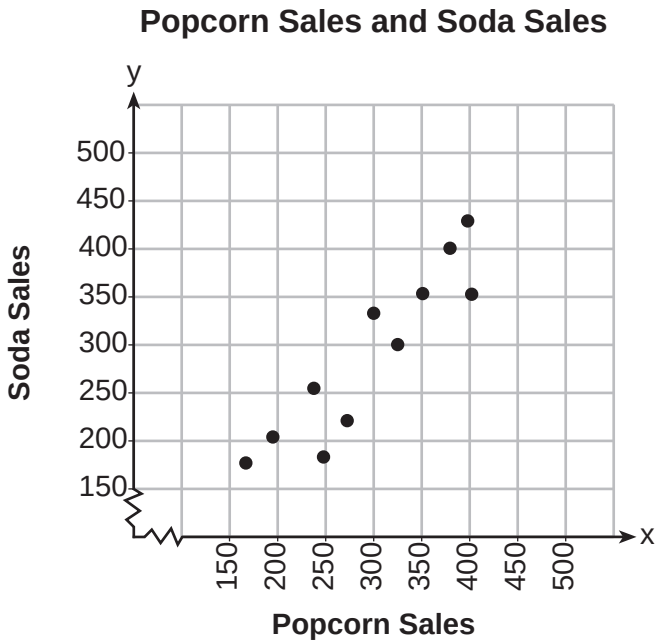
(2) 2003 – 2005

(3) 2004 – 2006

(4) 2005 – 2007

Use this space for computations.

4 The scatterplot below compares the number of bags of popcorn and the number of sodas sold at each performance of the circus over one week.



Which conclusion can be drawn from the scatterplot?

(1) There is a negative correlation between popcorn sales and soda sales.

(2) There is a positive correlation between popcorn sales and soda sales.

(3) There is no correlation between popcorn sales and soda sales.

(4) Buying popcorn causes people to buy soda.

5 The Celluloid Cinema sold 150 tickets to a movie. Some of these were child tickets and the rest were adult tickets. A child ticket cost \$7.75 and an adult ticket cost \$10.25. If the cinema sold \$1470 worth of tickets, which system of equations could be used to determine how many adult tickets, a, and how many child tickets, c, were sold?

(1) $a + c = 150$
$10.25a + 7.75c = 1470$

(2) $a + c = 1470$
$10.25a + 7.75c = 150$

(3) $a + c = 150$
$7.75a + 10.25c = 1470$

(4) $a + c = 1470$
$7.75a + 10.25c = 150$

Use this space for computations.

6 The tables below show the values of four different functions for given values of x.

x	f(x)
1	12
2	19
3	26
4	33

x	g(x)
1	–1
2	1
3	5
4	13

x	h(x)
1	9
2	12
3	17
4	24

x	k(x)
1	–2
2	4
3	14
4	28

Which table represents a linear function?

(1) $f(x)$
(2) $g(x)$
(3) $h(x)$
(4) $k(x)$

7 The acidity in a swimming pool is considered normal if the average of three pH readings, p, is defined such that $7.0 < p < 7.8$. If the first two readings are 7.2 and 7.6, which value for the third reading will result in an overall rating of normal?

(1) 6.2
(2) 7.3
(3) 8.6
(4) 8.8

8 Dan took 12.5 seconds to run the 100-meter dash. He calculated the time to be approximately

(1) 0.2083 minute
(2) 750 minutes
(3) 0.2083 hour
(4) 0.52083 hour

9 When $3x + 2 \leq 5(x - 4)$ is solved for x, the solution is

(1) $x \leq 3$
(2) $x \geq 3$
(3) $x \leq -11$
(4) $x \geq 11$

Use this space for computations.

10 The expression $3(x^2 - 1) - (x^2 - 7x + 10)$ is equivalent to

(1) $2x^2 - 7x + 7$

(2) $2x^2 + 7x - 13$

(3) $2x^2 - 7x + 9$

(4) $2x^2 + 7x - 11$

11 The range of the function $f(x) = x^2 + 2x - 8$ is all real numbers

(1) less than or equal to -9

(2) greater than or equal to -9

(3) less than or equal to -1

(4) greater than or equal to -1

12 The zeros of the function $f(x) = x^2 - 5x - 6$ are

(1) -1 and 6

(2) 1 and -6

(3) 2 and -3

(4) -2 and 3

13 In a sequence, the first term is 4 and the common difference is 3. The fifth term of this sequence is

(1) -11

(2) -8

(3) 16

(4) 19

14 The growth of a certain organism can be modeled by $C(t) = 10(1.029)^{24t}$, where $C(t)$ is the total number of cells after t hours. Which function is approximately equivalent to $C(t)$?

(1) $C(t) = 240(.083)^{24t}$

(2) $C(t) = 10(.083)^t$

(3) $C(t) = 10(1.986)^t$

(4) $C(t) = 240(1.986)^{\frac{t}{24}}$

Use this space for computations.

15 A public opinion poll was taken to explore the relationship between age and support for a candidate in an election. The results of the poll are summarized in the table below.

Age	For	Against	No Opinion
21–40	30	12	8
41–60	20	40	15
Over 60	25	35	15

What percent of the 21–40 age group was for the candidate?

(1) 15
(2) 25
(3) 40
(4) 60

16 Which equation and ordered pair represent the correct vertex form and vertex for $j(x) = x^2 - 12x + 7$?

(1) $j(x) = (x - 6)^2 + 43, \quad (6,43)$
(2) $j(x) = (x - 6)^2 + 43, \quad (-6,43)$
(3) $j(x) = (x - 6)^2 - 29, \quad (6,-29)$
(4) $j(x) = (x - 6)^2 - 29, \quad (-6,-29)$

17 A student invests \$500 for 3 years in a savings account that earns 4% interest per year. No further deposits or withdrawals are made during this time. Which statement does *not* yield the correct balance in the account at the end of 3 years?

(1) $500(1.04)^3$
(2) $500(1 - .04)^3$
(3) $500(1 + .04)(1 + .04)(1 + .04)$
(4) $500 + 500(.04) + 520(.04) + 540.8(.04)$

Use this space for computations.

18 The line represented by the equation $4y + 2x = 33.6$ shares a solution point with the line represented by the table below.

x	y
–5	3.2
–2	3.8
2	4.6
4	5
11	6.4

The solution for this system is

(1) $(-14.0,-1.4)$

(2) $(-6.8,5.0)$

(3) $(1.9,4.6)$

(4) $(6.0,5.4)$

19 What is the solution of the equation $2(x + 2)^2 - 4 = 28$?

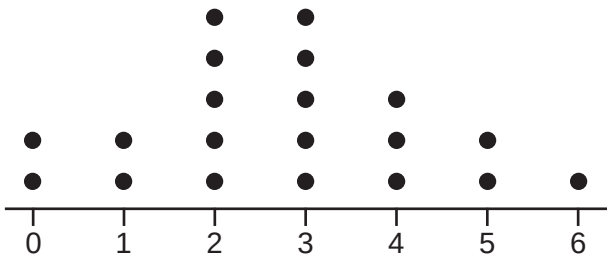
(1) 6, only

(2) 2, only

(3) 2 and -6

(4) 6 and -2

20 The dot plot shown below represents the number of pets owned by students in a class.



Which statement about the data is *not* true?

(1) The median is 3.

(2) The interquartile range is 2.

(3) The mean is 3.

(4) The data contain no outliers.

Use this space for computations.

21 What is the largest integer, x, for which the value of $f(x) = 5x^4 + 30x^2 + 9$ will be greater than the value of $g(x) = 3^x$?

(1) 7
(2) 8
(3) 9
(4) 10

22 The graphs of the functions $f(x) = |x - 3| + 1$ and $g(x) = 2x + 1$ are drawn. Which statement about these functions is true?

(1) The solution to $f(x) = g(x)$ is 3.
(2) The solution to $f(x) = g(x)$ is 1.
(3) The graphs intersect when $y = 1$.
(4) The graphs intersect when $x = 3$.

23 A store sells self-serve frozen yogurt sundaes. The function $C(w)$ represents the cost, in dollars, of a sundae weighing w ounces. An appropriate domain for the function would be

(1) integers
(2) rational numbers
(3) nonnegative integers
(4) nonnegative rational numbers

24 Sara was asked to solve this word problem: "The product of two consecutive integers is 156. What are the integers?"

What type of equation should she create to solve this problem?

(1) linear
(2) quadratic
(3) exponential
(4) absolute value

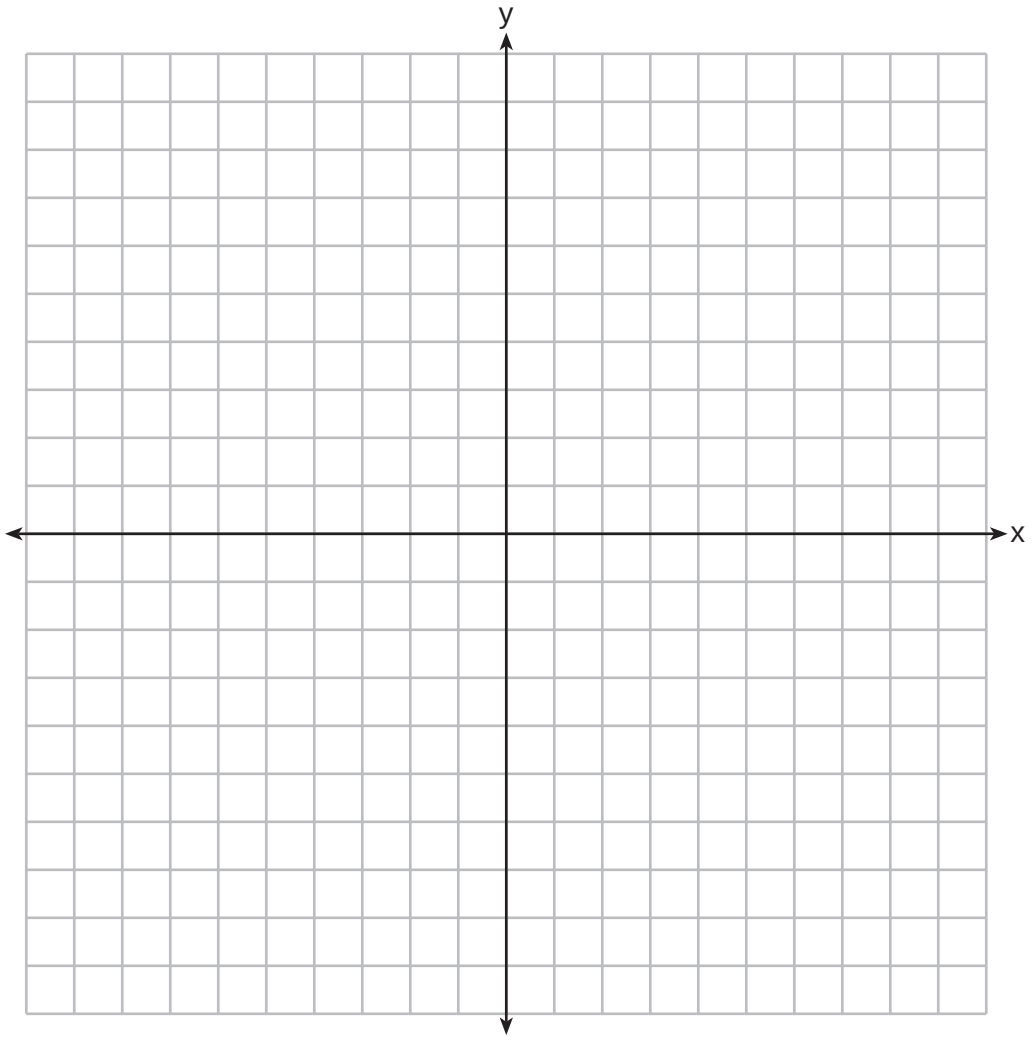
Part II

Answer all 8 questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [16]

25 Given that $f(x) = 2x + 1$, find $g(x)$ if $g(x) = 2[f(x)]^2 - 1$.

26 Determine if the product of $3\sqrt{2}$ and $8\sqrt{18}$ is rational or irrational. Explain your answer.

27 On the set of axes below, draw the graph of $y = x^2 - 4x - 1$.



State the equation of the axis of symmetry.

28 Amy solved the equation $2x^2 + 5x - 42 = 0$. She stated that the solutions to the equation were $\frac{7}{2}$ and -6. Do you agree with Amy's solutions? Explain why or why not.

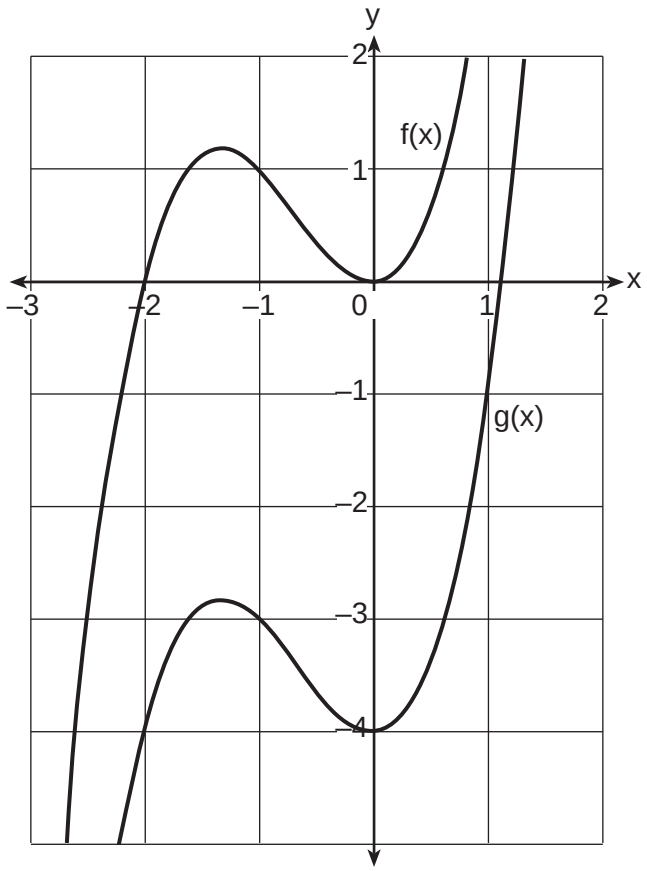
29 Sue and Kathy were doing their algebra homework. They were asked to write the equation of the line that passes through the points $(-3,4)$ and $(6,1)$. Sue wrote $y - 4 = -\frac{1}{3}(x + 3)$ and Kathy wrote $y = -\frac{1}{3}x + 3$. Justify why both students are correct.

30 During a recent snowstorm in Red Hook, NY, Jaime noted that there were 4 inches of snow on the ground at 3:00 p.m., and there were 6 inches of snow on the ground at 7:00 p.m.

If she were to graph these data, what does the slope of the line connecting these two points represent in the context of this problem?

31 The formula for the sum of the degree measures of the interior angles of a polygon is $S = 180(n - 2)$. Solve for n, the number of sides of the polygon, in terms of S.

32 In the diagram below, $f(x) = x^3 + 2x^2$ is graphed. Also graphed is $g(x)$, the result of a translation of $f(x)$.



Determine an equation of $g(x)$. Explain your reasoning.

Part III

Answer all 4 questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [16]

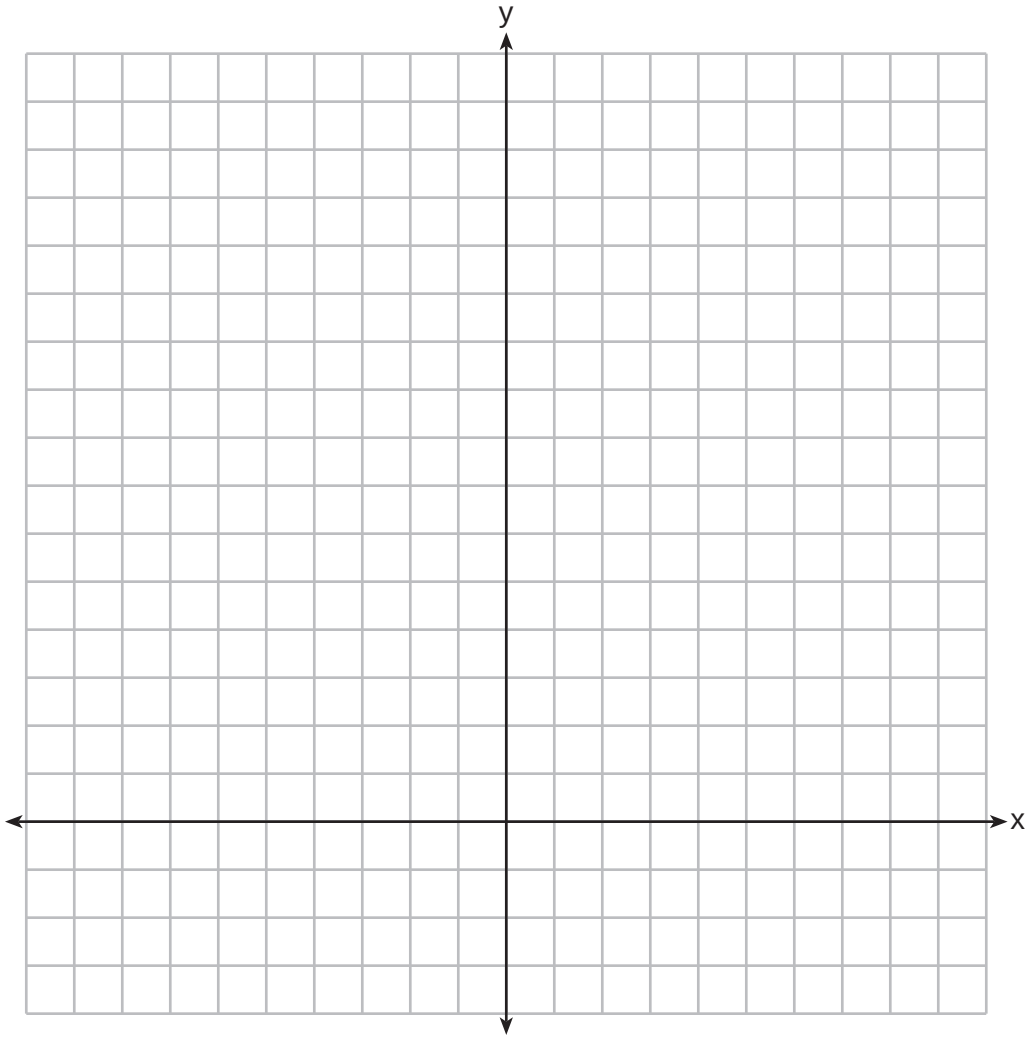
33 The height, H, in feet, of an object dropped from the top of a building after t seconds is given by $H(t) = -16t^2 + 144$.

How many feet did the object fall between one and two seconds after it was dropped?

Determine, algebraically, how many seconds it will take for the object to reach the ground.

34 The sum of two numbers, x and y, is more than 8. When you double x and add it to y, the sum is less than 14.

Graph the inequalities that represent this scenario on the set of axes below.



Kai says that the point (6,2) is a solution to this system. Determine if he is correct and explain your reasoning.

35 An airplane leaves New York City and heads toward Los Angeles. As it climbs, the plane gradually increases its speed until it reaches cruising altitude, at which time it maintains a constant speed for several hours as long as it stays at cruising altitude. After flying for 32 minutes, the plane reaches cruising altitude and has flown 192 miles. After flying for a total of 92 minutes, the plane has flown a total of 762 miles.

Determine the speed of the plane, at cruising altitude, in miles per minute.

Write an equation to represent the number of miles the plane has flown, y, during x minutes at cruising altitude, only.

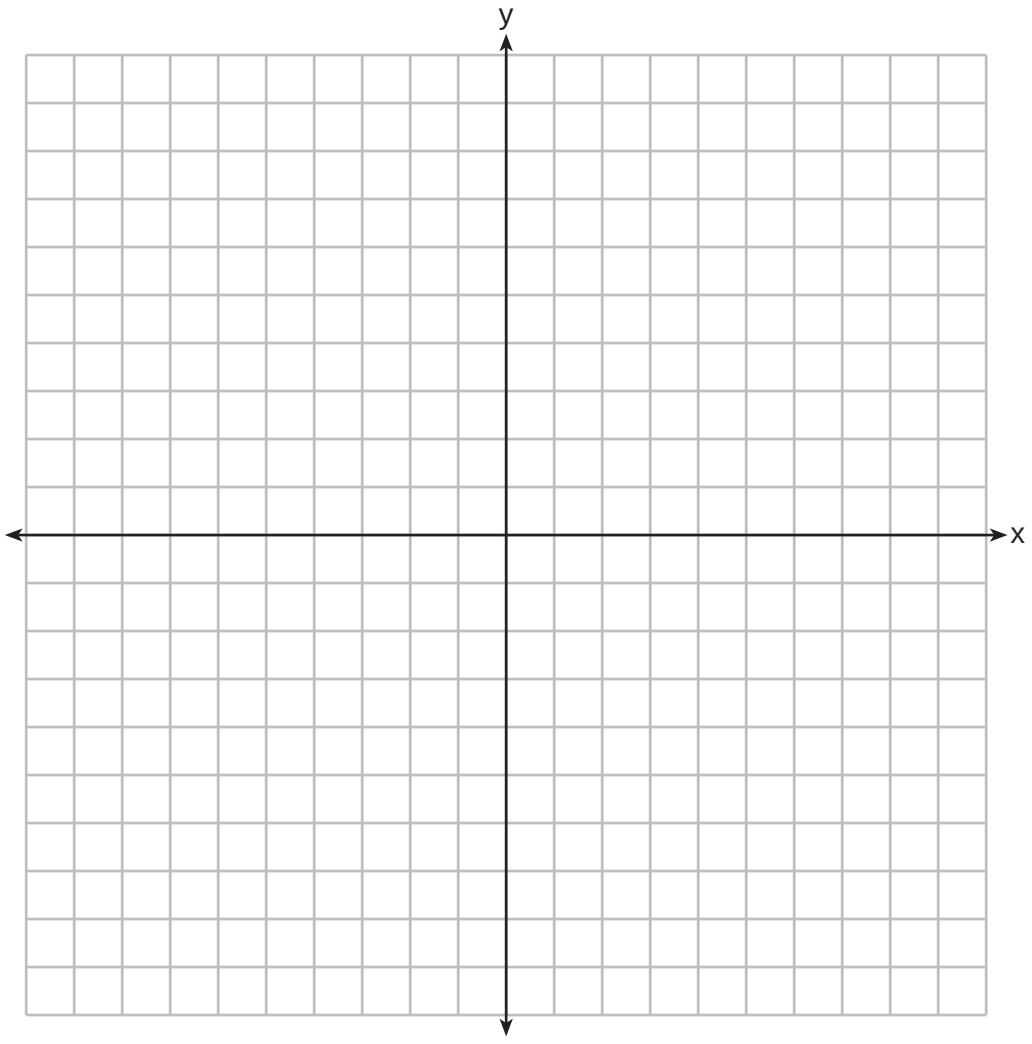
Assuming that the plane maintains its speed at cruising altitude, determine the total number of miles the plane has flown 2 hours into the flight.

36 On the set of axes below, graph

$$g(x) = \frac{1}{2}x + 1$$

and

$$f(x) = \begin{cases} 2x + 1, & x \leq -1 \\ 2 - x^2, & x > -1 \end{cases}$$



How many values of x satisfy the equation $f(x) = g(x)$? Explain your answer, using evidence from your graphs.

