ALGEBRA

I

ALGEBRA I

Wednesday, January 22, 2020 — 1:15 to 4:15 p.m., only

Student Name _____

School Name _____

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 If $f(x) = 2(3^x) + 1$, what is the value of $f(2)$?

(1) 13   (3) 37

(2) 19   (4) 54

2 A high school sponsored a badminton tournament. After each round, one-half of the players were eliminated. If there were 64 players at the start of the tournament, which equation models the number of players left after 3 rounds?

(1) $y = 64(1 - .5)^3$ (3) $y = 64(1 - .3)^{0.5}$

(2) $y = 64(1 + .5)^3$ (4) $y = 64(1 + .3)^{0.5}$

3 Given $7x + 2 \geq 58$, which number is *not* in the solution set?

(1) 6   (3) 10

(2) 8   (4) 12

4 Which table could represent a function?

x	f(x)
1	4
2	2
3	4
2	6

(1)

x	h(x)
2	6
0	4
1	6
2	2

(3)

x	g(x)
1	2
2	4
3	6
4	2

(2)

x	k(x)
2	2
3	2
4	6
3	6

(4)

5 Which value of x makes $\dfrac{x-3}{4} + \dfrac{2}{3} = \dfrac{17}{12}$ true?

(1) 8   (3) 0

(2) 6   (4) 4

6 Which expression is equivalent to $18x^2 - 50$?

(1) $2(3x + 5)^2$ (3) $2(3x - 5)(3x + 5)$

(2) $2(3x - 5)^2$ (4) $2(3x - 25)(3x + 25)$

7 The functions $f(x) = x^2 - 6x + 9$ and $g(x) = f(x) + k$ are graphed below.
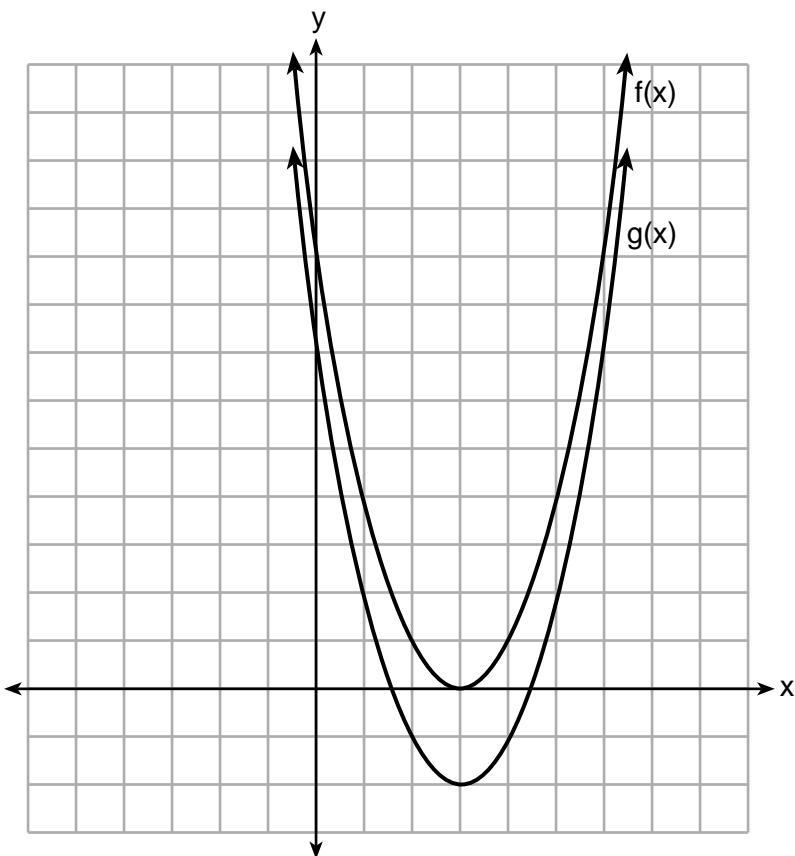
Which value of k would result in the graph of $g(x)$?

(1) 0   (3) -3

(2) 2   (4) -2

8 The shaded boxes in the figures below represent a sequence.

Figure 1   Figure 2   Figure 3

If figure 1 represents the first term and this pattern continues, how many shaded blocks will be in figure 35?

(1) 55 (3) 420

(2) 148 (4) 805

9 The zeros of the function $f(x) = x^3 - 9x^2$ are

(1) 9, only (3) 0 and 3, only

(2) 0 and 9 (4) -3, 0, and 3

10 A middle school conducted a survey of students to determine if they spent more of their time playing games or watching videos on their tablets. The results are shown in the table below.

	Playing Games	Watching Videos	Total
Boys	138	46	184
Girls	54	142	196
Total	192	188	380

Of the students who spent more time playing games on their tablets, approximately what percent were boys?