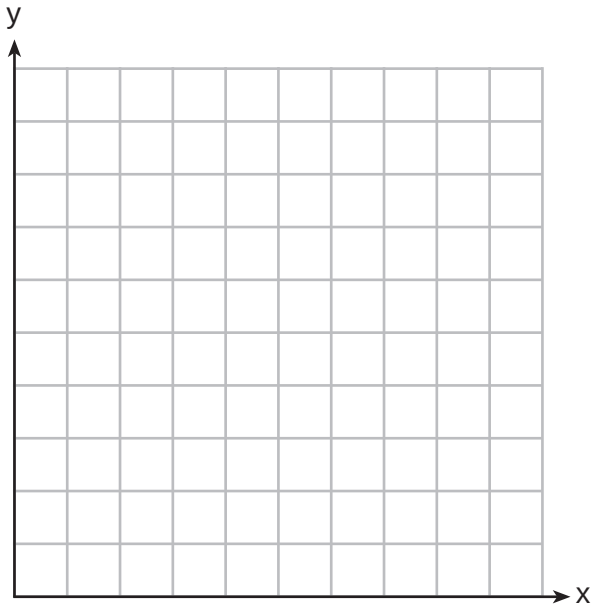
Part IV

Answer the question in this part. A correct answer will receive 6 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided to determine your answer. Note that diagrams are not necessarily drawn to scale. A correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [6]

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

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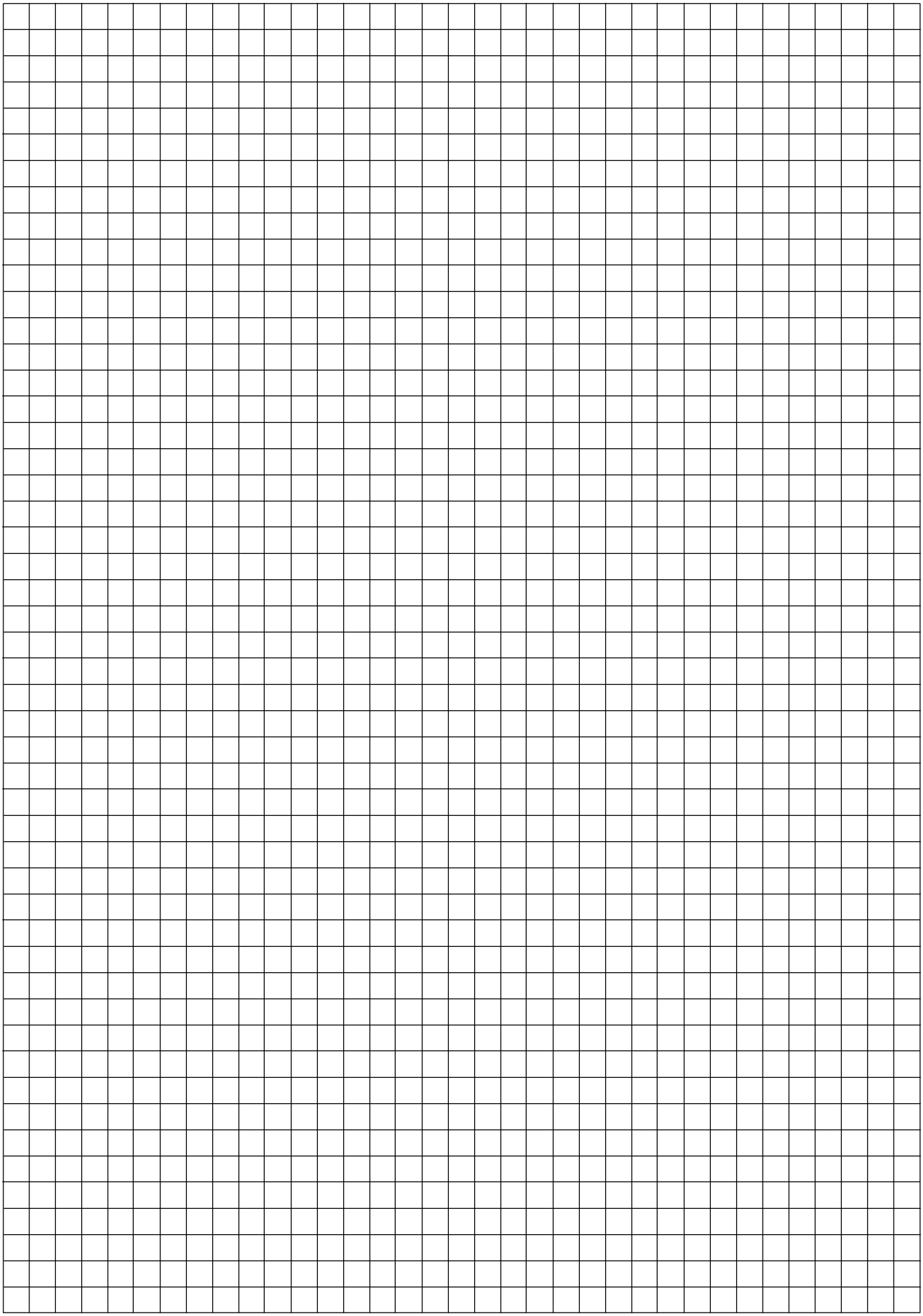
Scrap Graph Paper — This sheet will *not* be scored.



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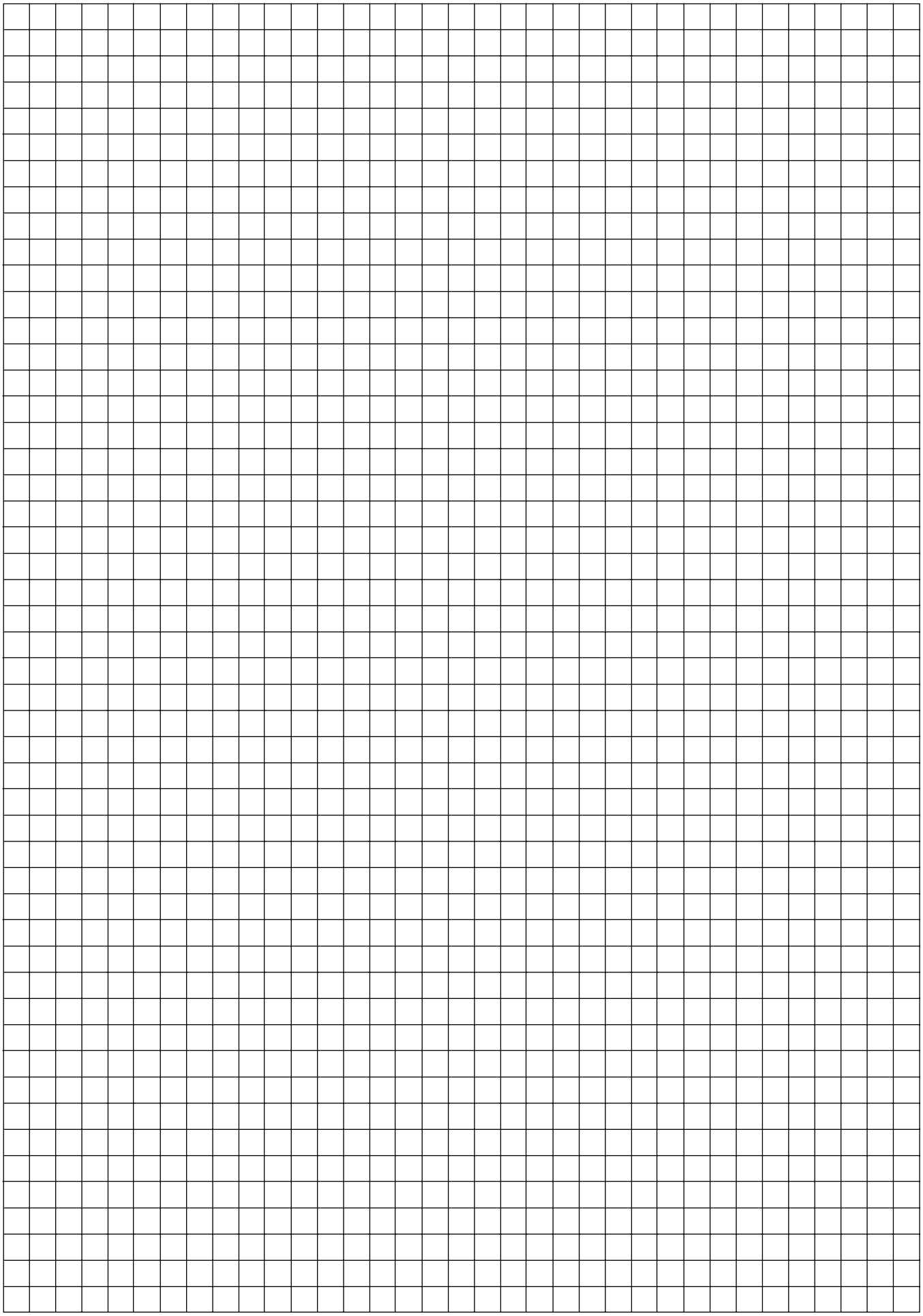

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High School Math Reference Sheet

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5280 feet
1 mile = 1760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilogram
1 kilogram = 2.2 pounds
1 ton = 2000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallon
1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pyramid	$V = \frac{1}{3}Bh$

Pythagorean Theorem	$a^2 + b^2 = c^2$
Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Arithmetic Sequence	$a_n = a_1 + (n - 1)d$
Geometric Sequence	$a_n = a_1 r^{n-1}$
Geometric Series	$S_n = \frac{a_1 - a_1 r^n}{1 - r}$ where $r \neq 1$
Radians	1 radian $= \frac{180}{\pi}$ degrees
Degrees	1 degree $= \frac{\pi}{180}$ radians
Exponential Growth/Decay	$A = A_0 e^{k(t - t_0)} + B_0$

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FOR TEACHERS ONLY

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ALGEBRA I (Common Core)

Thursday, June 16, 2016 — 9:15 a.m. to 12:15 p.m., only

SCORING KEY AND RATING GUIDE

Mechanics of Rating

The following procedures are to be followed for scoring student answer papers for the Regents Examination in Algebra I (Common Core). More detailed information about scoring is provided in the publication *Information Booklet for Scoring the Regents Examination in Algebra I (Common Core)*.

Do *not* attempt to correct the student's work by making insertions or changes of any kind. In scoring the constructed-response questions, use check marks to indicate student errors. Unless otherwise specified, mathematically correct variations in the answers will be allowed. Units need not be given when the wording of the questions allows such omissions.

Each student's answer paper is to be scored by a minimum of three mathematics teachers. No one teacher is to score more than approximately one-third of the constructed-response questions on a student's paper. Teachers may not score their own students' answer papers. On the student's separate answer sheet, for each question, record the number of credits earned and the teacher's assigned rater/scorer letter.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Raters should record the student's scores for all questions and the total raw score on the student's separate answer sheet. Then the student's total raw score should be converted to a scale score by using the conversion chart that will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ by Thursday, June 16, 2016. Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student's final score. The student's scale score should be entered in the box provided on the student's separate answer sheet. The scale score is the student's final examination score.

If the student's responses for the multiple-choice questions are being hand scored prior to being scanned, the scorer must be careful not to make any marks on the answer sheet except to record the scores in the designated score boxes. Marks elsewhere on the answer sheet will interfere with the accuracy of the scanning.

Part I

Allow a total of 48 credits, 2 credits for each of the following.

(1) 3	(9) 4	(17) . . . . . 2 . . . . .
(2) 4	(10) 2	(18) . . . . . 4 . . . . .
(3) 1	(11) 2	(19) . . . . . 3 . . . . .
(4) 2	(12) 1	(20) . . . . . 3 . . . . .
(5) 1	(13) 3	(21) . . . . . 3 . . . . .
(6) 1	(14) 3	(22) . . . . . 2 . . . . .
(7) 2	(15) 4	(23) . . . . . 4 . . . . .
(8) 1	(16) 3	(24) . . . . . 2 . . . . .

Updated information regarding the rating of this examination may be posted on the New York State Education Department's web site during the rating period. Check this web site at: http://www.p12.nysed.gov/assessment/ and select the link "Scoring Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents Examination period.

The Department is providing supplemental scoring guidance, the "Model Response Set," for the Regents Examination in Algebra I (Common Core). This guidance is recommended to be part of the scorer training. Schools are encouraged to incorporate the Model Response Sets into the scorer training or to use them as additional information during scoring. While not reflective of all scenarios, the model responses selected for the Model Response Set illustrate how less common student responses to constructed-response questions may be scored. The Model Response Set will be available on the Department's web site at http://www.nysedregents.org/algebraone/.

General Rules for Applying Mathematics Rubrics

I. General Principles for Rating

The rubrics for the constructed-response questions on the Regents Examination in Algebra I (Common Core) are designed to provide a systematic, consistent method for awarding credit. The rubrics are not to be considered all-inclusive; it is impossible to anticipate all the different methods that students might use to solve a given problem. Each response must be rated carefully using the teacher's professional judgment and knowledge of mathematics; all calculations must be checked. The specific rubrics for each question must be applied consistently to all responses. In cases that are not specifically addressed in the rubrics, raters must follow the general rating guidelines in the publication *Information Booklet for Scoring the Regents Examination in Algebra I (Common Core)*, use their own professional judgment, confer with other mathematics teachers, and/or contact the State Education Department for guidance. During each Regents Examination administration period, rating questions may be referred directly to the Education Department. The contact numbers are sent to all schools before each administration period.

II. Full-Credit Responses

A full-credit response provides a complete and correct answer to all parts of the question. Sufficient work is shown to enable the rater to determine how the student arrived at the correct answer.

When the rubric for the full-credit response includes one or more examples of an acceptable method for solving the question (usually introduced by the phrase "such as"), it does not mean that there are no additional acceptable methods of arriving at the correct answer. Unless otherwise specified, mathematically correct alternative solutions should be awarded credit. The only exceptions are those questions that specify the type of solution that must be used; e.g., an algebraic solution or a graphic solution. A correct solution using a method other than the one specified is awarded half the credit of a correct solution using the specified method.

III. Appropriate Work

Full-Credit Responses: The directions in the examination booklet for all the constructed-response questions state: "Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc." The student has the responsibility of providing the correct answer ***and*** showing how that answer was obtained. The student must "construct" the response; the teacher should not have to search through a group of seemingly random calculations scribbled on the student paper to ascertain what method the student may have used.

Responses With Errors: Rubrics that state "Appropriate work is shown, but…" are intended to be used with solutions that show an essentially complete response to the question but contain certain types of errors, whether computational, rounding, graphing, or conceptual. If the response is incomplete; i.e., an equation is written but not solved or an equation is solved but not all of the parts of the question are answered, appropriate work has ***not*** been shown. Other rubrics address incomplete responses.

IV. Multiple Errors

Computational Errors, Graphing Errors, and Rounding Errors: Each of these types of errors results in a 1-credit deduction. Any combination of two of these types of errors results in a 2-credit deduction. No more than 2 credits should be deducted for such mechanical errors in a 4-credit question and no more than 3 credits should be deducted in a 6-credit question. The teacher must carefully review the student's work to determine what errors were made and what type of errors they were.

Conceptual Errors: A conceptual error involves a more serious lack of knowledge or procedure. Examples of conceptual errors include using the incorrect formula for the area of a figure, choosing the incorrect trigonometric function, or multiplying the exponents instead of adding them when multiplying terms with exponents.

If a response shows repeated occurrences of the same conceptual error, the student should not be penalized twice. If the same conceptual error is repeated in responses to other questions, credit should be deducted in each response.

For 4- and 6-credit questions, if a response shows one conceptual error and one computational, graphing, or rounding error, the teacher must award credit that takes into account both errors. Refer to the rubric for specific scoring guidelines.

Part II

For each question, use the specific criteria to award a maximum of 2 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(25) **[2]** $2(2x + 1)^2 - 1$ or an equivalent expression is written.

[1] Appropriate work is shown, but one computational error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(26) **[2]** Rational, and a correct explanation is written.

[1] Appropriate work is shown, but one computational error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] A correct explanation is written, but rational is not stated.

or

[1] 144 and rational, but the explanation is missing or incorrect.

[0] Rational, but the explanation is missing or incorrect.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(27) **[2]** A correct graph is drawn and $x = 2$ is stated.

[1] Appropriate work is shown, but one computational or graphing error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] A correct graph is drawn, but no further correct work is shown.

or

[1] $x = 2$ is stated, but no further correct work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(28) **[2]** Yes, and a correct explanation is written.

[1] Appropriate work is shown, but one computational or factoring error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] Yes, but the explanation is incomplete.

[0] Yes, but the explanation is missing or incorrect.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(29) **[2]** A correct justification is given.

[1] Appropriate work is shown, but one computational error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] An incomplete justification is given.

[0] An incorrect justification is given.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(30) **[2]** The number of inches of snow falling per hour or an equivalent explanation is written.

[1] Appropriate work is shown, but one computational error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] An incomplete explanation is written.

or

[1] Appropriate work is shown to find $\frac{1}{2}$, but no explanation or an incorrect explanation is written.

or

[1] An explanation that doesn't refer to the context is written.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(31) **[2]** $n = \frac{S+360}{180}$ or $n = \frac{S}{180} + 2$, and correct work is shown.

[1] Appropriate work is shown, but one computational error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] $n = \frac{S+360}{180}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(32) **[2]** $g(x) = x^3 + 2x^2 - 4$ or $g(x) = f(x) - 4$, and a correct explanation is written.

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] Appropriate work is shown, but the explanation is missing or incorrect.

or

[1] A correct explanation is written, but no further correct work is shown.

or

[1] The expression $x^3 + 2x^2 - 4$ is written, and a correct explanation is written.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

Part III

For each question, use the specific criteria to award a maximum of 4 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(33) **[4]** 48, 3, and correct work is shown.

[3] Appropriate work is shown, but one computational error is made.

[2] Appropriate work is shown, but two or more computational errors are made.

or

[2] Appropriate work is shown, but one conceptual error is made.

or

[2] Appropriate work is shown to find 48 or 3, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational error are made.

or

[1] Appropriate work is shown to find 128 and 80, but no further correct work is shown.

or

[1] 48 and 3, but no work is shown.

[0] 128 and 80, but no work is shown.

or

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(34) **[4]** Both inequalities are graphed correctly and at least one is labeled, and a correct explanation stating he is incorrect is written.

[3] Appropriate work is shown, but one computational, graphing, or labeling error is made.

or

[3] Appropriate work is shown, but the explanation is missing or incorrect.

[2] Appropriate work is shown, but one conceptual error is made.

or

[2] Appropriate work is shown, but two or more computational, graphing, or labeling errors are made.

or

[2] Both inequalities are graphed correctly, but no further correct work is shown.

[1] Both inequalities are stated correctly, but no further correct work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(35) **[4]** 9.5, $y = 9.5x$ and 1028, and correct work is shown.

[3] Appropriate work is shown, but one computational error is made.

or

[3] Appropriate work is shown to find 9.5 and 1028, but no equation or an incorrect equation is written.

or

[3] Appropriate work is shown to find 9.5, $y = 9.5x$ and 266, the number of miles flown after 92 minutes, but no further correct work is shown.

[2] Appropriate work is shown, but two or more computational errors are made.

or

[2] Appropriate work is shown, but one conceptual error is made.

or

[2] Appropriate work is shown to find 9.5 and $y = 9.5x$, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational error are made.

or

[1] Appropriate work is shown to find 9.5, but no further correct work is shown.

or

[1] 9.5, $y = 9.5x$ and 1028, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(36) **[4]** Correct graphs are drawn, 1, and a correct explanation is written.

[3] Appropriate work is shown, but one computational or graphing error is made.

or

[3] Appropriate work is shown, but the explanation is missing or incorrect.

[2] Appropriate work is shown, but two or more computational or graphing errors are made.

or

[2] Appropriate work is shown, but one conceptual error is made.

or

[2] Correct graphs are drawn, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational or graphing error are made.

or

[1] Two of the following equations are graphed correctly: $y = 2x + 1$ over $x \leq -1$, $y = 2 - x^2$ over $x > -1$, or $y = \frac{1}{2}x + 1$ for all real numbers.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

Part IV

For this question, use the specific criteria to award a maximum of 6 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(37) **[6]** $3x + 2y = 19$ and $2x + 4y = 24$ are written and graphed correctly, and at least one is labeled, $x = 3.50$ and $y = 4.25$ or the coordinates (3.50, 4.25) are stated, and a justification is given.

[5] Appropriate work is shown, but one computational, graphing, or labeling error is made.

or

[5] Appropriate work is shown, but the justification is missing.

or

[5] Appropriate work is shown, but only one cost is stated correctly.

[4] Appropriate work is shown, but two computational, graphing, or labeling errors are made.

or

[4] Appropriate work is shown, but one conceptual error is made.

or

[4] A correct system of equations is written and graphed correctly, and at least one is labeled, but no further correct work is shown.

or

[4] Appropriate work is shown, but no graphs are drawn.

[3] Appropriate work is shown, but three or more computational, graphing, or labeling errors are made.

or

[3] Appropriate work is shown, but one conceptual error and one computational, graphing, or labeling error are made.

or

[3] A correct system of equations is written, and one line is graphed and labeled correctly, but no further correct work is shown.

[2] Appropriate work is shown, but one conceptual error and two or more computational, graphing, or labeling errors are made.

or

[2] Appropriate work is shown, but two conceptual errors are made.

or

[2] A correct system of equations is written, but no further correct work is shown.

or

[2] Only one equation is written and graphed correctly, but no further correct work is shown.

[1] Appropriate work is shown, but two conceptual errors and one computational, graphing, or labeling error are made.

or

[1] Only one of the equations is written correctly, but no further correct work is shown.

or

[1] $x = 3.50$ and $y = 4.25$ or the coordinates (3.50, 4.25) are stated, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

Map to the Common Core Learning Standards
Algebra I (Common Core)
June 2016

Question	Type	Credits	Cluster
1	Multiple Choice	2	A-SSE.A
2	Multiple Choice	2	A-SSE.A
3	Multiple Choice	2	F-IF.B
4	Multiple Choice	2	S-ID.C
5	Multiple Choice	2	A-REI.C
6	Multiple Choice	2	F-LE.A
7	Multiple Choice	2	A-CED.A
8	Multiple Choice	2	N-Q.A
9	Multiple Choice	2	A-REI.B
10	Multiple Choice	2	A-APR.A
11	Multiple Choice	2	F-IF.A
12	Multiple Choice	2	A-APR.B
13	Multiple Choice	2	F-IF.A
14	Multiple Choice	2	A-SSE.B
15	Multiple Choice	2	S-ID.B
16	Multiple Choice	2	F-IF.C
17	Multiple Choice	2	F-BF.A
18	Multiple Choice	2	F-IF.C
19	Multiple Choice	2	A-REI.B
20	Multiple Choice	2	S-ID.A

21	Multiple Choice	2	F-LE.A
22	Multiple Choice	2	F-IF.A
23	Multiple Choice	2	F-IF.B
24	Multiple Choice	2	A-CED.A
25	Constructed Response	2	F-IF.A
26	Constructed Response	2	N-RN.B
27	Constructed Response	2	A-REI.D
28	Constructed Response	2	A-REI.A
29	Constructed Response	2	A-REI.D
30	Constructed Response	2	S-ID.C
31	Constructed Response	2	A-CED.A
32	Constructed Response	2	F-BF.B
33	Constructed Response	4	A-SSE.B
34	Constructed Response	4	A-REI.D
35	Constructed Response	4	A-CED.A
36	Constructed Response	4	F-IF.C
37	Constructed Response	6	A-CED.A

Regents Examination in Algebra I (Common Core)

June 2016

Chart for Converting Total Test Raw Scores to Final Examination Scores (Scale Scores)

The *Chart for Determining the Final Examination Score for the June 2016 Regents Examination in Algebra I (Common Core)* will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ by Thursday, June 16, 2016. Conversion charts provided for previous administrations of the Regents Examination in Algebra I (Common Core) must NOT be used to determine students' final scores for this administration.

Online Submission of Teacher Evaluations of the Test to the Department

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:

1. Go to http://www.forms2.nysed.gov/emsc/osa/exameval/reexameval.cfm.

2. Select the test title.

3. Complete the required demographic fields.

4. Complete each evaluation question and provide comments in the space provided.

5. Click the SUBMIT button at the bottom of the page to submit the completed form.

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

ALGEBRA I (Common Core)

Thursday, June 16, 2016 — 9:15 a.m. to 12:15 p.m.

MODEL RESPONSE SET

Table of Contents

Question 25

25 Given that $f(x) = 2x + 1$, find $g(x)$ if $g(x) = 2[f(x)]^2 - 1$.

$g(x) = 2(2x+1)^2 - 1$

Score 2: The student gave a complete and correct response.

Question 25

25 Given that $f(x) = 2x + 1$, find $g(x)$ if $g(x) = 2[f(x)]^2 - 1$.

$2[2x+1]^2-1$

Score 2: The student gave a complete and correct response.

Question 25

25 Given that $f(x) = 2x + 1$, find $g(x)$ if $g(x) = 2[f(x)]^2 - 1$.

$g(x) = 2(f(x))^2 - 1$

$gx = 2(2x+1)^2 - 1$

$gx = 2(2x+1)(2x+1) - 1$

$gx = 2(4x+1) - 1$

$gx = (8x+2) - 1$

Score 1: The student made an error when squaring the binomial.

Question 25

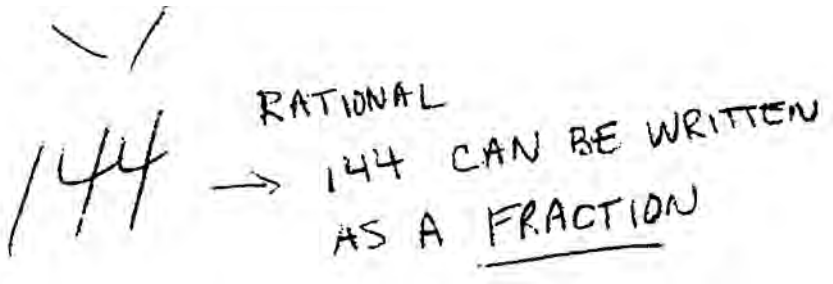
25 Given that $f(x) = 2x + 1$, find $g(x)$ if $g(x) = 2[f(x)]^2 - 1$.

When $2(x)^2 - 1$ is put in the y= it turns into a quadratic

Score 0: The student gave a completely incorrect response.

Question 26

26 Determine if the product of $3\sqrt{2}$ and $8\sqrt{18}$ is rational or irrational. Explain your answer.



Score 2: The student gave a complete and correct response.

Question 26

26 Determine if the product of $3\sqrt{2}$ and $8\sqrt{18}$ is rational or irrational. Explain your answer.

I MULTIPIED IT ON MY CALCULATOR AND GOT 144 WHICH IS RATIONAL BECAUSE ITS AN INTEGER.

Score 2: The student gave a complete and correct response.

Question 26

26 Determine if the product of $3\sqrt{2}$ and $8\sqrt{18}$ is rational or irrational. Explain your answer.

$24 \cdot \sqrt{36}$

$24 \cdot 6$

both are rational

Score 1: The student wrote an incomplete explanation.

Question 26

26 Determine if the product of $3\sqrt{2}$ and $8\sqrt{18}$ is rational or irrational. Explain your answer.

$(4.242640687)(33.94411255) = 144$

Rational

Score 1: The student did not write an explanation.

Question 26

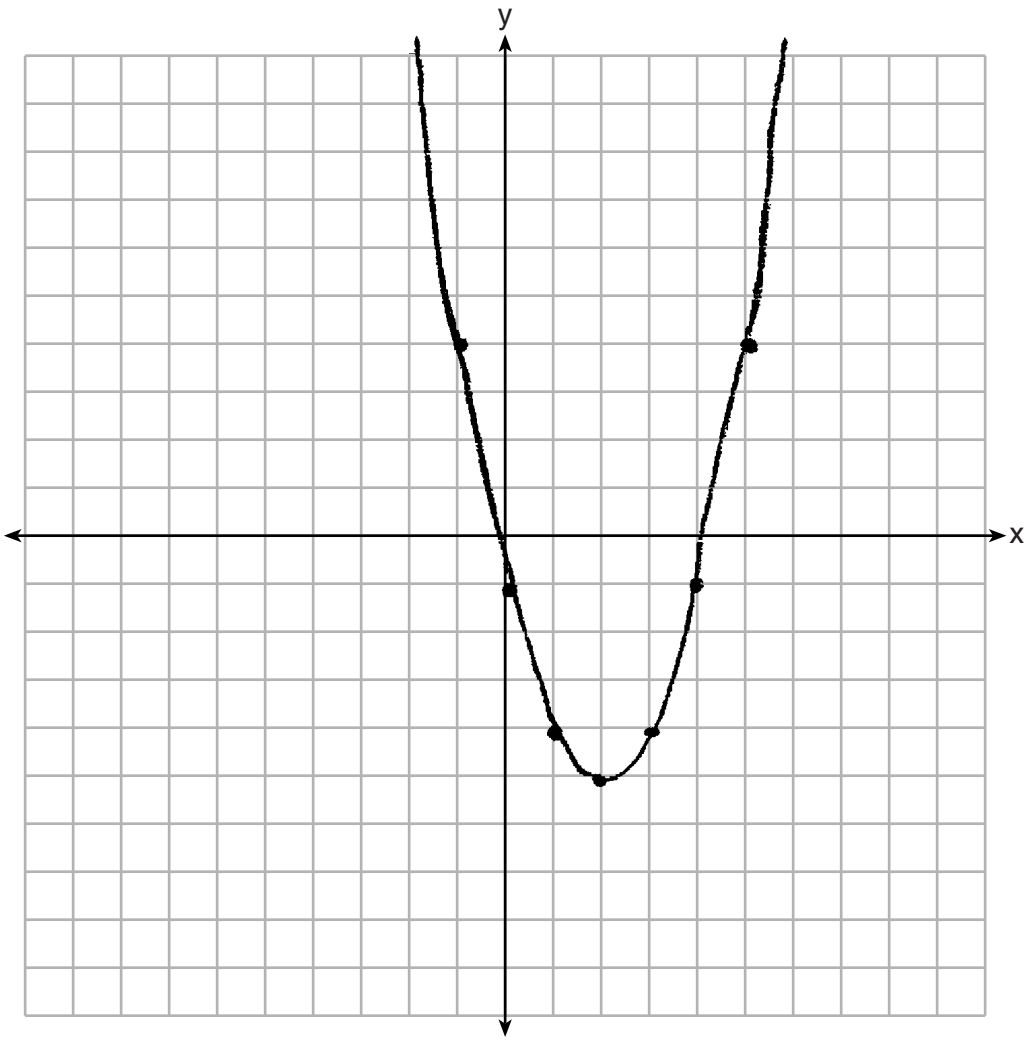
26 Determine if the product of $3\sqrt{2}$ and $8\sqrt{18}$ is rational or irrational. Explain your answer.

I believe that it is irrational because it can't be written as a fraction 3. both answers come out as decimals.

Score 0: The student gave an irrelevant response.

Question 27

27 On the set of axes below, draw the graph of $y = x^2 - 4x - 1$.



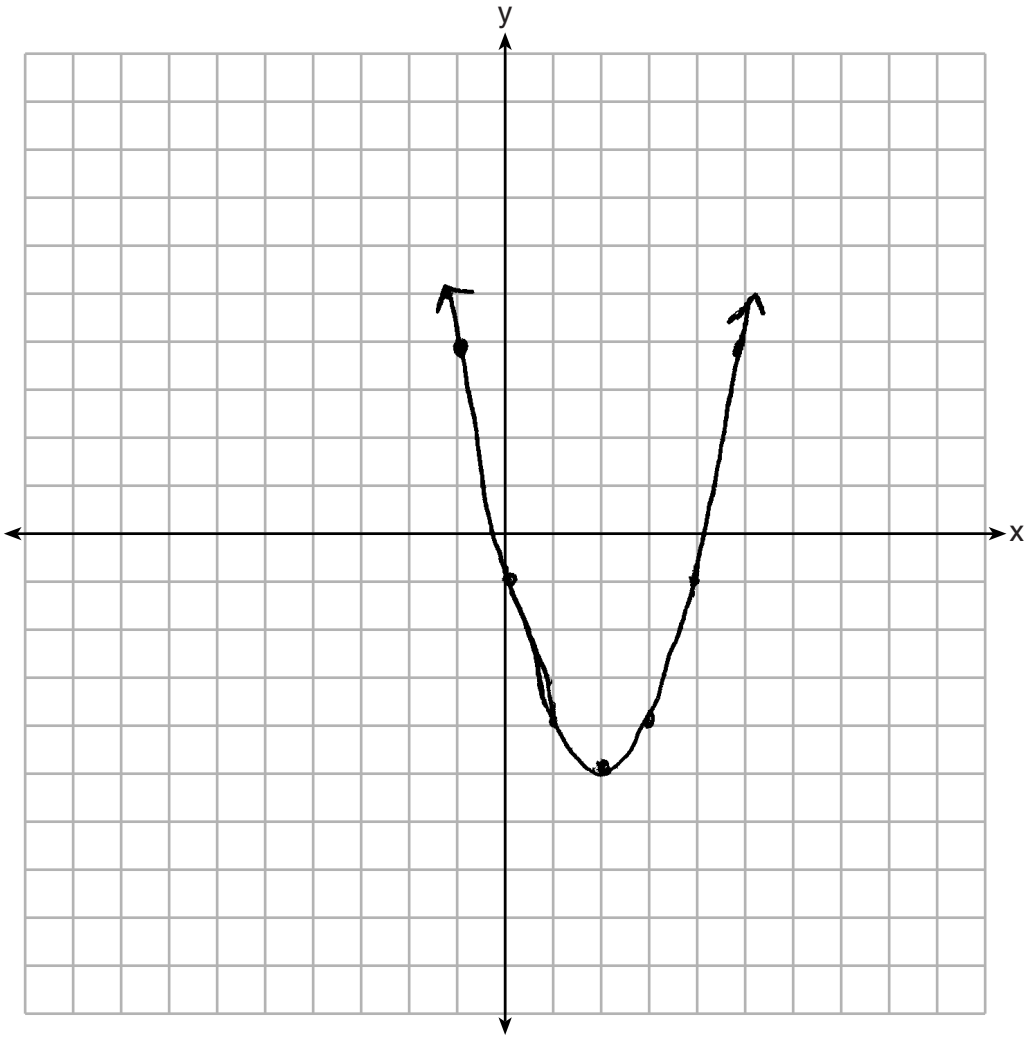
State the equation of the axis of symmetry.

$x = 2$

Score 2: The student gave a complete and correct response.

Question 27

27 On the set of axes below, draw the graph of $y = x^2 - 4x - 1$.



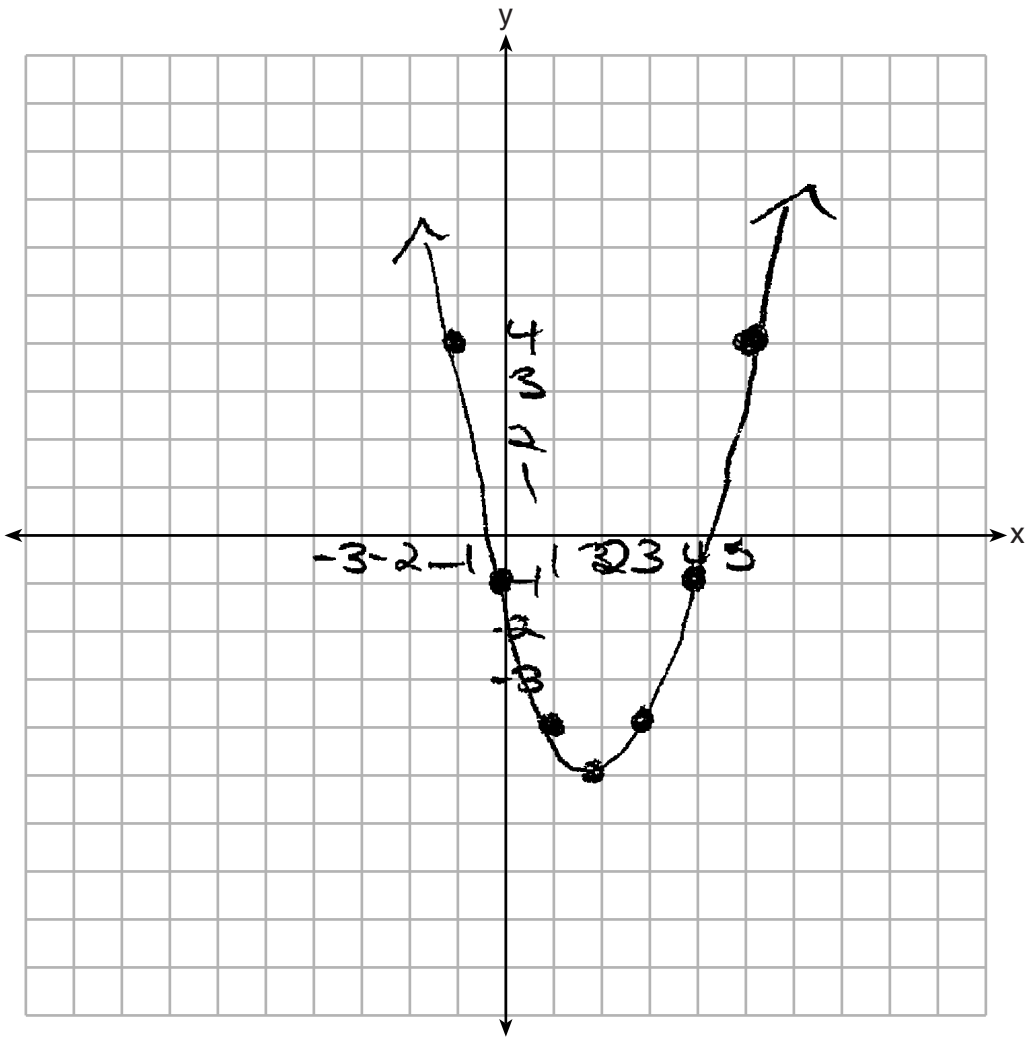
State the equation of the axis of symmetry.

$x = \frac{-b}{2a} = \frac{4}{2}$

Score 2: The student gave a complete and correct response.

Question 27

27 On the set of axes below, draw the graph of $y = x^2 - 4x - 1$.



State the equation of the axis of symmetry.

$x = \frac{-b}{2a}$ $\frac{4}{2}$ $x = 2$ $y = 2^2 - 4(2) - 1$

$4 - 8 - 1$

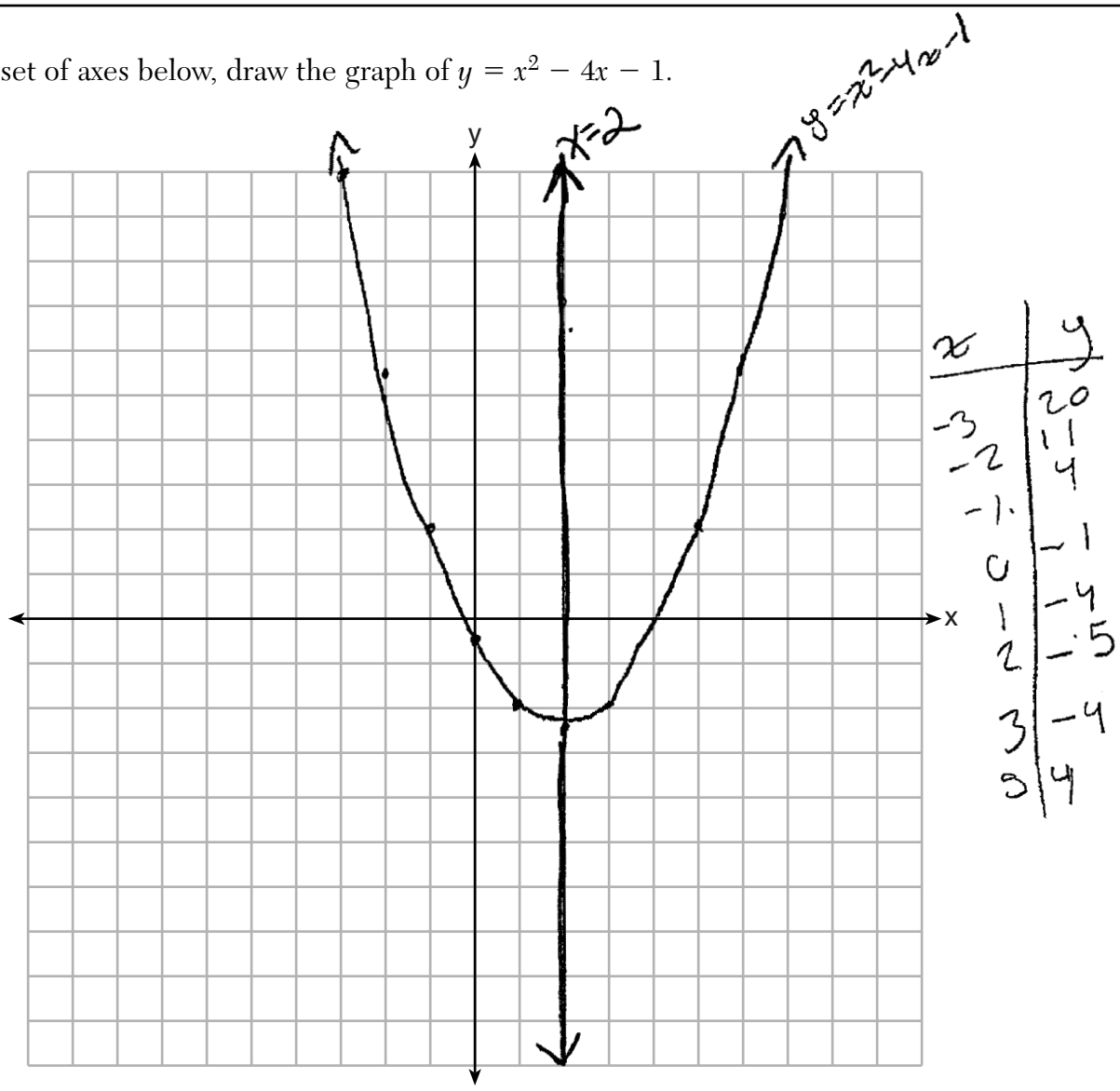
$-4 - 1$

$(2, -5)$ $y = -5$

Score 1: The student did not indicate which boxed-in response was the equation of the axis of symmetry.

Question 27

27 On the set of axes below, draw the graph of $y = x^2 - 4x - 1$.

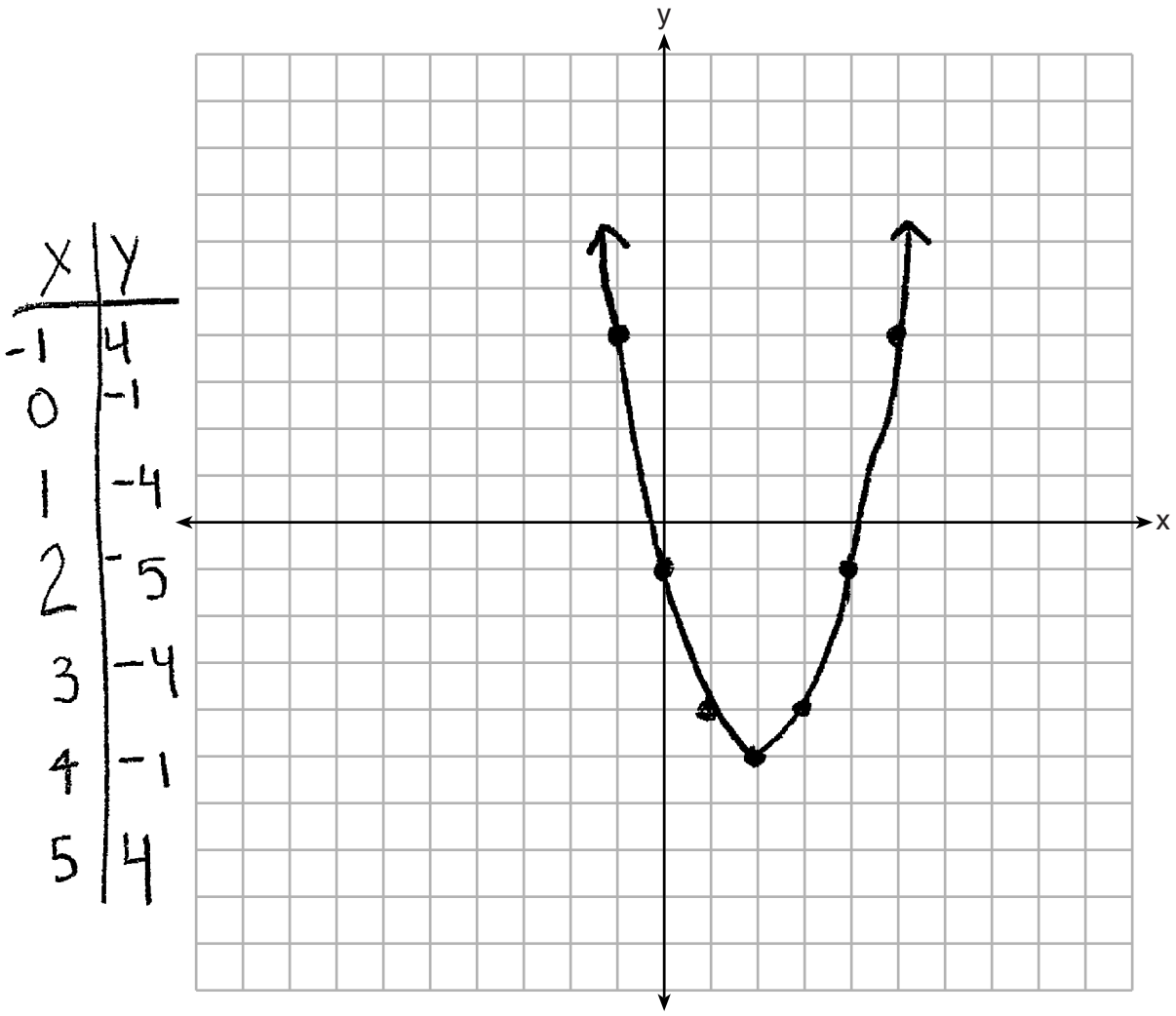


State the equation of the axis of symmetry.

Score 1: The student used a scale other than one on the y-axis, but did not label it on the graph.

Question 27

27 On the set of axes below, draw the graph of $y = x^2 - 4x - 1$.



x	y
-1	4
0	-1
1	-4
2	-5
3	-4
4	-1
5	4

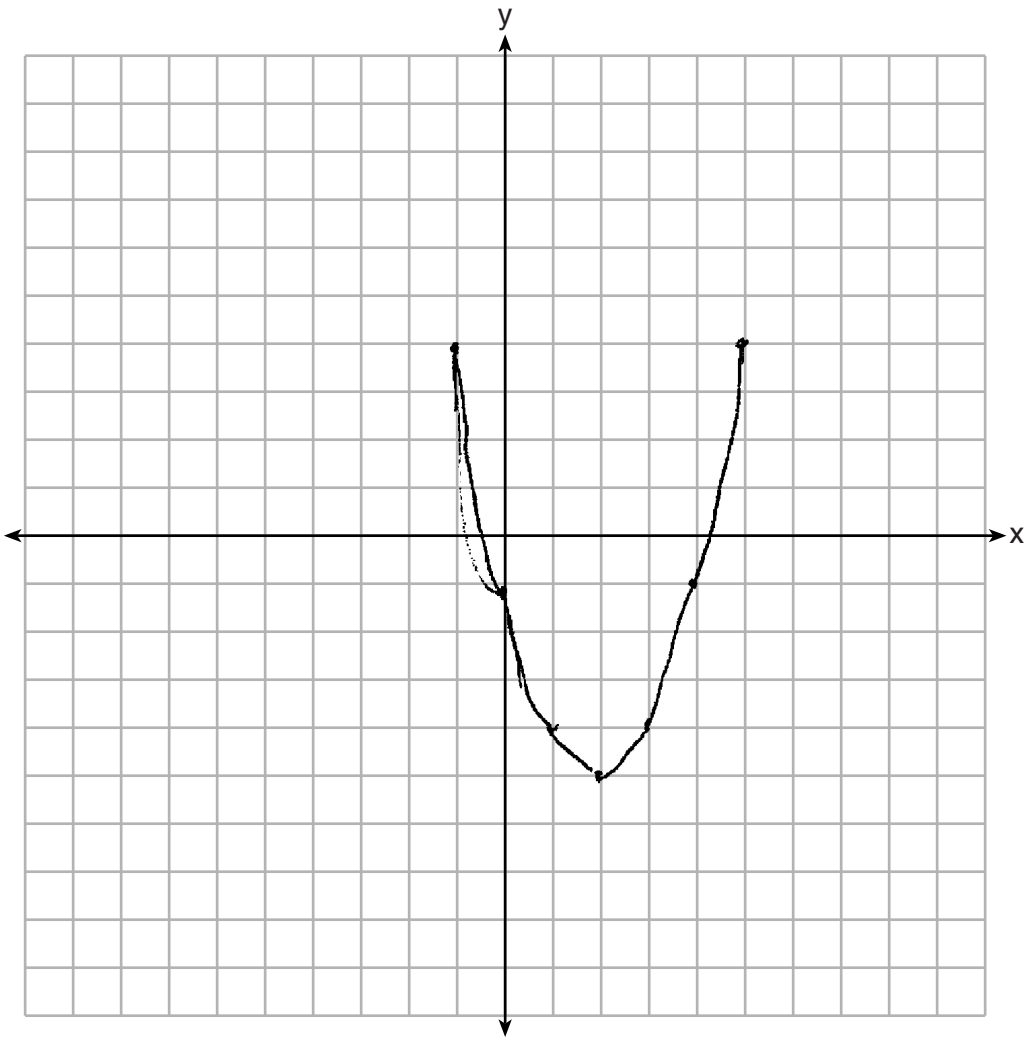
State the equation of the axis of symmetry.

$$\frac{-b}{2a} = \frac{4}{2 \cdot 1} = \frac{4}{2} = 2$$

Score 1: The student did not write the axis of symmetry as $x = 2$.