(1) 41 (3) 72

(2) 56 (4) 75

11 Which statement best describes the solutions of a two-variable equation?

(1) The ordered pairs must lie on the graphed equation.

(2) The ordered pairs must lie near the graphed equation.

(3) The ordered pairs must have $x = 0$ for one coordinate.

(4) The ordered pairs must have $y = 0$ for one coordinate.

12 The expression $x^2 - 10x + 24$ is equivalent to

(1) $(x + 12)(x - 2)$ (3) $(x + 6)(x + 4)$

(2) $(x - 12)(x + 2)$ (4) $(x - 6)(x - 4)$

13 Which statement is true about the functions $f(x)$ and $g(x)$, given below?

g(x)

$f(x) = -x^2 - 4x - 4$
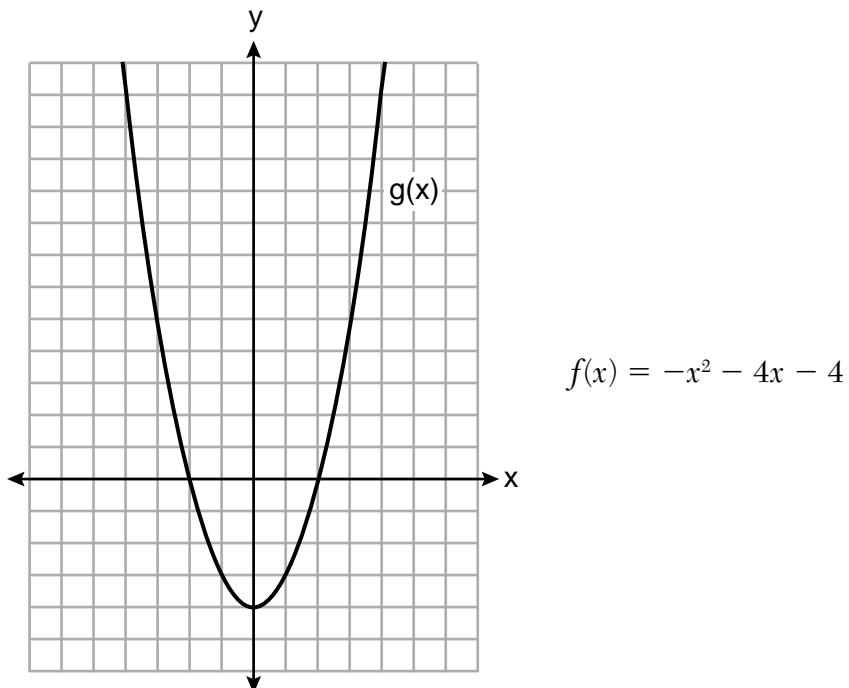
(1) The minimum value of $g(x)$ is greater than the maximum value of $f(x)$.

(2) $f(x)$ and $g(x)$ have the same y-intercept.

(3) $f(x)$ and $g(x)$ have the same roots.

(4) $f(x) = g(x)$ when $x = -4$.

14 The equation $V(t) = 12{,}000(0.75)^t$ represents the value of a motorcycle t years after it was purchased. Which statement is true?

(1) The motorcycle cost $9000 when purchased.

(2) The motorcycle cost $12,000 when purchased.

(3) The motorcycle's value is decreasing at a rate of 75% each year.

(4) The motorcycle's value is decreasing at a rate of 0.25% each year.

15 The solutions to $(x + 4)^2 - 2 = 7$ are

(1) $-4 \pm \sqrt{5}$ (3) -1 and -7

(2) $4 \pm \sqrt{5}$ (4) 1 and 7

16 Which expression is *not* equivalent to $-4x^3 + x^2 - 6x + 8$?

(1) $x^2(-4x + 1) - 2(3x - 4)$ (3) $-4x^3 + (x - 2)(x - 4)$

(2) $x(-4x^2 - x + 6) + 8$ (4) $-4(x^3 - 2) + x(x - 6)$

17 Which situation could be modeled as a linear equation?

(1) The value of a car decreases by 10% every year.

(2) The number of fish in a lake doubles every 5 years.

(3) Two liters of water evaporate from a pool every day.

(4) The amount of caffeine in a person's body decreases by $\dfrac{1}{3}$ every 2 hours.