Question 27

27 On the set of axes below, draw the graph of $y = x^2 - 4x - 1$.



State the equation of the axis of symmetry.

Score 0: The student did not indicate that the graph continues beyond $(-1,4)$ and $(5,4)$, and did not write the equation of the axis of symmetry.

Question 28

28 Amy solved the equation $2x^2 + 5x - 42 = 0$. She stated that the solutions to the equation were $\frac{7}{2}$ and -6. Do you agree with Amy's solutions? Explain why or why not.

$2x^2 + 5x - 42 = 0$

$2(-6)^2 + 5(-6) - 42 = 0$

$72 - 30 - 42 = 0$

$42 - 42 = 0$

$0 = 0$

$2(3.5)^2 + 5(3.5) - 42 = 0$

$24.5 + 17.5 - 42 = 0$

$42 - 42 = 0$

$0 = 0$

She is correct because when the solutions are substituted for "x" and the equation is solved, both sides equal 0.

Score 2: The student gave a complete and correct response.

Question 28

28 Amy solved the equation $2x^2 + 5x - 42 = 0$. She stated that the solutions to the equation were $\frac{7}{2}$ and -6. Do you agree with Amy's solutions? Explain why or why not.

$(2x - 7)(x + 6)$

yes because when you solve for the zeroes using the factoring method the factors of the equation are 2x-7 and x+6. If you set those equal to 0 then you would get $\frac{7}{2}$ and -6 as the zeroes.

Score 2: The student gave a complete and correct response.

Question 28

28 Amy solved the equation $2x^2 + 5x - 42 = 0$. She stated that the solutions to the equation were $\frac{7}{2}$ and -6. Do you agree with Amy's solutions? Explain why or why not.

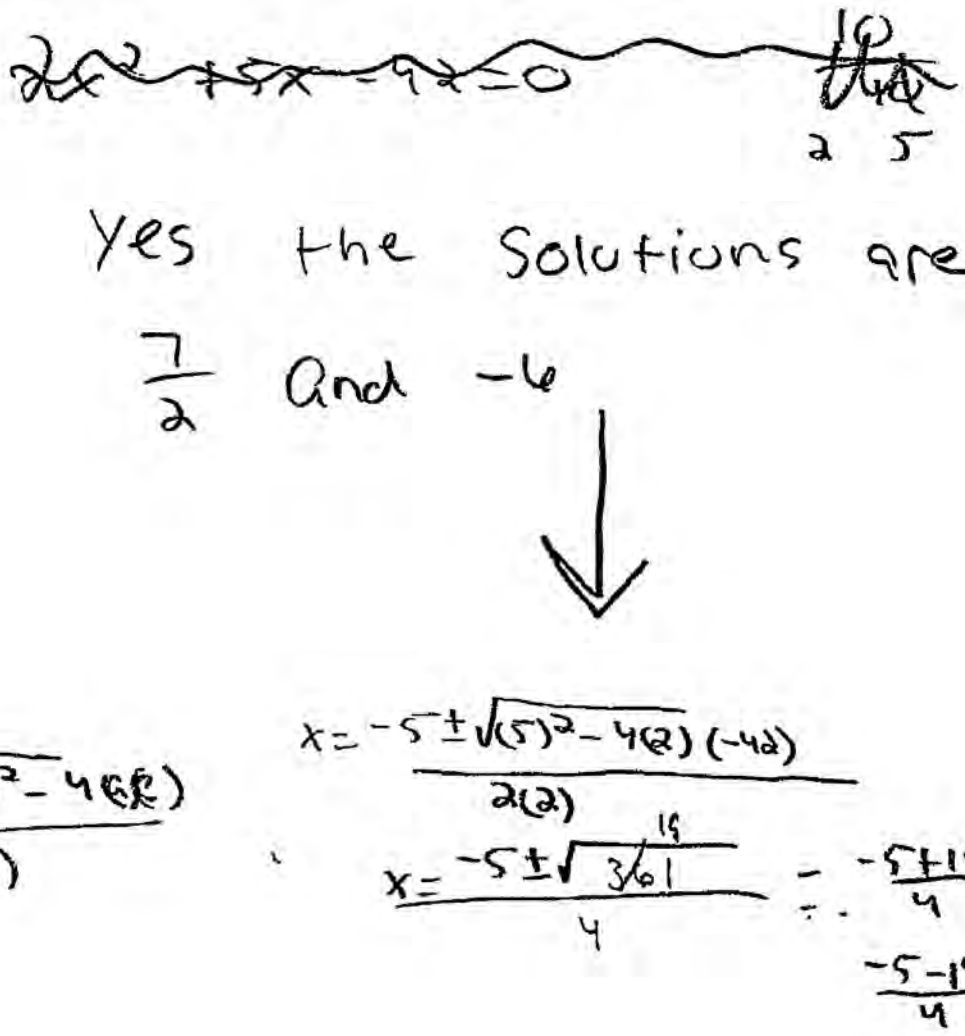
Yes

When I graphed the equation on my calculator it crossed the x-axis at 3.5 and -6.

Score 2: The student gave a complete and correct response.

Question 28

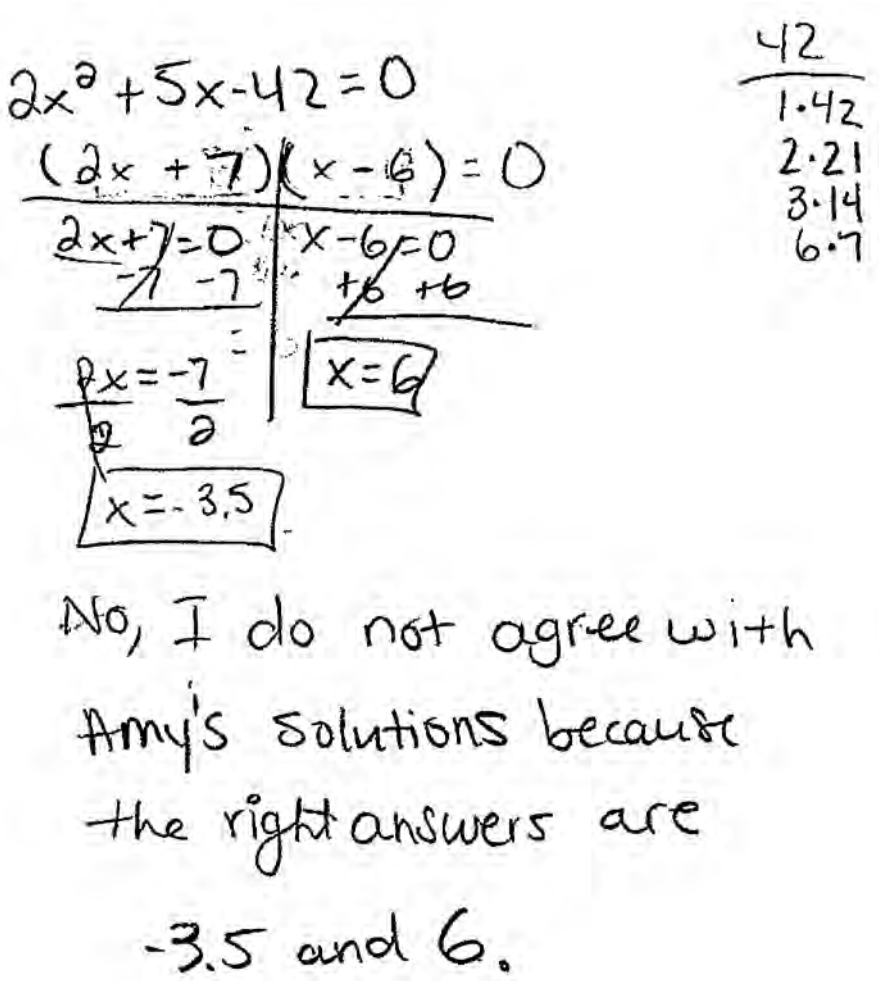
28 Amy solved the equation $2x^2 + 5x - 42 = 0$. She stated that the solutions to the equation were $\frac{7}{2}$ and -6. Do you agree with Amy's solutions? Explain why or why not.



Score 1: The student justified that the solutions are $\frac{7}{2}$ and -6, but did not write an explanation.

Question 28

28 Amy solved the equation $2x^2 + 5x - 42 = 0$. She stated that the solutions to the equation were $\frac{7}{2}$ and -6. Do you agree with Amy's solutions? Explain why or why not.



Score 1: The student made a factoring error, but wrote an appropriate explanation.

Question 28

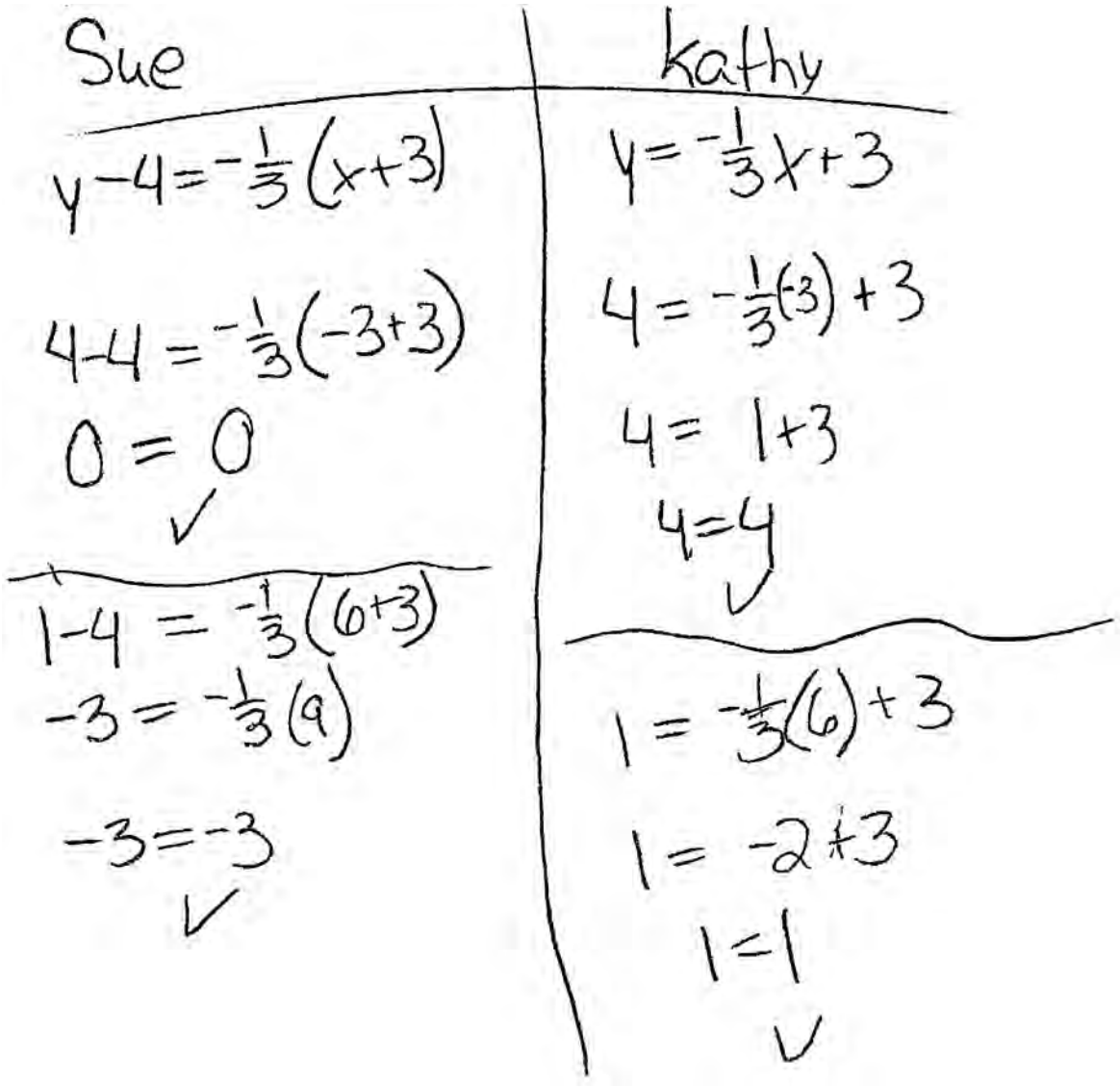
28 Amy solved the equation $2x^2 + 5x - 42 = 0$. She stated that the solutions to the equation were $\frac{7}{2}$ and -6. Do you agree with Amy's solutions? Explain why or why not.

yes Because the Soultion is 7/2 and -6

Score 0: The student wrote yes, but did not write an explanation.

Question 29

29 Sue and Kathy were doing their algebra homework. They were asked to write the equation of the line that passes through the points $(-3,4)$ and $(6,1)$. Sue wrote $y - 4 = -\frac{1}{3}(x + 3)$ and Kathy wrote $y = -\frac{1}{3}x + 3$. Justify why both students are correct.



Score 2: The student gave a complete and correct response.

Question 29

29 Sue and Kathy were doing their algebra homework. They were asked to write the equation of the line that passes through the points $(-3,4)$ and $(6,1)$. Sue wrote $y - 4 = -\frac{1}{3}(x + 3)$ and Kathy wrote $y = -\frac{1}{3}x + 3$. Justify why both students are correct.

They are both correct because as I plugged the equations in the calculator, and they both have the same points, (-3,4) and (6,1) on the table

Score 2: The student gave a complete and correct response.

Question 29

29 Sue and Kathy were doing their algebra homework. They were asked to write the equation of the line that passes through the points $(-3,4)$ and $(6,1)$. Sue wrote $y - 4 = -\frac{1}{3}(x + 3)$ and Kathy wrote $y = -\frac{1}{3}x + 3$. Justify why both students are correct.

The students are both correct because the graph show two lines declining but they both go through (-3,4) (6,1). The two lines are on one another so they went through the same points.

Score 2: The student gave a complete and correct response.

Question 29

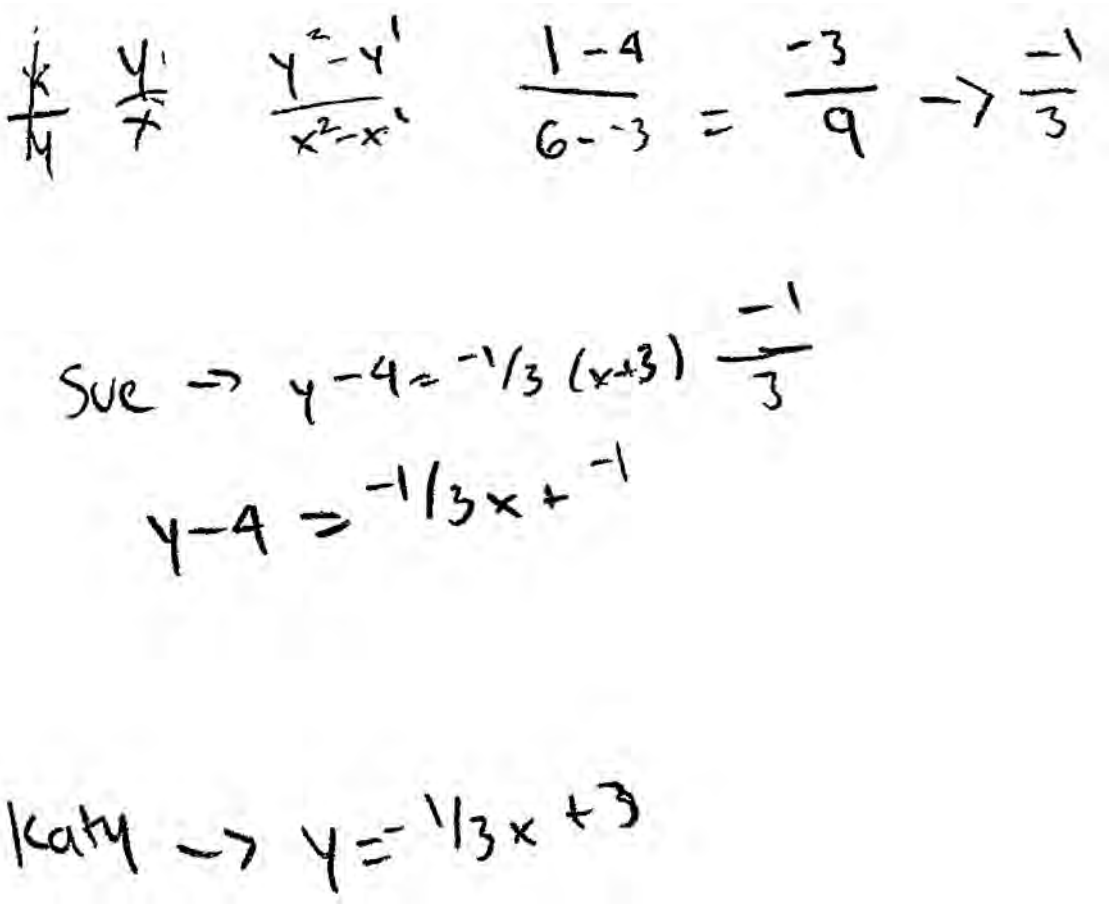
29 Sue and Kathy were doing their algebra homework. They were asked to write the equation of the line that passes through the points $(-3,4)$ and $(6,1)$. Sue wrote $y - 4 = -\frac{1}{3}(x + 3)$ and Kathy wrote $y = -\frac{1}{3}x + 3$. Justify why both students are correct.

Both students are correct because they are just doing different reprensentations of the same equation. Kathy wrote it in the $y=mx+b$ format while Sue wrote it in the point, slope format. They are both the same equations just in different forms.

Score 1: The student wrote an incomplete justification because no work was shown to demonstrate that the equations are the same.

Question 29

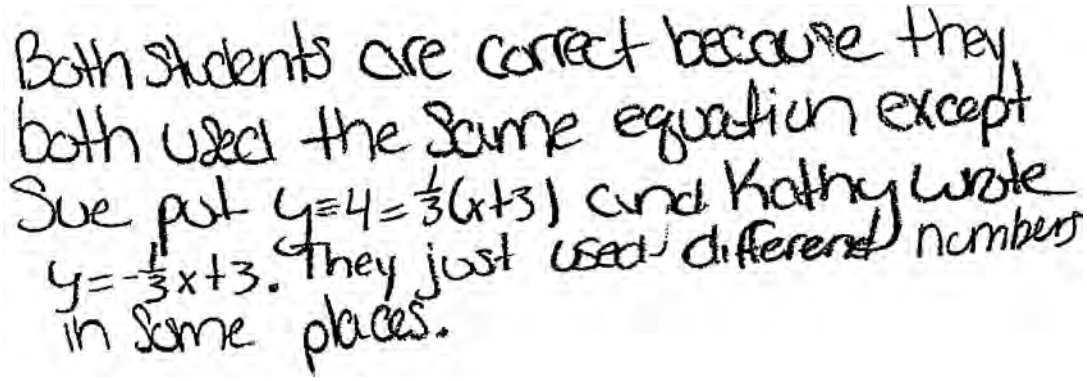
29 Sue and Kathy were doing their algebra homework. They were asked to write the equation of the line that passes through the points $(-3,4)$ and $(6,1)$. Sue wrote $y - 4 = -\frac{1}{3}(x + 3)$ and Kathy wrote $y = -\frac{1}{3}x + 3$. Justify why both students are correct.



Score 1: The student wrote an incomplete justification.

Question 29

29 Sue and Kathy were doing their algebra homework. They were asked to write the equation of the line that passes through the points $(-3,4)$ and $(6,1)$. Sue wrote $y - 4 = -\frac{1}{3}(x + 3)$ and Kathy wrote $y = -\frac{1}{3}x + 3$. Justify why both students are correct.

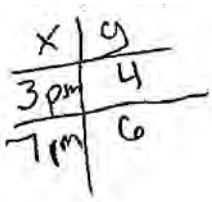


Score 0: The student rewrote the question, but did not provide a justification.

Question 30

30 During a recent snowstorm in Red Hook, NY, Jaime noted that there were 4 inches of snow on the ground at 3:00 p.m., and there were 6 inches of snow on the ground at 7:00 p.m.

If she were to graph these data, what does the slope of the line connecting these two points represent in the context of this problem?



(3,4)
(7,6)

$\frac{4-6}{3-7} = \frac{-2}{-4} = \frac{1}{2}$

It represents the rate of which snow falls per hour. ($\frac{1}{2}$ in. every hour.)

Score 2: The student gave a complete and correct response.

Question 30

30 During a recent snowstorm in Red Hook, NY, Jaime noted that there were 4 inches of snow on the ground at 3:00 p.m., and there were 6 inches of snow on the ground at 7:00 p.m.

If she were to graph these data, what does the slope of the line connecting these two points represent in the context of this problem?

2 inches of snow every four hours.

Score 2: The student gave a complete and correct response.

Question 30

30 During a recent snowstorm in Red Hook, NY, Jaime noted that there were 4 inches of snow on the ground at 3:00 p.m., and there were 6 inches of snow on the ground at 7:00 p.m.

If she were to graph these data, what does the slope of the line connecting these two points represent in the context of this problem?

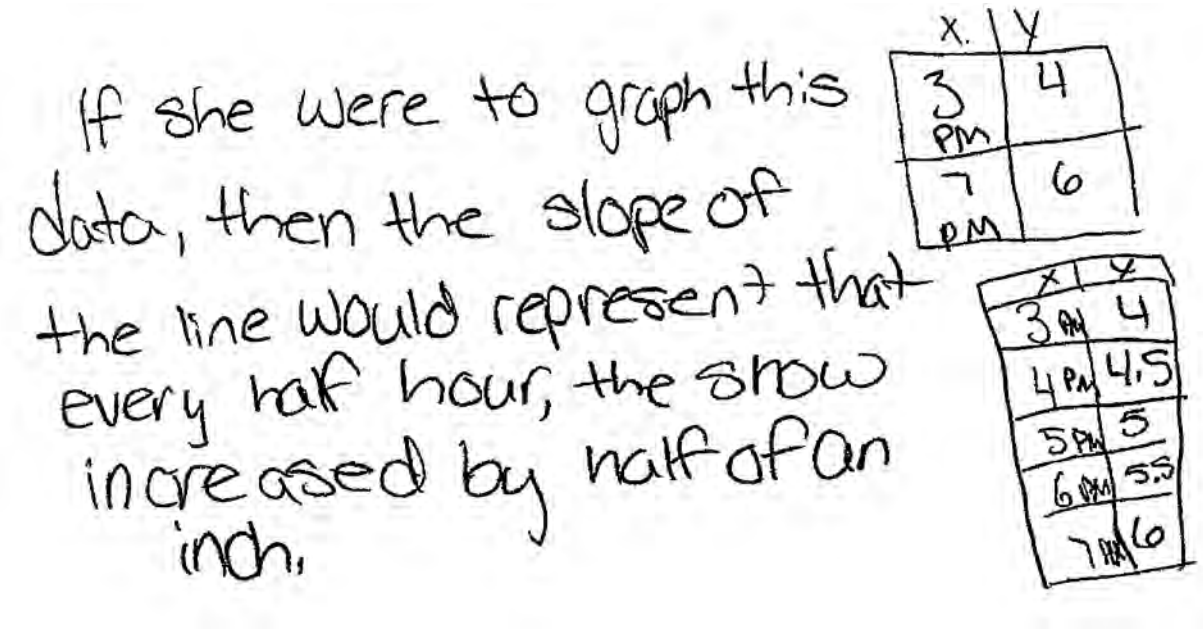
The amount of snow increases as time increases.

Score 1: The student wrote an explanation that did not include inches and hours.

Question 30

30 During a recent snowstorm in Red Hook, NY, Jaime noted that there were 4 inches of snow on the ground at 3:00 p.m., and there were 6 inches of snow on the ground at 7:00 p.m.

If she were to graph these data, what does the slope of the line connecting these two points represent in the context of this problem?



Score 1: The student made an error in the explanation by writing "every half hour."

Question 30

30 During a recent snowstorm in Red Hook, NY, Jaime noted that there were 4 inches of snow on the ground at 3:00 p.m., and there were 6 inches of snow on the ground at 7:00 p.m.

If she were to graph these data, what does the slope of the line connecting these two points represent in the context of this problem?

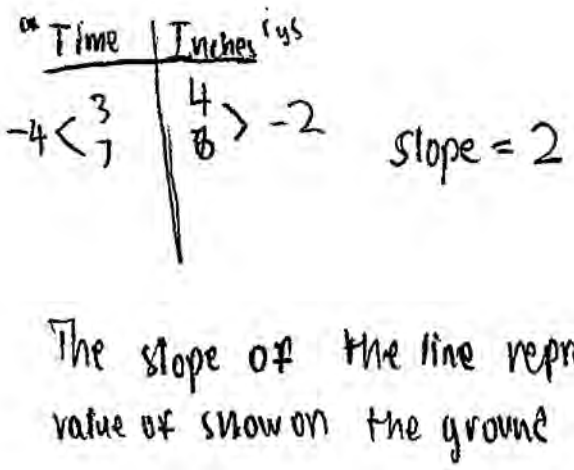
The slope of the line represents the amount of inches of snow on the ground at different times.

Score 0: The student gave a completely incorrect response.

Question 30

30 During a recent snowstorm in Red Hook, NY, Jaime noted that there were 4 inches of snow on the ground at 3:00 p.m., and there were 6 inches of snow on the ground at 7:00 p.m.

If she were to graph these data, what does the slope of the line connecting these two points represent in the context of this problem?

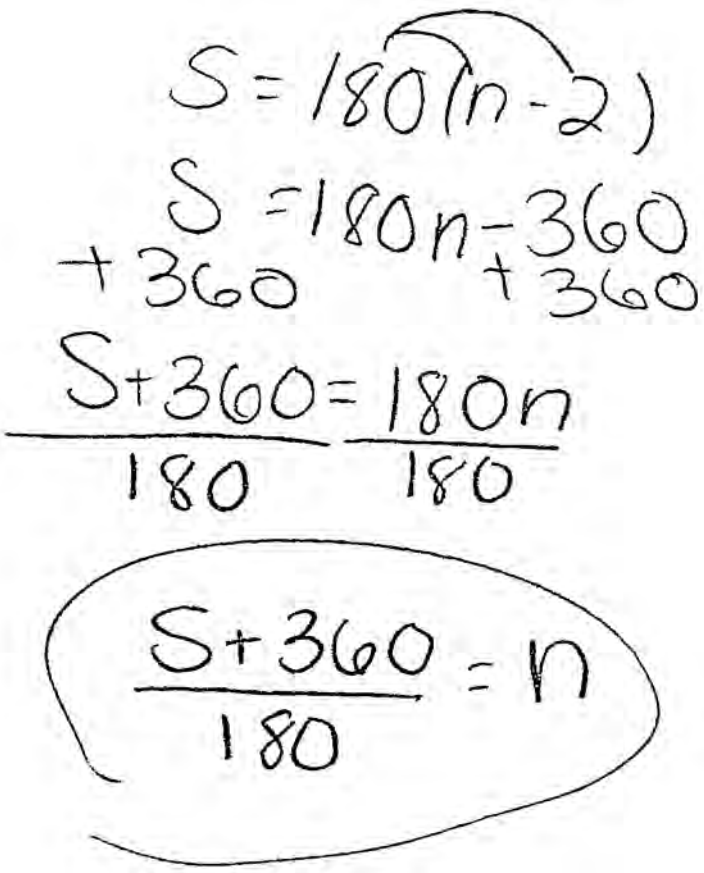


The slope of the line represents an increase of the value of snow on the ground

Score 0: The student gave a completely incorrect response.

Question 31

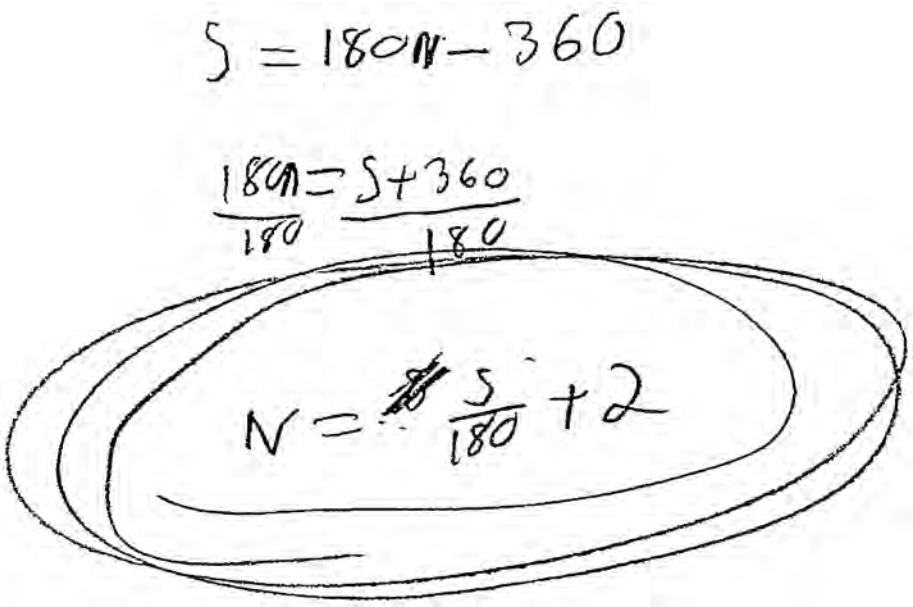
31 The formula for the sum of the degree measures of the interior angles of a polygon is $S = 180(n - 2)$. Solve for n, the number of sides of the polygon, in terms of S.



Score 2: The student gave a complete and correct response.

Question 31

31 The formula for the sum of the degree measures of the interior angles of a polygon is $S = 180(n - 2)$. Solve for n, the number of sides of the polygon, in terms of S.



Score 2: The student gave a complete and correct response.

Question 31

31 The formula for the sum of the degree measures of the interior angles of a polygon is $S = 180(n - 2)$. Solve for n, the number of sides of the polygon, in terms of S.

$S = 180(n-2)$

$\frac{S}{180} = \frac{180n - 360}{180}$

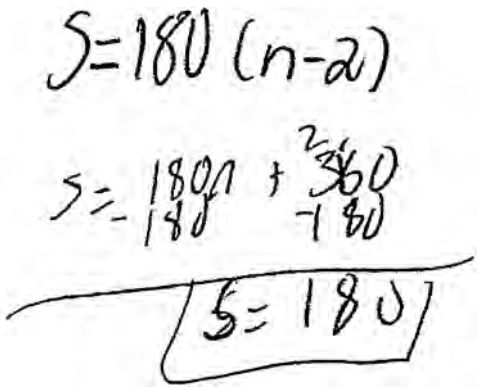
$\frac{S}{180} = n - 360$
$+360$

$\frac{S}{180} + 360 = n$

Score 1: The student did not divide 360 by 180.

Question 31

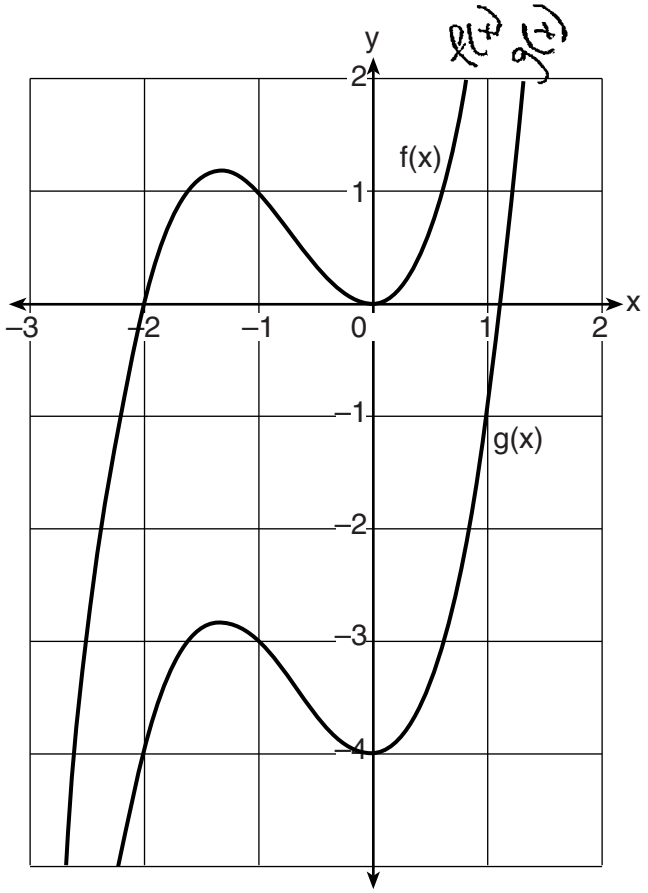
31 The formula for the sum of the degree measures of the interior angles of a polygon is $S = 180(n - 2)$. Solve for n, the number of sides of the polygon, in terms of S.



Score 0: The student gave a completely incorrect response.

Question 32

32 In the diagram below, $f(x) = x^3 + 2x^2$ is graphed. Also graphed is $g(x)$, the result of a translation of $f(x)$.



Determine an equation of $g(x)$. Explain your reasoning.

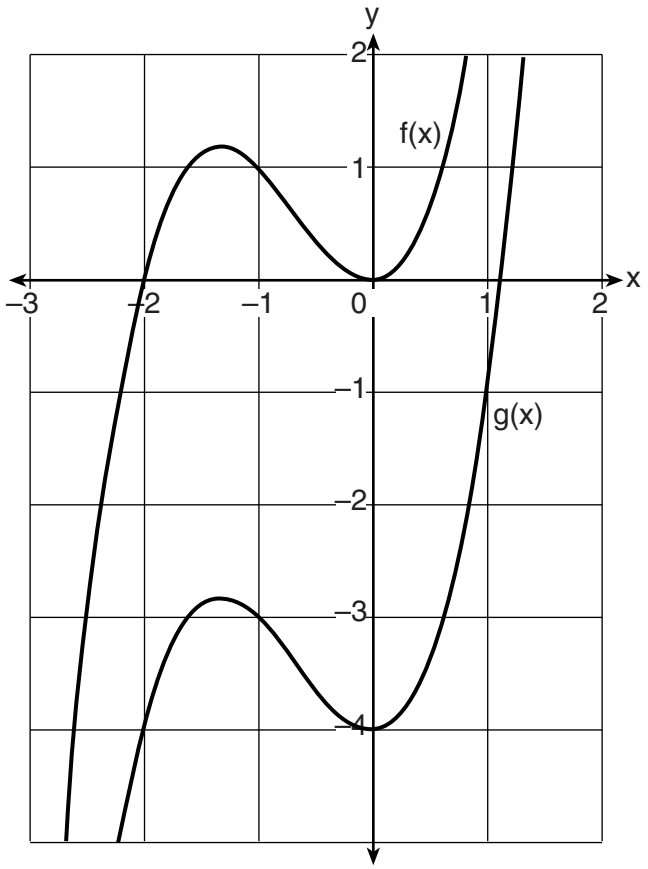
$g(x) = x^3 + 2x^2 - 4$

translated down 4 units.

Score 2: The student gave a complete and correct response.

Question 32

32 In the diagram below, $f(x) = x^3 + 2x^2$ is graphed. Also graphed is $g(x)$, the result of a translation of $f(x)$.



Determine an equation of $g(x)$. Explain your reasoning.

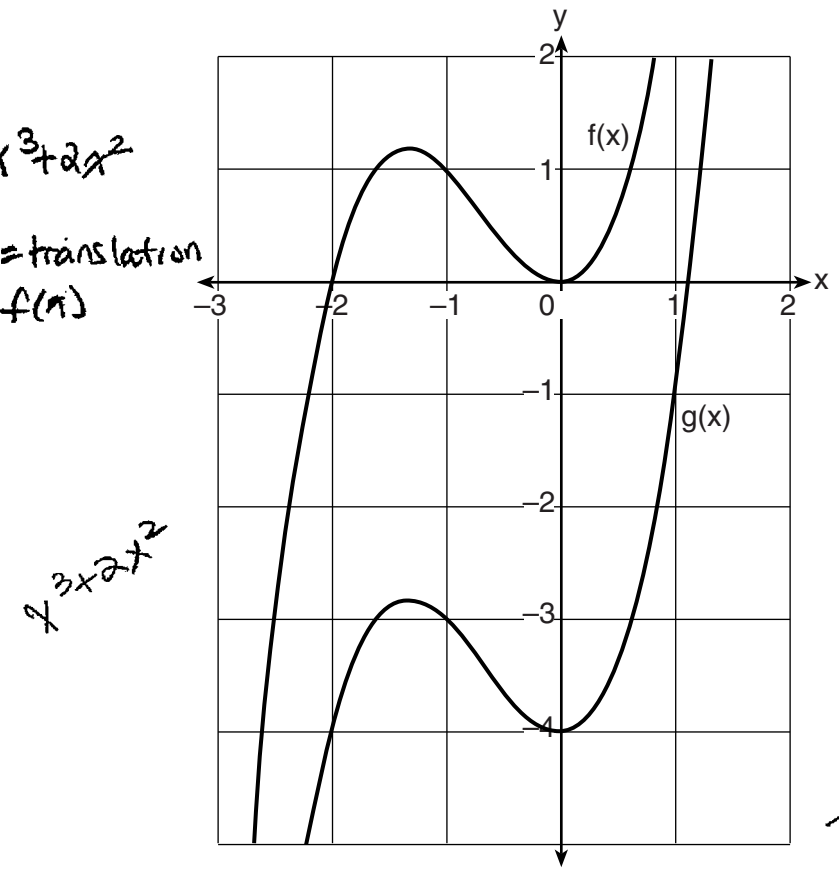
$g(x) = -4x^3 + 4x^2$

b/c it is a translation 4 down

Score 1: The student wrote a correct explanation, but the equation is incorrect.

Question 32

32 In the diagram below, $f(x) = x^3 + 2x^2$ is graphed. Also graphed is $g(x)$, the result of a translation of $f(x)$.



f(x)=x³+2x²

g(x) = translation of f(x)

x³+2x²

X	Y
0	0
−1	1
−2	0

X	Y
K	−1
−0.75	−2
−0.50	−3
−0	−4
−1	−3
−2	−4

x³+2x²

X	X
1	−1 (+3)
−1	0 (−4) (+1)
−1	−1 (−3) (+1)
−1	−2 (−4)

Determine an equation of $g(x)$. Explain your reasoning.

g(x)= x^3 −4.

The equation of g(x) is x³−4 because for f(x) it's +2x²

so x3 cause the line/way of the graph but then 2x² show the level of the line so I put −4 as my answer b/c the point for f(x) were at negative and it's far apart from f(x).

Score 0: The student gave a completely incorrect response.

Question 33

33 The height, H, in feet, of an object dropped from the top of a building after t seconds is given by $H(t) = -16t^2 + 144$.

How many feet did the object fall between one and two seconds after it was dropped?

After the first second, the object was 128 feet from the ground and after 2 seconds, the object was 80 feet from the ground. That means that it fell 48 feet between 1 and 2 seconds.

Determine, algebraically, how many seconds it will take for the object to reach the ground.

$0 = -16t^2 + 144$
$-144 \quad\quad -144$
$\frac{-144}{-16} = \frac{-16t^2}{-16}$
$\sqrt{9} = \sqrt{t^2}$
$3 = t$
$t = 3$

It will take 3 seconds for the object to reach the ground.

Score 4: The student gave a complete and correct response.

Question 33

33 The height, H, in feet, of an object dropped from the top of a building after t seconds is given by $H(t) = -16t^2 + 144$.

How many feet did the object fall between one and two seconds after it was dropped?

$H(1) = 128$

$H(2) = 80$

$128 - 80 = 48$

Determine, algebraically, how many seconds it will take for the object to reach the ground.

$16t^2 - 144 = 0$

$4(4t^2 - 36) = 0$

$4(2t + 6)(2t - 6) = 0$

$2t = -6$ $\quad 2t = 6$

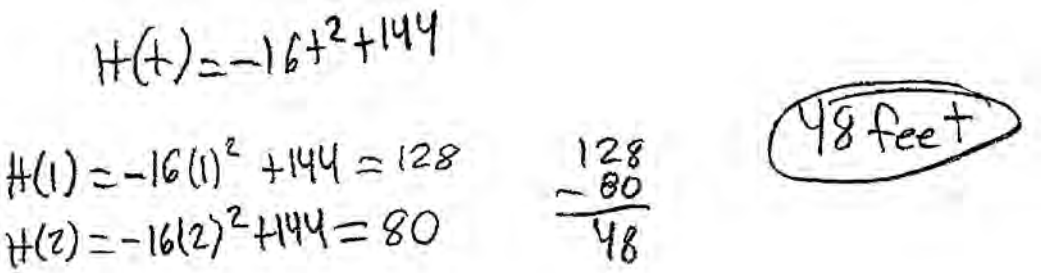
$t = -3$ $\quad t = 3$

Score 4: The student gave a complete and correct response.

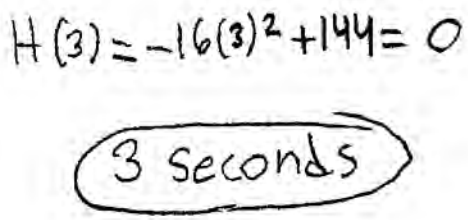
Question 33

33 The height, H, in feet, of an object dropped from the top of a building after t seconds is given by $H(t) = -16t^2 + 144$.

How many feet did the object fall between one and two seconds after it was dropped?



Determine, algebraically, how many seconds it will take for the object to reach the ground.



Score 3: The student did not determine 3 algebraically.

Question 33

33 The height, H, in feet, of an object dropped from the top of a building after t seconds is given by $H(t) = -16t^2 + 144$.

How many feet did the object fall between one and two seconds after it was dropped?

32

Determine, algebraically, how many seconds it will take for the object to reach the ground.

$0 = -16t^2 + 144$

$\sqrt{t^2} = \sqrt{9}$

$t = 3$

Score 2: The student showed appropriate algebraic work to determine 3.

Question 33

33 The height, H, in feet, of an object dropped from the top of a building after t seconds is given by $H(t) = -16t^2 + 144$.

How many feet did the object fall between one and two seconds after it was dropped?

$H(t) = -16t^2 + 144$
$H(t) = -16(2)^2 + 144$
$H(t) = 80$ ft

$H(t) = -16t^2 + 144$
$H(t) = -16(t)^2 + 144$
$H(t) = 128$ ft

Determine, algebraically, how many seconds it will take for the object to reach the ground.

$H(t) = -16(3)^2 + 144$
$H(t) = 0$

3 seconds

Score 2: The student did not find the difference between the two heights and did not determine 3 algebraically.

Question 33

33 The height, H, in feet, of an object dropped from the top of a building after t seconds is given by $H(t) = -16t^2 + 144$.

How many feet did the object fall between one and two seconds after it was dropped?

$-16(1)^2 + 144 = 128$ ft

$-16(2)^2 + 144 = 80$ ft

$128 + 80 = 208$ ft after it

Determine, algebraically, how many seconds it will take for the object to reach the ground.

$-16t^2 + 144 = 128$

$-16t^2 + 144 = 80$

$\frac{208}{-32}$

$\frac{0t^2}{0t^2} = \frac{48}{0t^2}$

48 more seconds

Score 1: The student showed appropriate work to find 128 and 80.

Question 33

33 The height, H, in feet, of an object dropped from the top of a building after t seconds is given by $H(t) = -16t^2 + 144$.

How many feet did the object fall between one and two seconds after it was dropped?

t=128 feet

Determine, algebraically, how many seconds it will take for the object to reach the ground.

The second will take the object 28. to reach the ground

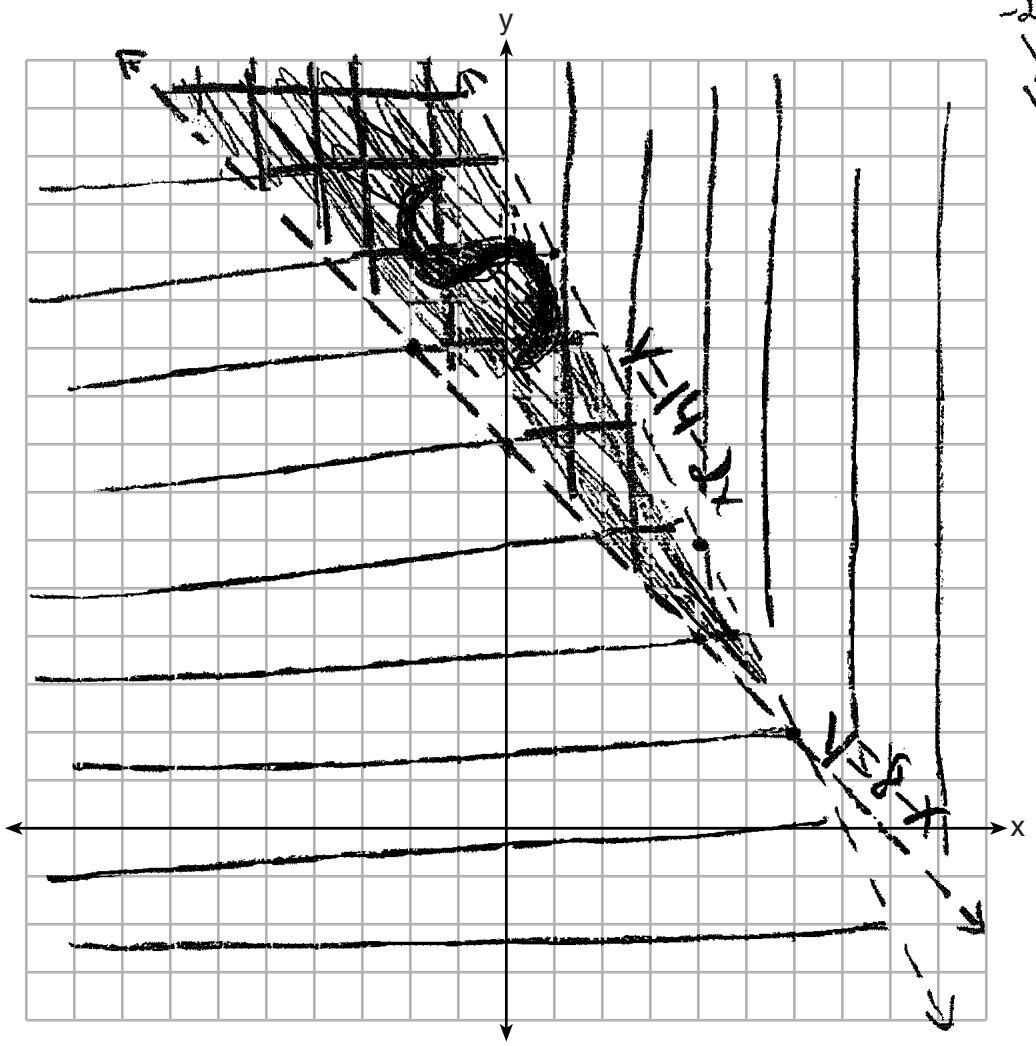
Score 0: The student gave a completely incorrect response.

Question 34

34 The sum of two numbers, x and y, is more than 8. When you double x and add it to y, the sum is less than 14.

Graph the inequalities that represent this scenario on the set of axes below.

$x+y>8$
$2x+y<14$
$-2x \quad -2x$
$y>8-x$
$y<14-2x$



Kai says that the point (6,2) is a solution to this system. Determine if he is correct and explain your reasoning.

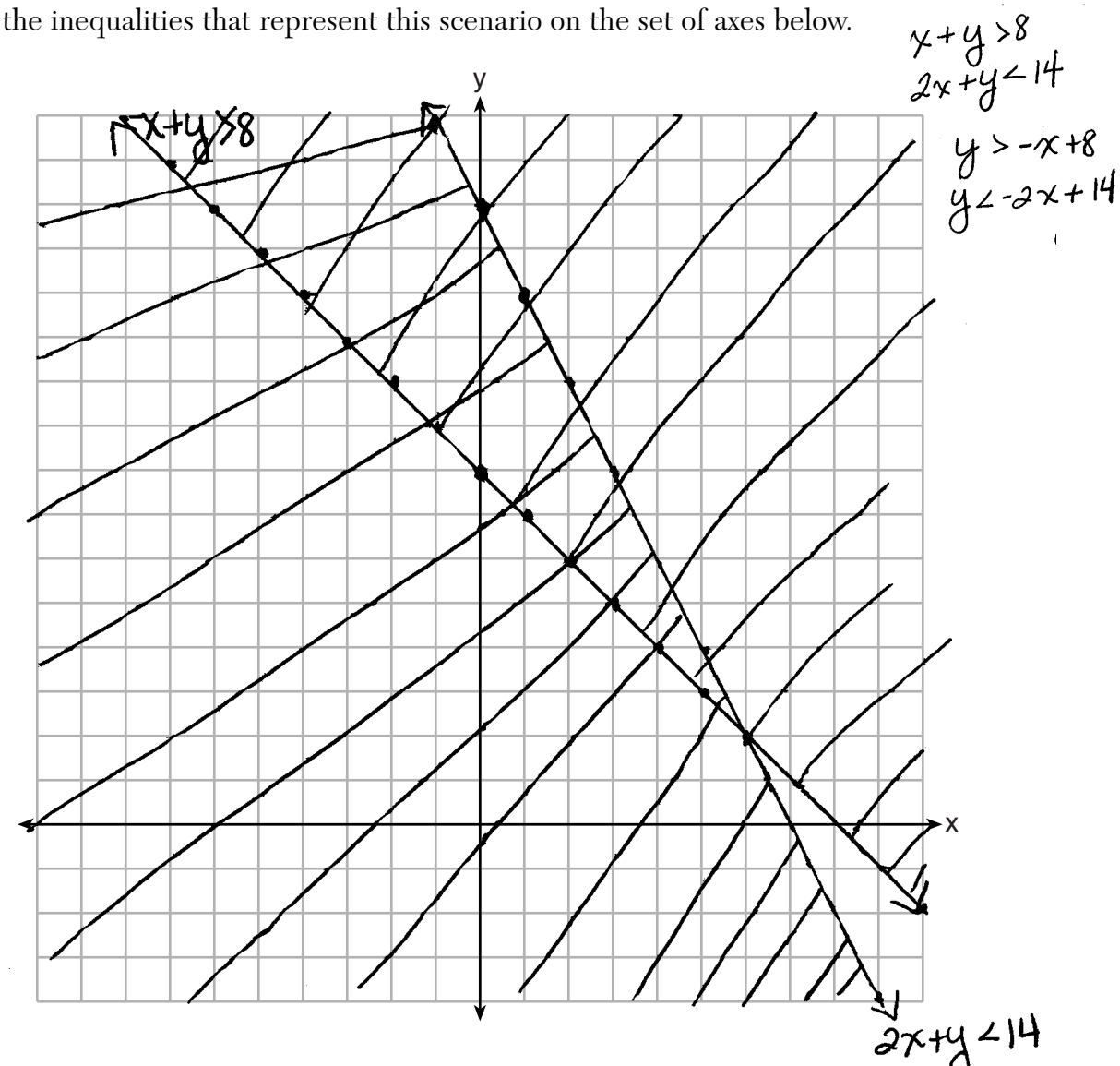
It is not because it lands where the 2 dotted lines meet and it has to be in the shaded area of both lines

Score 4: The student gave a complete and correct response.

Question 34

34 The sum of two numbers, x and y, is more than 8. When you double x and add it to y, the sum is less than 14.

Graph the inequalities that represent this scenario on the set of axes below.



Kai says that the point (6,2) is a solution to this system. Determine if he is correct and explain your reasoning.

He is correct because its where the two graphs intersect.

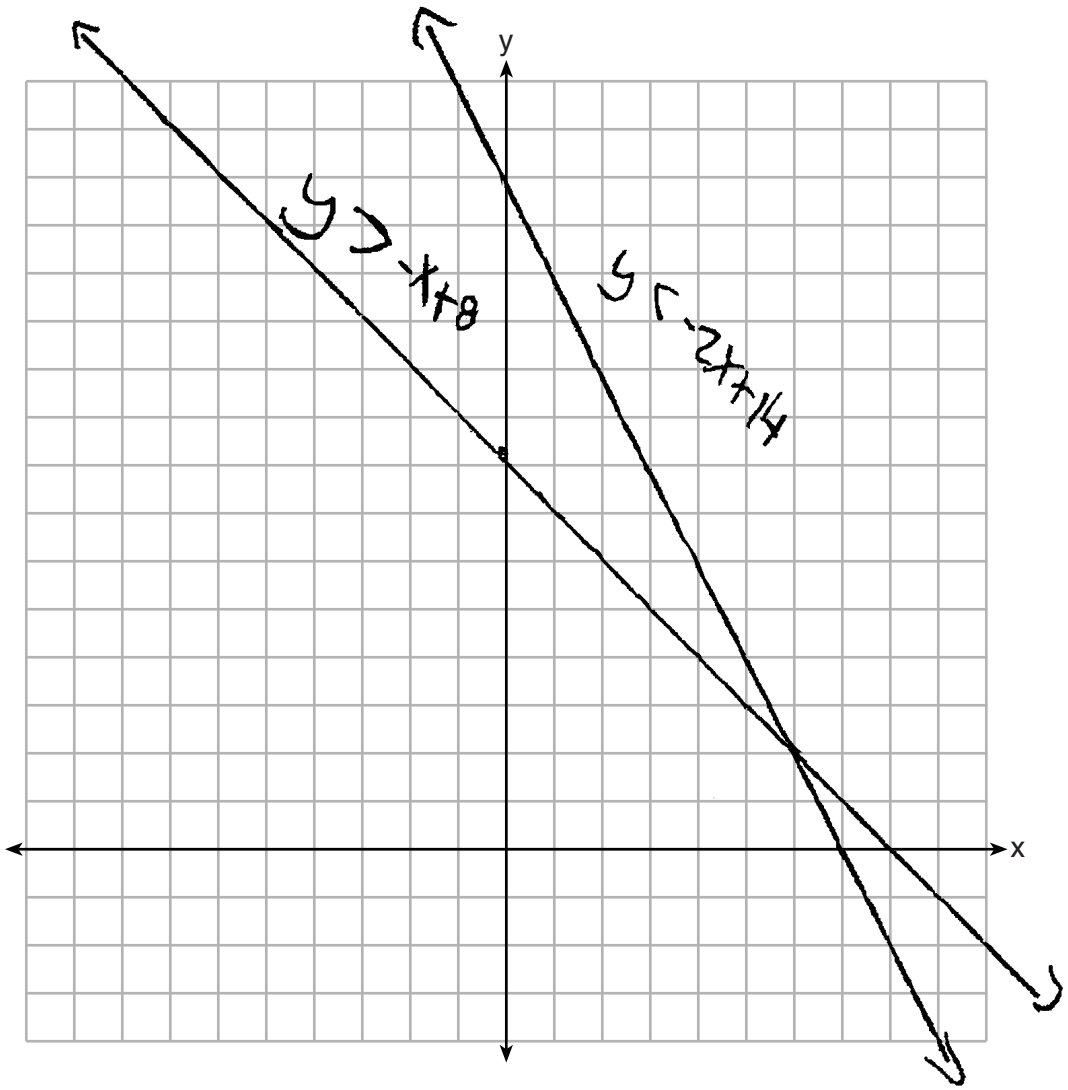
Score 3: The student made one graphing error by drawing solid lines, but wrote an appropriate explanation based on the graph.

Question 34

34 The sum of two numbers, x and y, is more than 8. When you double x and add it to y, the sum is less than 14.

$x+y>8$ $-x$ $2x+y<14$ $-2x$

Graph the inequalities that represent this scenario on the set of axes below.



Kai says that the point (6,2) is a solution to this system. Determine if he is correct and explain your reasoning.

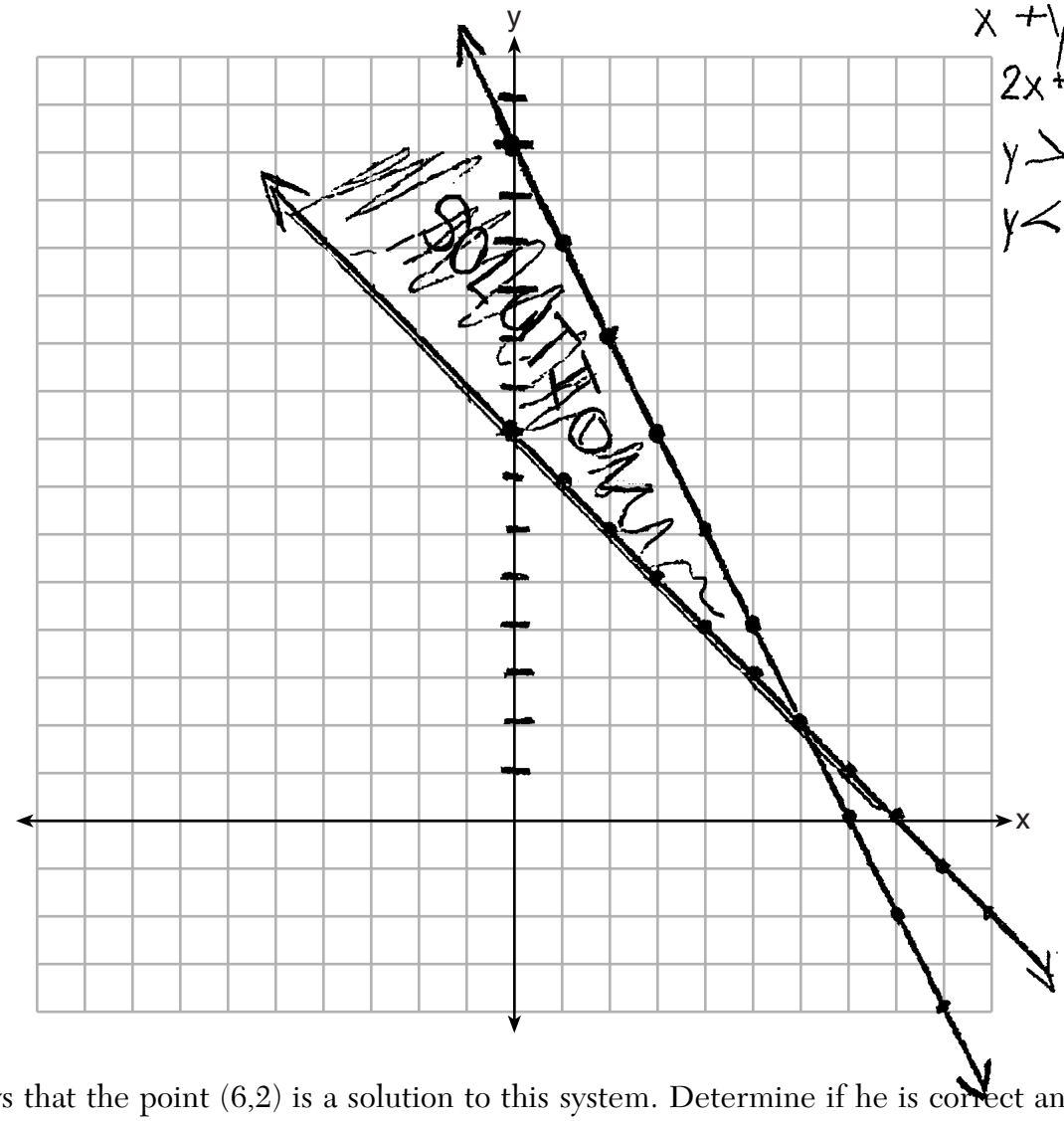
He is correct because that is the point they intersected.

Score 2: The student treated the inequalities as equations, but wrote an appropriate explanation based on the graph.

Question 34

34 The sum of two numbers, x and y, is more than 8. When you double x and add it to y, the sum is less than 14.

Graph the inequalities that represent this scenario on the set of axes below.



Kai says that the point (6,2) is a solution to this system. Determine if he is correct and explain your reasoning.

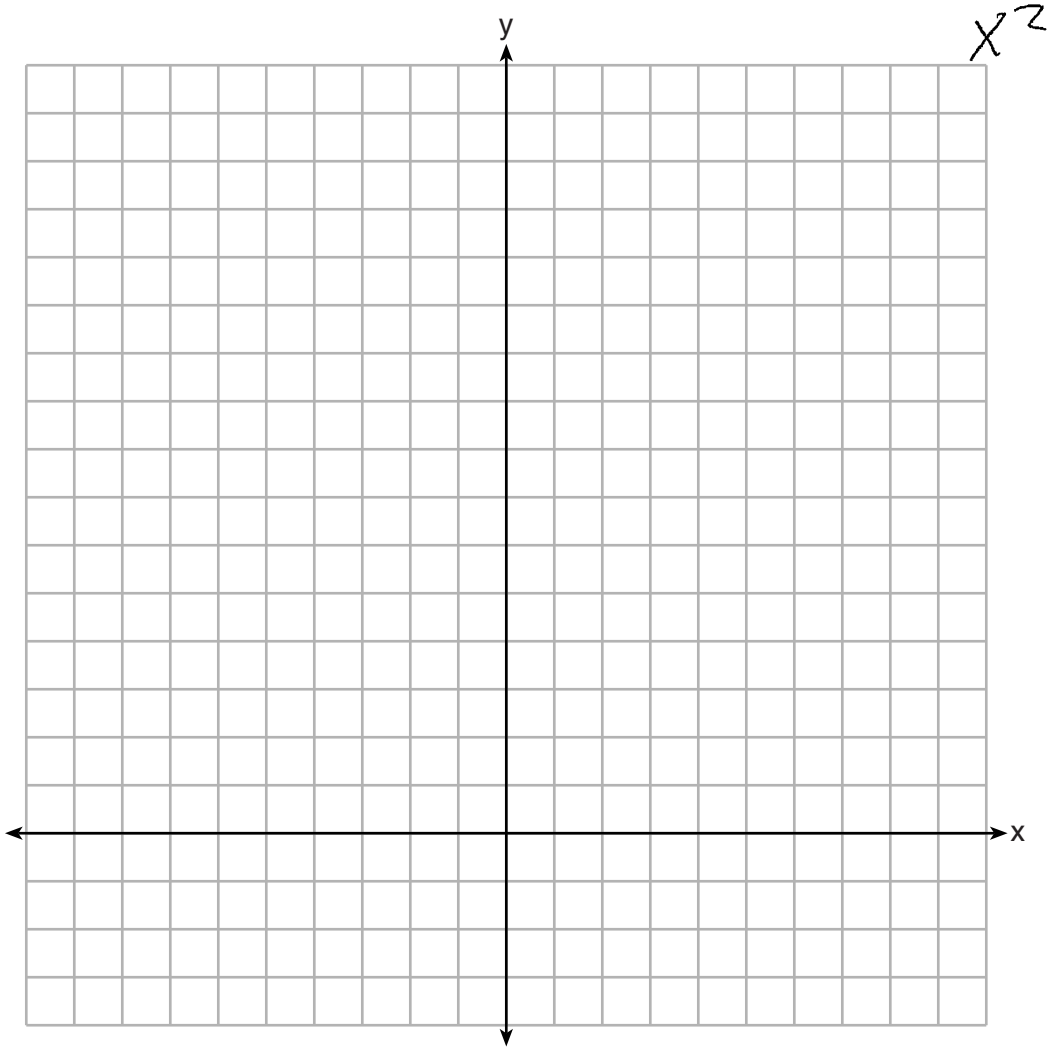
Kai is not correct because point (6, 2) is not in the solution for the graph

Score 1: The student stated both inequalities correctly. The student made multiple errors graphing the inequality and wrote an incorrect explanation based on the graph.

Question 34

34 The sum of two numbers, x and y, is more than 8. When you double x and add it to y, the sum is less than 14.

Graph the inequalities that represent this scenario on the set of axes below. $x+y>8$ $x^2+y<14$



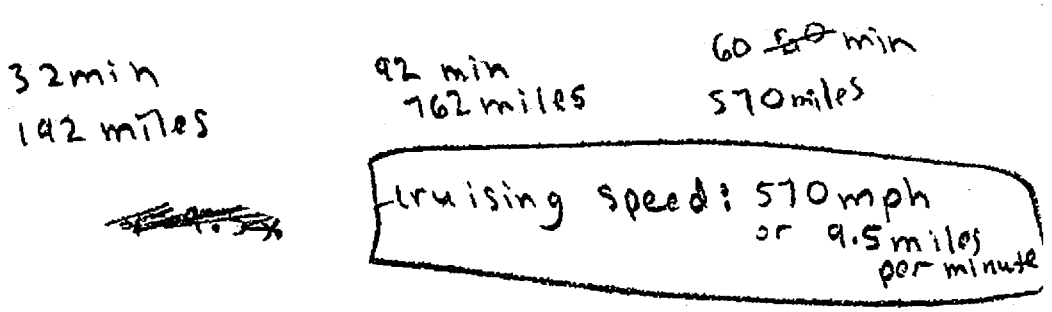
Kai says that the point (6,2) is a solution to this system. Determine if he is correct and explain your reasoning.

Score 0: The student wrote only one correct inequality.

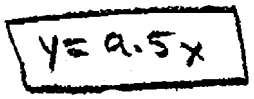
Question 35

35 An airplane leaves New York City and heads toward Los Angeles. As it climbs, the plane gradually increases its speed until it reaches cruising altitude, at which time it maintains a constant speed for several hours as long as it stays at cruising altitude. After flying for 32 minutes, the plane reaches cruising altitude and has flown 192 miles. After flying for a total of 92 minutes, the plane has flown a total of 762 miles.

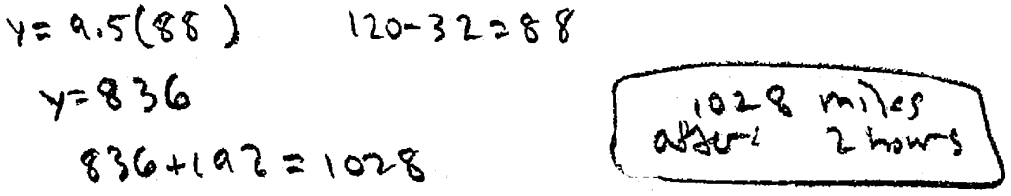
Determine the speed of the plane, at cruising altitude, in miles per minute.



Write an equation to represent the number of miles the plane has flown, y, during x minutes at cruising altitude, only.



Assuming that the plane maintains its speed at cruising altitude, determine the total number of miles the plane has flown 2 hours into the flight.



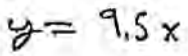
Score 4: The student gave a complete and correct response.

Question 35

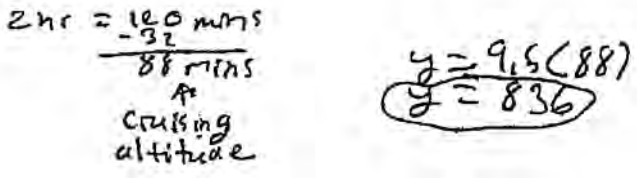
35 An airplane leaves New York City and heads toward Los Angeles. As it climbs, the plane gradually increases its speed until it reaches cruising altitude, at which time it maintains a constant speed for several hours as long as it stays at cruising altitude. After flying for 32 minutes, the plane reaches cruising altitude and has flown 192 miles. After flying for a total of 92 minutes, the plane has flown a total of 762 miles.

Determine the speed of the plane, at cruising altitude, in miles per minute.

Write an equation to represent the number of miles the plane has flown, y, during x minutes at cruising altitude, only.



Assuming that the plane maintains its speed at cruising altitude, determine the total number of miles the plane has flown 2 hours into the flight.



Score 3: The student did not add 192 miles to the 836 miles.

Question 35

35 An airplane leaves New York City and heads toward Los Angeles. As it climbs, the plane gradually increases its speed until it reaches cruising altitude, at which time it maintains a constant speed for several hours as long as it stays at cruising altitude. After flying for 32 minutes, the plane reaches cruising altitude and has flown 192 miles. After flying for a total of 92 minutes, the plane has flown a total of 762 miles.

Determine the speed of the plane, at cruising altitude, in miles per minute.

Let y = number of miles
x = min at cruising speed

32 - 192
60 - 570
92 - 762

$$60\overline{)570} = 9.5$$

9.5

Write an equation to represent the number of miles the plane has flown, y, during x minutes at cruising altitude, only.

$y = x$
$762 =$

Assuming that the plane maintains its speed at cruising altitude, determine the total number of miles the plane has flown 2 hours into the flight.

~~2 hours = 1140~~

836 + 192 = 1028 miles

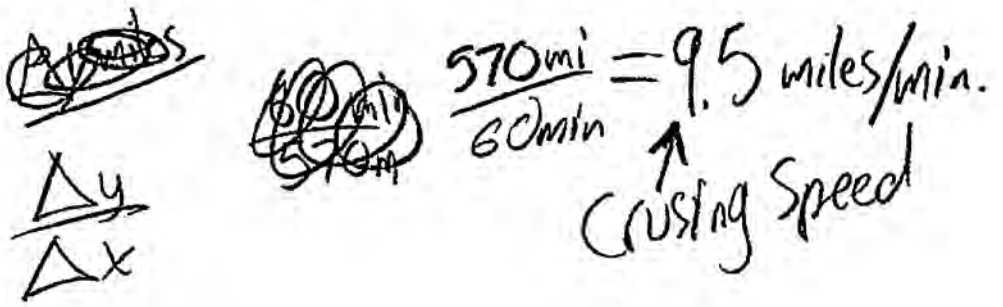
↑ cruise ↑ 32 min

Score 2: The student showed correct work to determine 9.5, but did not write a correct equation or show sufficient work to find 1028.

Question 35

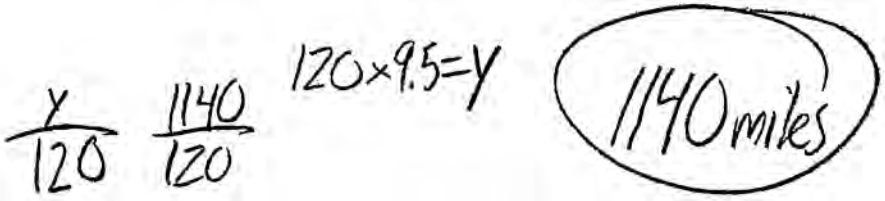
35 An airplane leaves New York City and heads toward Los Angeles. As it climbs, the plane gradually increases its speed until it reaches cruising altitude, at which time it maintains a constant speed for several hours as long as it stays at cruising altitude. After flying for 32 minutes, the plane reaches cruising altitude and has flown 192 miles. After flying for a total of 92 minutes, the plane has flown a total of 762 miles.

Determine the speed of the plane, at cruising altitude, in miles per minute.



Write an equation to represent the number of miles the plane has flown, y, during x minutes at cruising altitude, only.

Assuming that the plane maintains its speed at cruising altitude, determine the total number of miles the plane has flown 2 hours into the flight.



Score 1: The student showed correct work to find 9.5.

Question 35

35 An airplane leaves New York City and heads toward Los Angeles. As it climbs, the plane gradually increases its speed until it reaches cruising altitude, at which time it maintains a constant speed for several hours as long as it stays at cruising altitude. After flying for 32 minutes, the plane reaches cruising altitude and has flown 192 miles. After flying for a total of 92 minutes, the plane has flown a total of 762 miles.

Determine the speed of the plane, at cruising altitude, in miles per minute.

Write an equation to represent the number of miles the plane has flown, y, during x minutes at cruising altitude, only.

$y = mx + b$

$y = 9.5x + 0$

$y = ax^2 + bx + c$

Assuming that the plane maintains its speed at cruising altitude, determine the total number of miles the plane has flown 2 hours into the flight.

1,140 miles

Score 0: The student wrote a correct equation, but did not show any work.

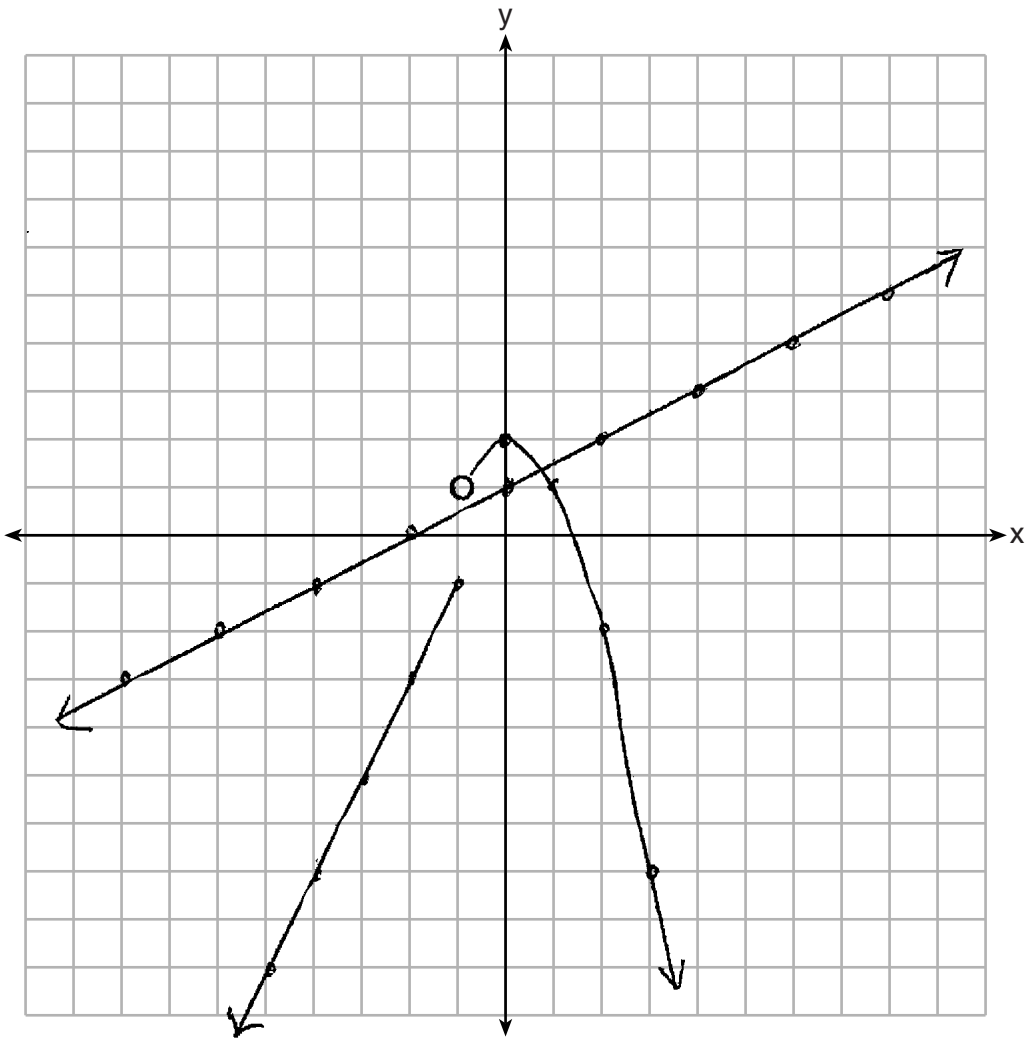
Question 36

36 On the set of axes below, graph

$$g(x) = \frac{1}{2}x + 1$$

and

$$f(x) = \begin{cases} 2x + 1, & x \leq -1 \\ 2 - x^2, & x > -1 \end{cases}$$



How many values of x satisfy the equation $f(x) = g(x)$? Explain your answer, using evidence from your graphs.

1 valve because the functions intersect on the graph one time

Score 4: The student gave a complete and correct response.

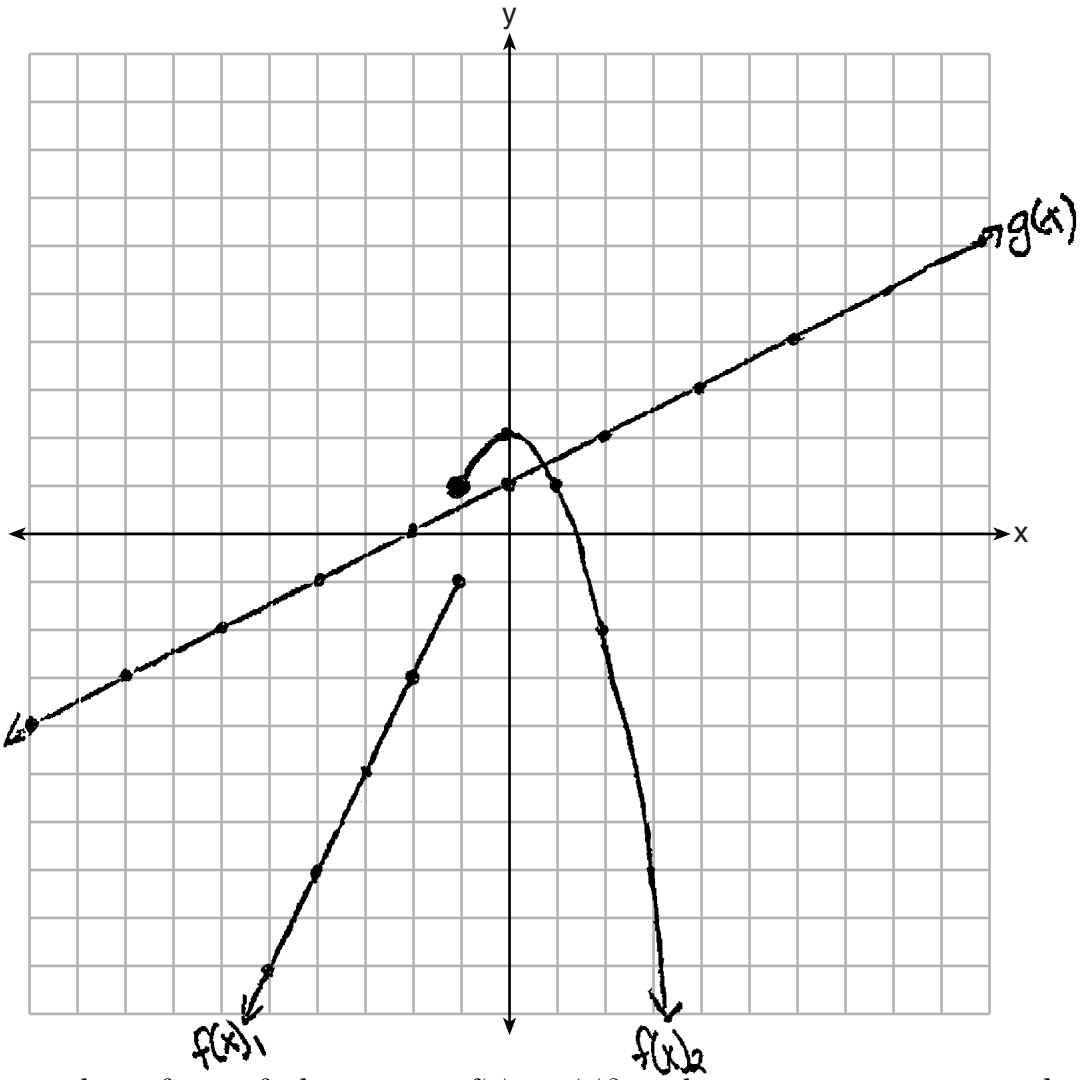
Question 36

36 On the set of axes below, graph

$$g(x) = \frac{1}{2}x + 1$$

and

$$f(x) = \begin{cases} 2x + 1, & x \leq -1 \\ 2 - x^2, & x > -1 \end{cases}$$



How many values of x satisfy the equation $f(x) = g(x)$? Explain your answer, using evidence from your graphs.

Only one value of x satisfies the equation f(x)=g(x) because there is only one place where 2 lines intercept.

Score 3: The student made a graphing error by putting a solid dot at $(-1,1)$.

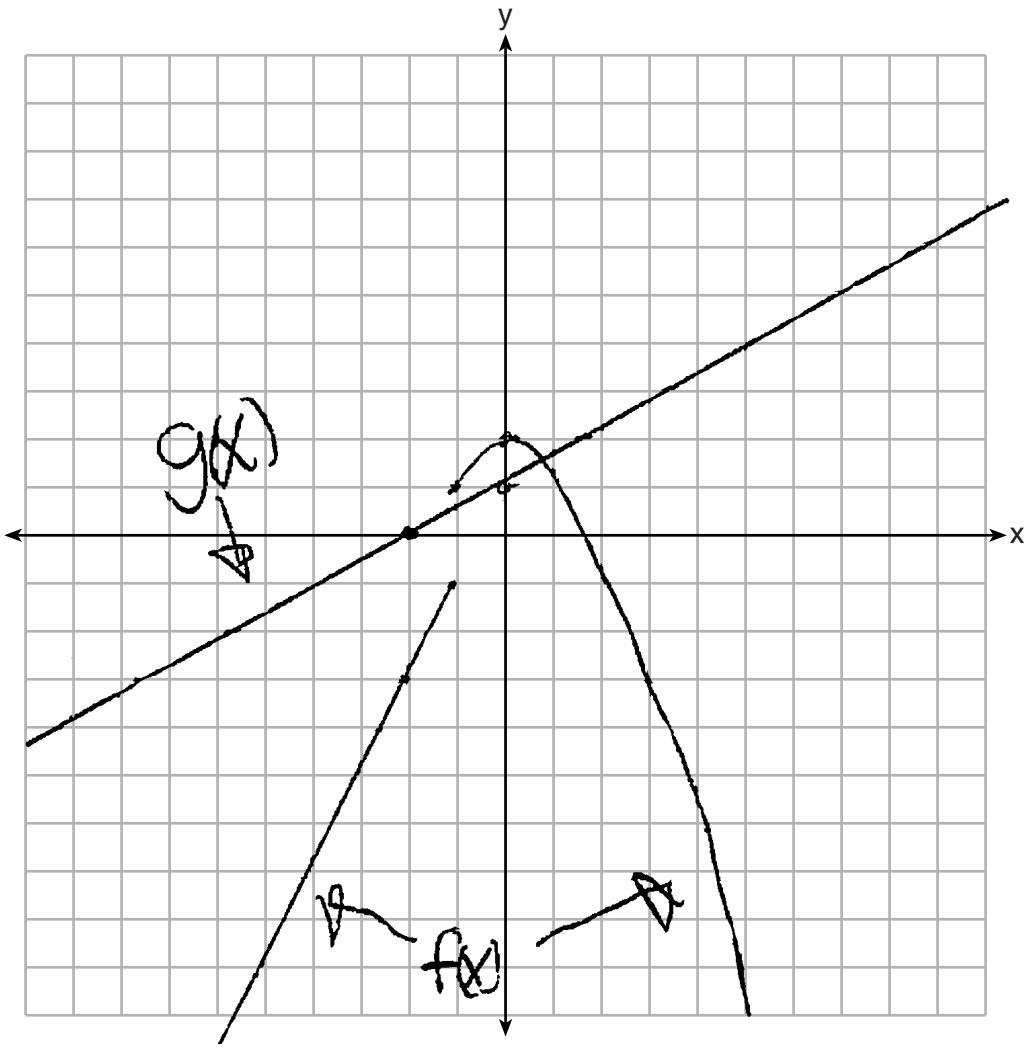
Question 36

36 On the set of axes below, graph

$$g(x) = \frac{1}{2}x + 1$$

and

$$f(x) = \begin{cases} 2x + 1, & x \leq -1 \\ 2 - x^2, & x > -1 \end{cases}$$



How many values of x satisfy the equation $f(x) = g(x)$? Explain your answer, using evidence from your graphs.

one only at (0.781, 1.39)

Score 2: The student graphed two linear equations correctly and stated 1, but did not write an explanation.

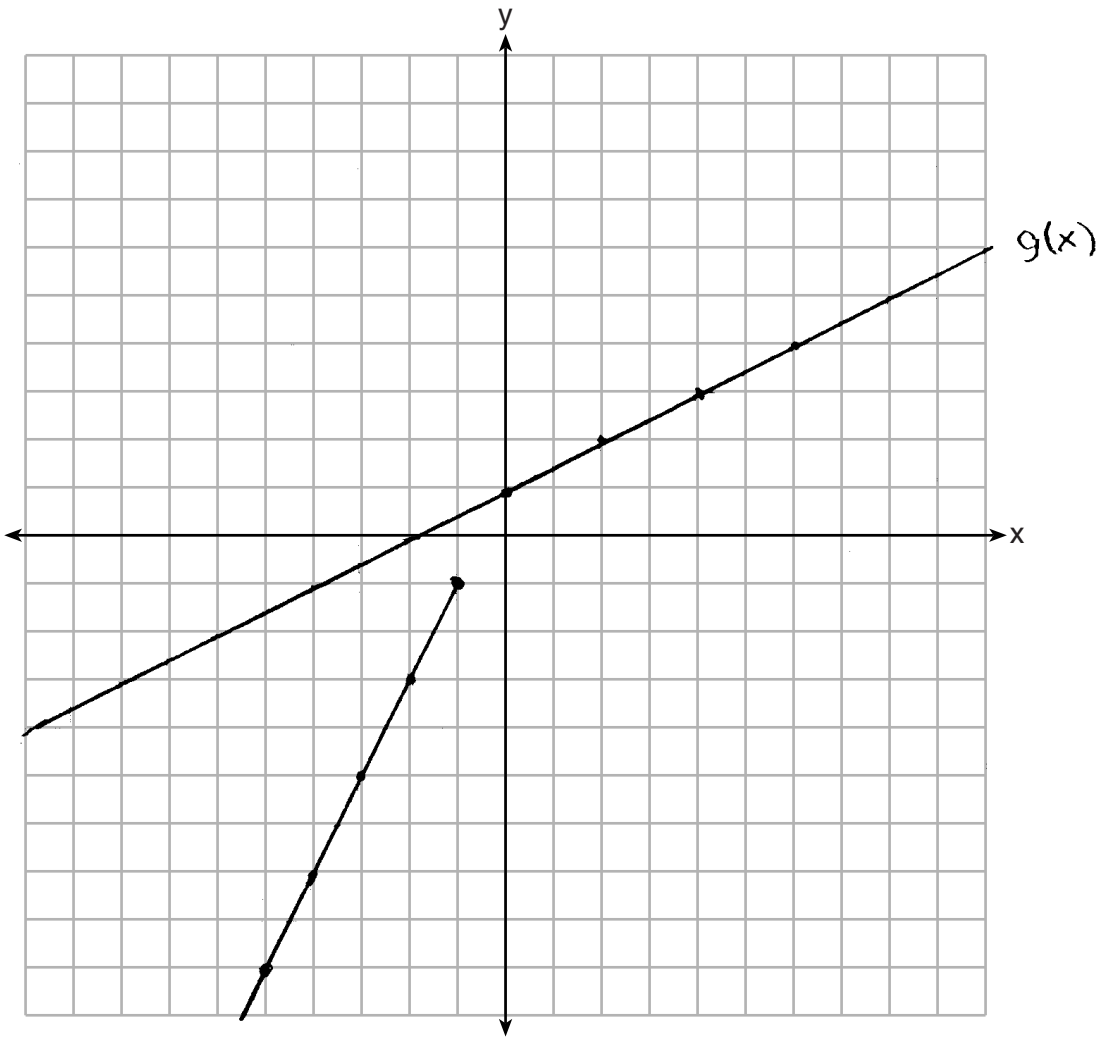
Question 36

36 On the set of axes below, graph

$$g(x) = \frac{1}{2}x + 1$$

and

$$f(x) = \begin{cases} 2x + 1, & x \leq -1 \\ 2 - x^2, & x > -1 \end{cases}$$



How many values of x satisfy the equation $f(x) = g(x)$? Explain your answer, using evidence from your graphs.

Score 1: The student graphed the two linear equations correctly.

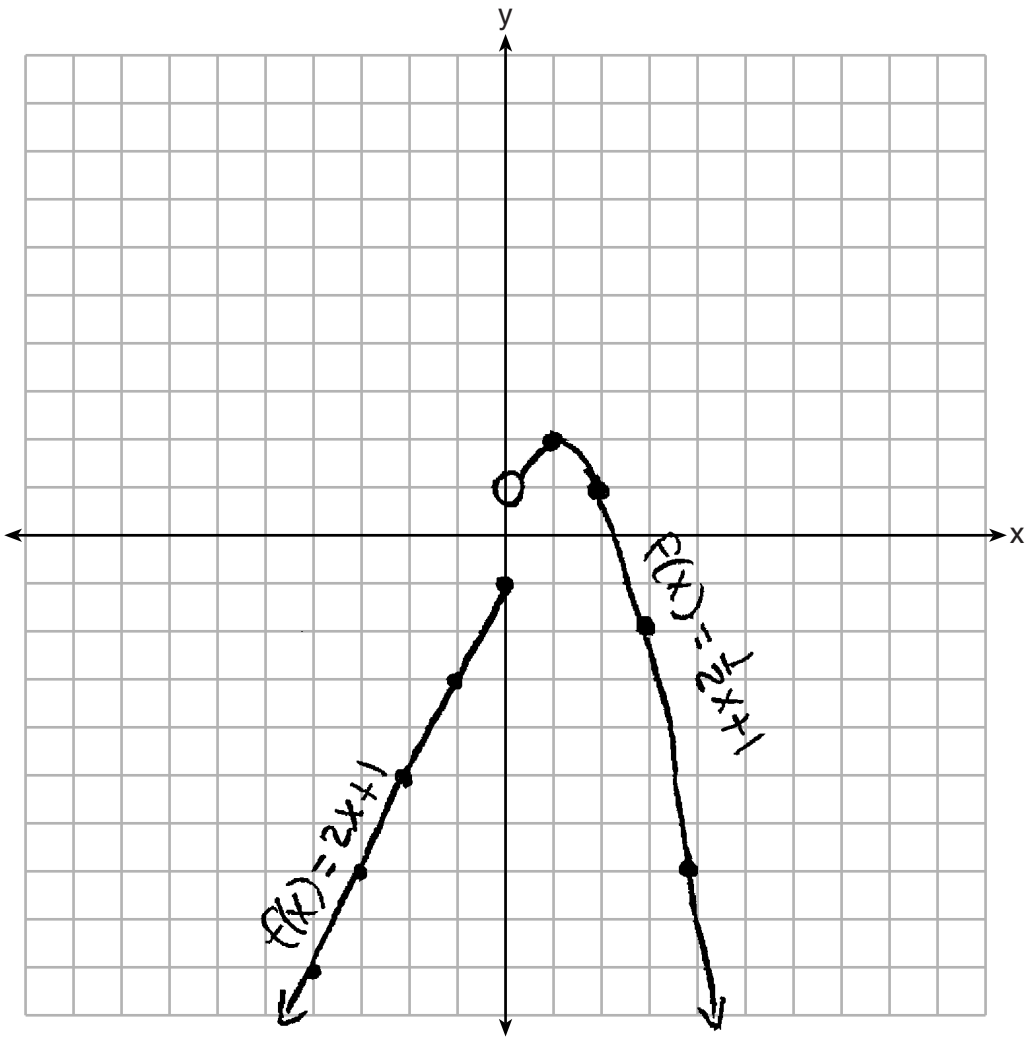
Question 36

36 On the set of axes below, graph

$$g(x) = \frac{1}{2}x + 1$$

and

$$f(x) = \begin{cases} 2x + 1, & x \leq -1 \\ 2 - x^2, & x > -1 \end{cases}$$



How many values of x satisfy the equation $f(x) = g(x)$? Explain your answer, using evidence from your graphs.

-1 because

Score 0: The student graphed $f(x)$ incorrectly.

Question 37

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

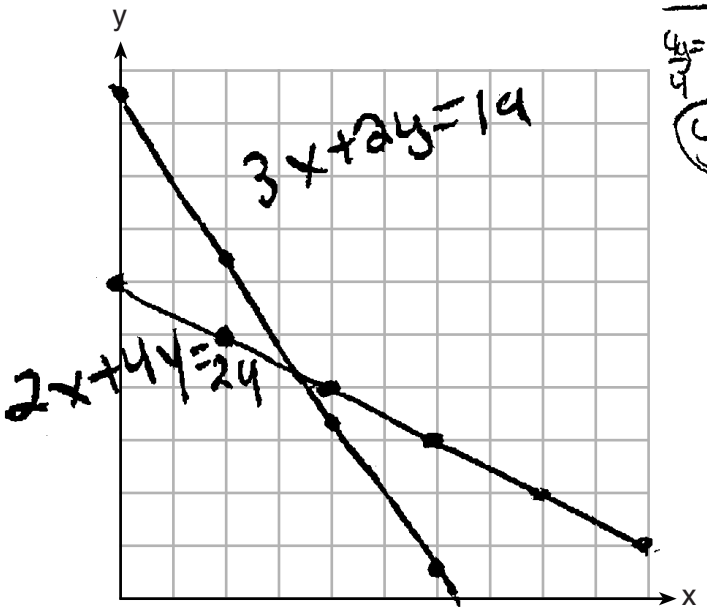
Write a system of equations that describes the given situation.

$3x+2y=19$
$2x+4y=24$

$3x+2y=19$
$-3x \quad -3x$
$2y=-3x+19$
$\frac{2y}{2}=\frac{-3x}{2}+\frac{19}{2}$
$y=-\frac{3}{2}x+9.5$

$2x+4y=24$
$-2x \quad -2x$
$\frac{4y}{4}=\frac{-2x+24}{4}$
$y=-\frac{1}{2}x+6$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

3.50 - cupcakes
4.25 - brownies

Set them equal to eachother:

$-\frac{1}{2}x+6=-\frac{3}{2}x+9.5$
$-6 \quad\quad -6$
$-\frac{1}{2}x=-\frac{3}{2}x+3.5$
$+\frac{3}{2x} \quad +\frac{3}{2x}$
$\frac{1x}{1}=\frac{3.50}{1}$

Substitute for x:
$-\frac{1}{2}(3.5)+6$
4.25

Score 6: The student gave a complete and correct response.

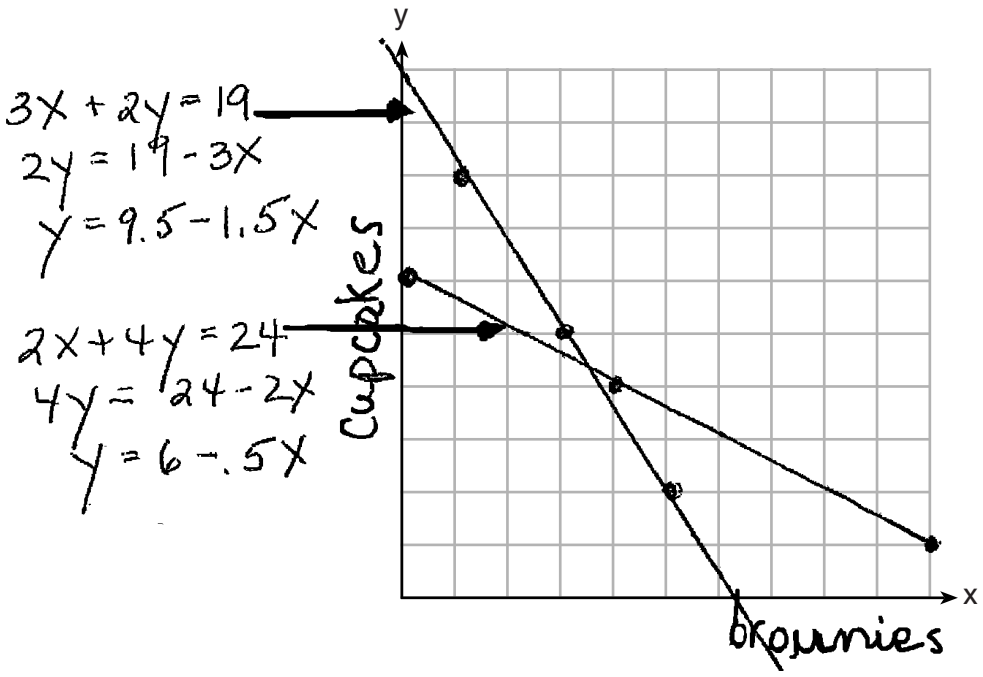
Question 37

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

$3x + 2y = 19$
$2x + 4y = 24$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

$Y_1 = 9.5 - 1.5X$
$Y_2 = 6 - .5X$
2nd calc intersect (3.5, 4.25)

Score 6: The student gave a complete and correct response.

Question 37

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

$2y+3x=19$ $-3x\ -3x$

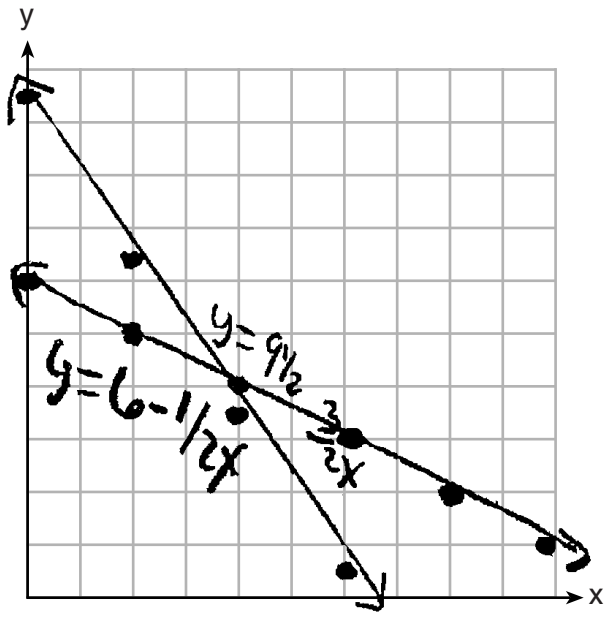
$-2(3x+2y=19)$ $-6x-4y=-38$
$2x+4y=24$ $2x+4y=24$
$4x=-14$
$\frac{4x}{4}=\frac{-14}{4}$ $x=3.50$

On the set of axes below, graph the system of equations.

$\frac{2y}{2}=\frac{19}{2}-\frac{3x}{2}$

$y=9.5-\frac{3}{2}x$

$2x+4y=24$
$-2x\quad -2x$
$4y=24-2x$
$\frac{4y}{4}=\frac{24}{4}-\frac{2x}{4}$
$y=6-1/2x$



$7+4y=24$
$-7\quad -7$
$4y=17$
$\frac{4y}{4}=\frac{17}{4}$
$y=4.25$

Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

$x=3.50$
$y=4.25$

$3(3.50)+2(4.25)=19$ ✓
$2(3.50)+4(4.25)=24$ ✓

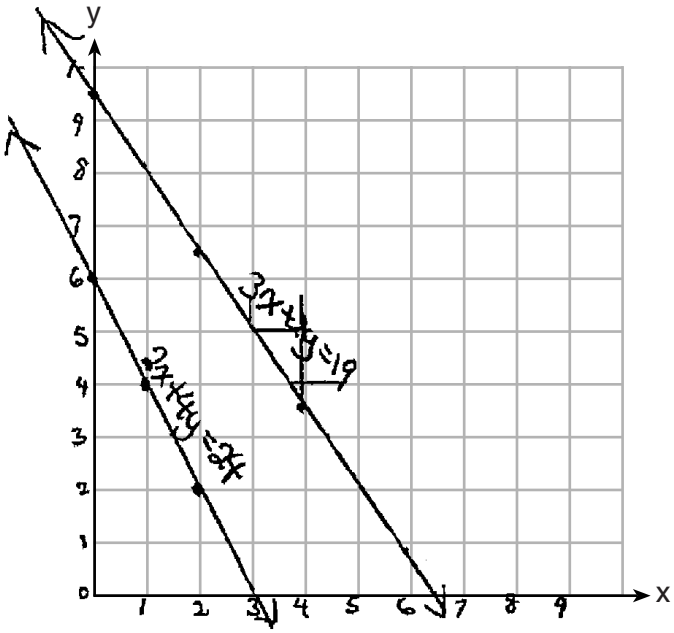
Score 5: The student did not draw the line through the plotted points for $y = 9\frac{1}{2} - \frac{3}{2}x$.

Question 37

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

Let x = cupcakes = 3.5
y = brownies = 4.25

$2(3x+2y=19)$
$-\ 2x+4y=24$
$\frac{4x}{4} = \frac{14}{4}$
$x = 3.5$

$3(3.5)+2y=19$
$10.5+2y=19$
$2y=8.5$
$y=4.25$

Score 5: The student made an error when graphing $2x + 4y = 24$.

Question 37

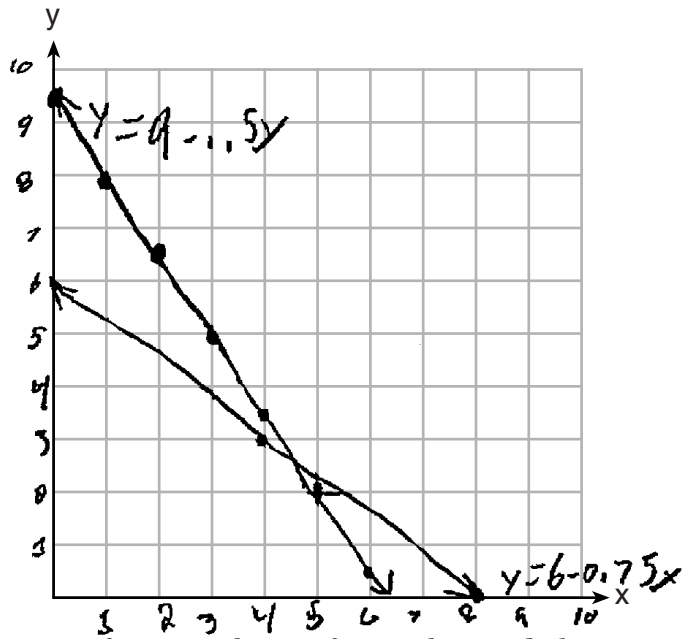
37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

$3x+2y=19 \longrightarrow y=9.5-1.5x$

$3x+4y=24 \longrightarrow y=6-0.75x$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

$3x+4y=24$
$3x+2y=19$
$2y=5$
$y=2.5$

$3x+4(2.5)=24$
$3x+10=24$
$3x=14$
$x=4.67$

Cupcakes costs \$4.67
Brownies costs \$2.50

Score 5: The student wrote one incorrect equation, but graphed and solved the system of equations appropriately.

Question 37

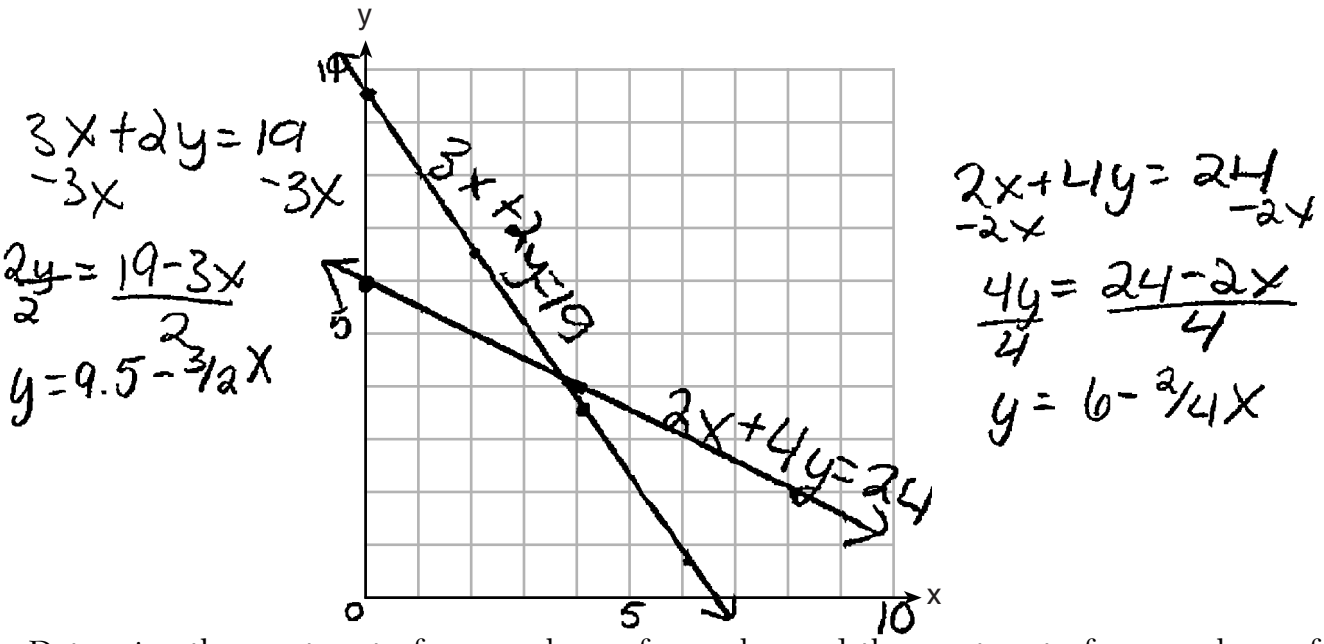
37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

$3x + 2y = 19$

$2x + 4y = 24$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

trial and error

3, 5

$3x + 2y = 19$

$2x + 4y = 24$

3 5 15 7 14

I don't know what else to do

15 4

$3(5) + 2(2) = 19$

10 8

$2(5) + 4(2) = 18$

5 cupcakes = \$5

10 brownies = \$3.5

Score 4: The student wrote and graphed a correct system of equations.

Question 37

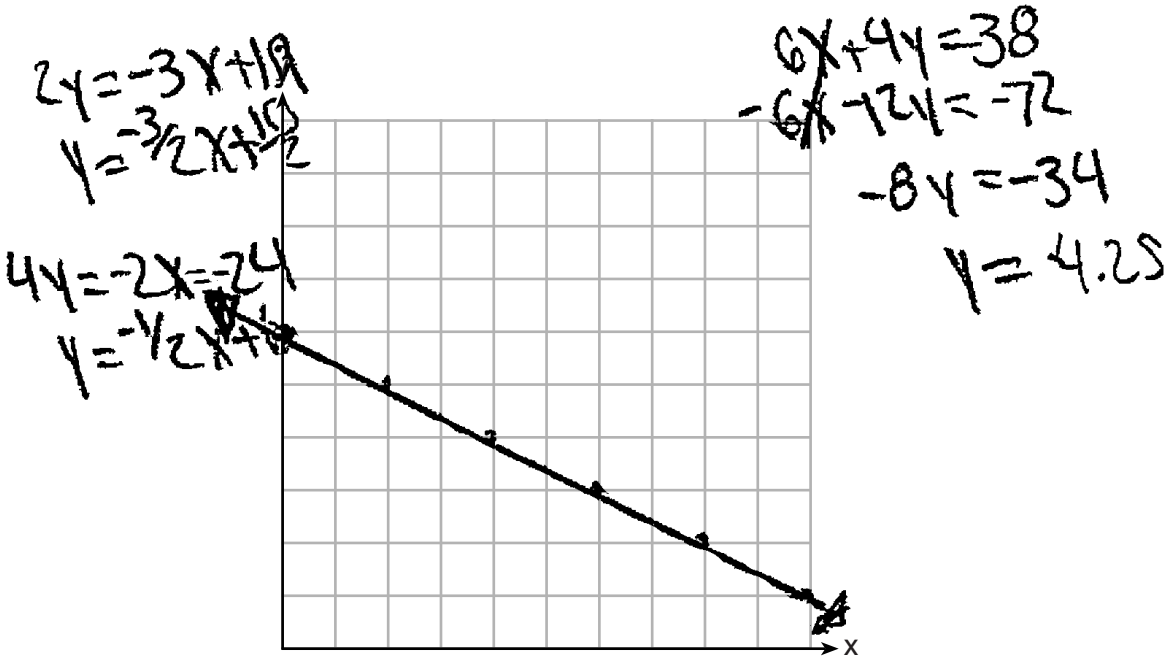
37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

$3x+2y=19$
$2x+4y=24$

$2(3x+2y=19)$
$-3(2x+4y=24)$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

add equations

Score 4: The student wrote a correct system of equations. One equation was graphed correctly and one cost was determined.

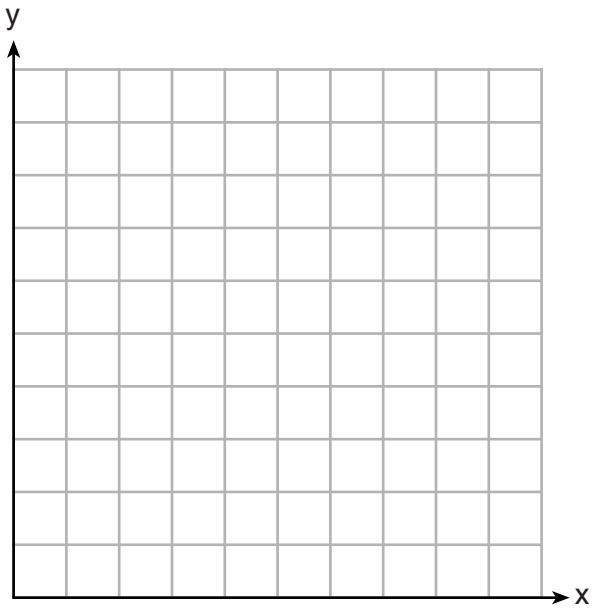
Question 37

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

$3c+2n=19$
$2c+4n=24$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

$2(3c+2b=19) \rightarrow 6c+4b=38$
$3(2c+4b=24) \rightarrow -(6c+12b=72)$
$\frac{-8n}{-8}=\frac{-34}{-8}$
$b=4.25$

$3c+2b=19$
$3c+2(4.25)=19$
$3c+8.50=19$
$-8.50 \quad -8.50$
$3c=10.5$
$c=3.5$

Score 3: The student wrote and solved an appropriate system of equations, but did not use x and y.

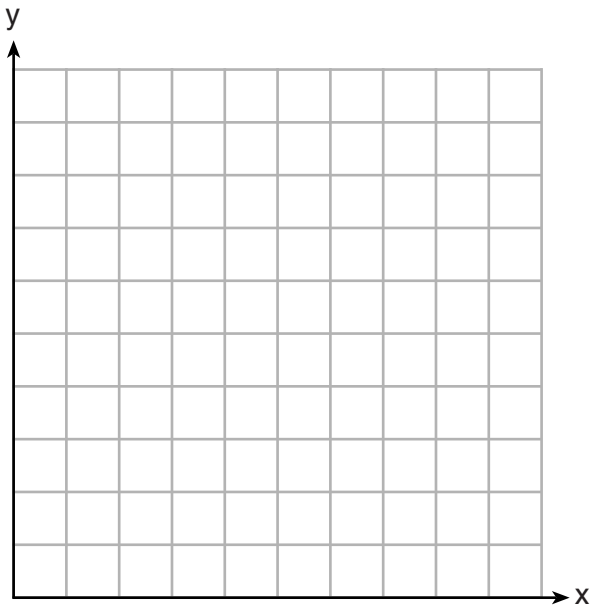
Question 37

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

$3x + 2y = 19$
$2x + 4y = 24$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

$2(3x + 2y = 19)$
$2x + 4y = 24$
$-\ 6x + 4y = 38$
$-\ 2x + 4y = 24$

$\frac{4x}{4} = \frac{14}{4}$
$= \$3.50$

Score 3: The student wrote a correct system of equations and determined one cost correctly.

Question 37

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

Franco → \$19 = 3x + 2y

Caryl → \$24 = 2x + 4y

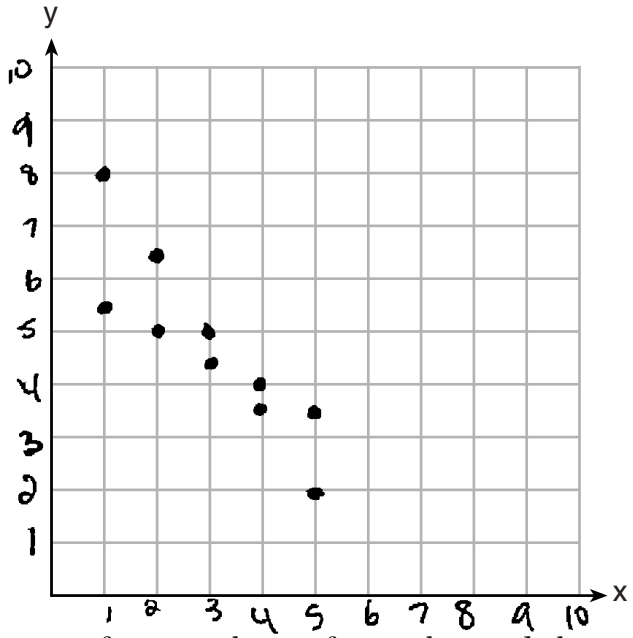
$2y = -3x + 19$

$4y = -2x + 24$

$y = -\frac{3}{2}x + 9.5$

$y = -\frac{1}{2}x + 6$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

$2(19 = 3x + 2y) \rightarrow 38 = 6x + 4y$

$3(24 = 2x + 4y) \rightarrow 72 = 6x + 8y$

$72 = 6x + 8y$

$-38 = 6x + 4y$

$\frac{34}{4} = \frac{4y}{4}$

\$8.50 = y

$24 = 2x + 4(8.5)$

$24 = 2x + 34$

$-34 \quad -34$

$\frac{-10}{2} = \frac{2x}{2}$

$-5 = x$

Score 2: The student wrote a correct system of equations.

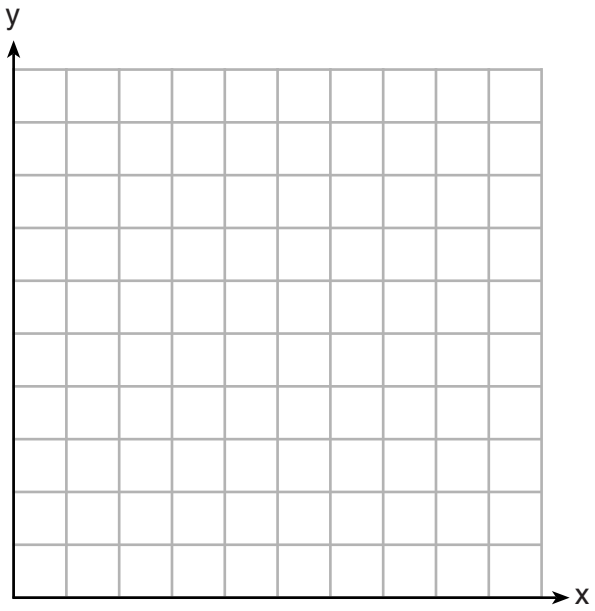
Question 37

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

$3x+2y=19$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

$3x+2y=19$

Score 1: The student wrote one correct equation.

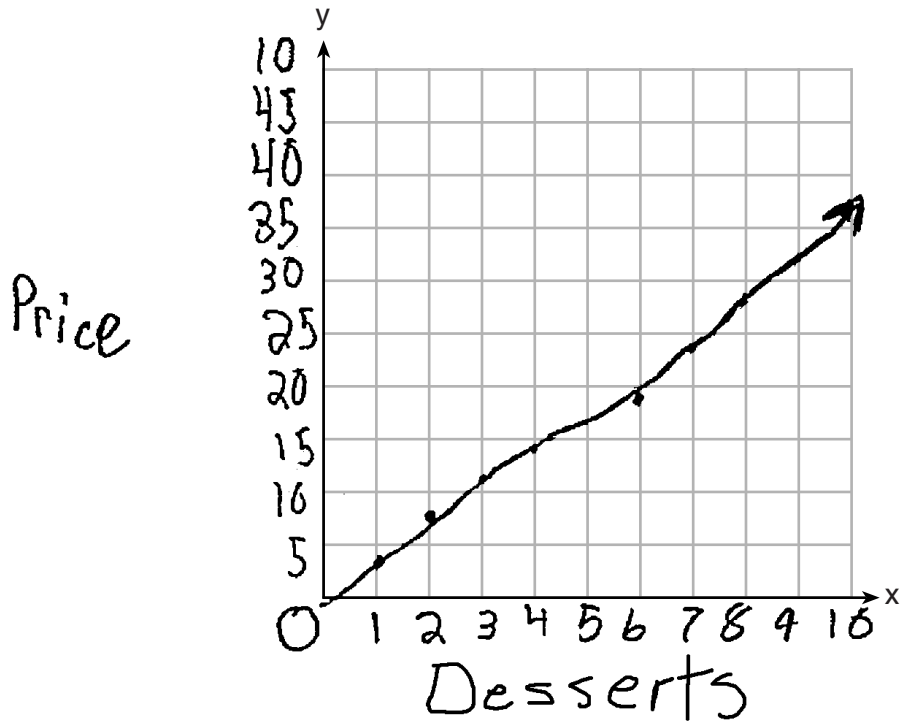
Question 37

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

$5(c)+6(b)$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

$24 = 2(c)+4(b)$

Cupcakes = \$3.50

Brownies = \$4.93

Score 0: The student wrote one equation, but not in terms of x and y, and did not show work to find the cost of the cupcakes.

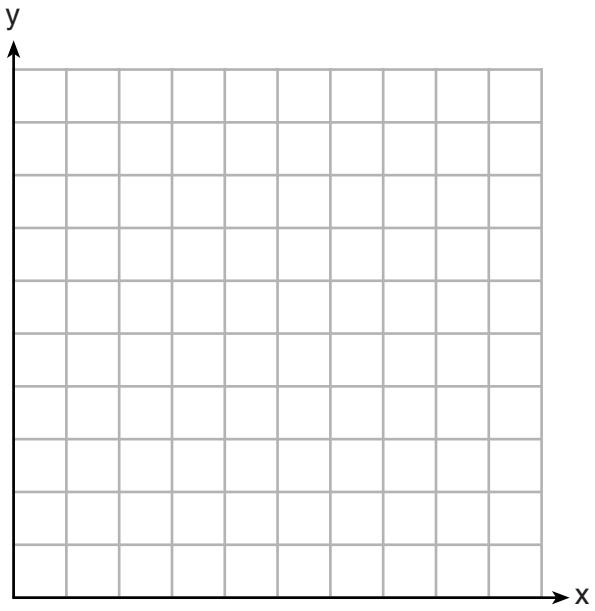
Question 37

37 Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let x equal the price of one package of cupcakes and y equal the price of one package of brownies.

Write a system of equations that describes the given situation.

$3c + 2b = 19$

On the set of axes below, graph the system of equations.



Determine the exact cost of one package of cupcakes and the exact cost of one package of brownies in dollars and cents. Justify your solution.

Score 0: The student wrote one equation, but not in terms of x and y.

The State Education Department / The University of the State of New York

Regents Examination in Algebra I (Common Core) – June 2016

Chart for Converting Total Test Raw Scores to Final Exam Scores (Scale Scores)

(Use for the June 2016 exam only.)

Raw Score	Scale Score	Performance Level
86	**100**	5
85	**99**	5
84	**98**	5
83	**96**	5
82	**95**	5
81	**94**	5
80	**93**	5
79	**92**	5
78	**92**	5
77	**91**	5
76	**90**	5
75	**89**	5
74	**89**	5
73	**88**	5
72	**87**	5
71	**87**	5
70	**86**	5
69	**86**	5
68	**86**	5
67	**85**	5
66	**84**	4
65	**84**	4
64	**84**	4
63	**83**	4
62	**83**	4
61	**83**	4
60	**82**	4
59	**82**	4
58	**82**	4

Raw Score	Scale Score	Performance Level
57	**81**	4
56	**81**	4
55	**81**	4
54	**81**	4
53	**80**	4
52	**80**	4
51	**80**	4
50	**79**	3
49	**79**	3
48	**79**	3
47	**78**	3
46	**78**	3
45	**78**	3
44	**77**	3
43	**77**	3
42	**77**	3
41	**76**	3
40	**76**	3
39	**75**	3
38	**74**	3
37	**74**	3
36	**73**	3
35	**72**	3
34	**72**	3
33	**71**	3
32	**70**	3
31	**69**	3
30	**68**	3
29	**67**	3

Raw Score	Scale Score	Performance Level
28	**66**	3
27	**65**	3
26	**64**	2
25	**63**	2
24	**61**	2
23	**60**	2
22	**58**	2
21	**57**	2
20	**55**	2
19	**53**	1
18	**51**	1
17	**49**	1
16	**47**	1
15	**45**	1
14	**43**	1
13	**41**	1
12	**38**	1
11	**36**	1
10	**33**	1
9	**30**	1
8	**28**	1
7	**25**	1
6	**21**	1
5	**18**	1
4	**15**	1
3	**11**	1
2	**8**	1
1	**4**	1
0	**0**	1

To determine the student's final examination score (scale score), find the student's total test raw score in the column labeled "Raw Score" and then locate the scale score that corresponds to that raw score. The scale score is the student's final examination score. Enter this score in the space labeled "Scale Score" on the student's answer sheet.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Because scale scores corresponding to raw scores in the conversion chart change from one administration to another, it is crucial that for each administration the conversion chart provided for that administration be used to determine the student's final score. The chart above is usable only for this administration of the Regents Examination in Algebra I (Common Core).