18 The range of the function $f(x) = |x + 3| - 5$ is

(1) $[-5, \infty)$ (3) $[3, \infty)$

(2) $(-5, \infty)$ (4) $(3, \infty)$

19 A laboratory technician used the function $t(m) = 2(3)^{2m+1}$ to model her research. Consider the following expressions:

I. $6(3)^{2m}$ II. $6(6)^{2m}$ III. $6(9)^m$

The function $t(m)$ is equivalent to

(1) I, only   (3) I and III

(2) II, only   (4) II and III

20 Which system of equations has the same solutions as the system below?

$$3x - y = 7$$
$$2x + 3y = 12$$

(1) $6x - 2y = 14$ (3) $-9x - 3y = -21$
    $-6x + 9y = 36$ $2x + 3y = 12$

(2) $18x - 6y = 42$ (4) $3x - y = 7$
    $4x + 6y = 24$ $x + y = 2$

21 A population of paramecia, P, can be modeled using the exponential function $P(t) = 3(2)^t$, where t is the number of days since the population was first observed. Which domain is most appropriate to use to determine the population over the course of the first two weeks?

(1) $t \geq 0$ (3) $0 \leq t \leq 2$

(2) $t \leq 2$ (4) $0 \leq t \leq 14$

22 Given the following data set:

65, 70, 70, 70, 70, 80, 80, 80, 85, 90, 90, 95, 95, 95, 100

Which representations are correct for this data set?

I

II

III
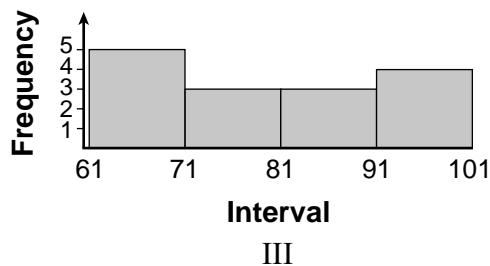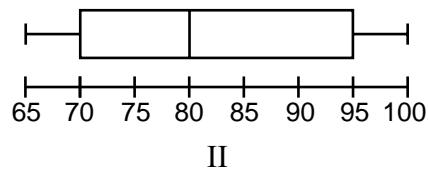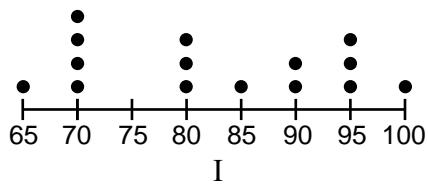
(1) I and II, only

(2) I and III, only

(3) II and III, only

(4) I, II, and III

23 A recursively defined sequence is shown below.

$$a_1 = 5$$
$$a_{n+1} = 2a_n - 7$$

The value of a_4 is

(1) -9 (3) 8

(2) -1 (4) 15

24 Which polynomial has a leading coefficient of 4 and a degree of 3?

(1) $3x^4 - 2x^2 + 4x - 7$ (3) $4x^4 - 3x^3 + 2x^2$

(2) $4 + x - 4x^2 + 5x^3$ (4) $2x + x^2 + 4x^3$

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 Graph $f(x) = -\sqrt{x} + 1$ on the set of axes below.
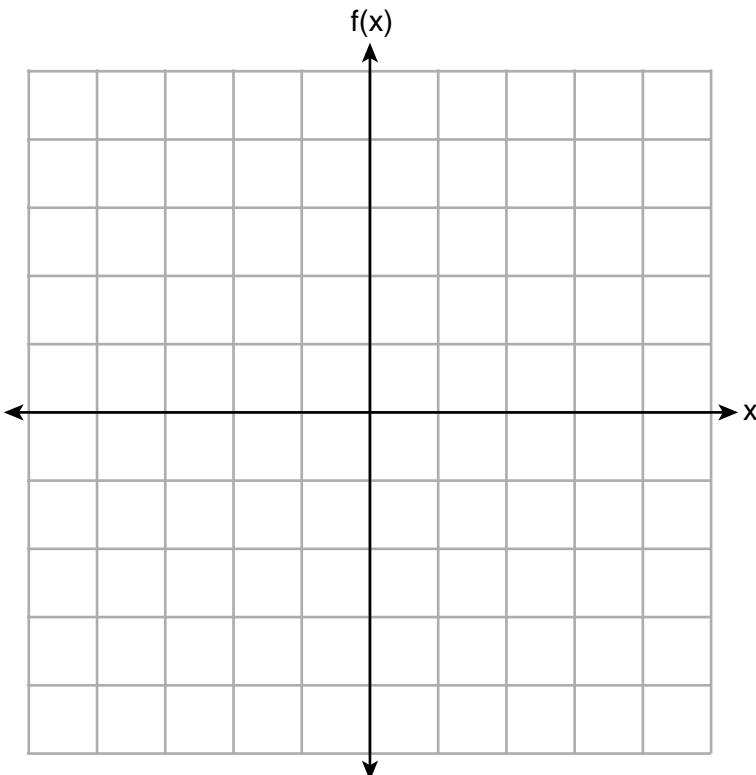
26 Maria orders T-shirts for her volleyball camp. Adult-sized T-shirts cost $6.25 each and youth-sized T-shirts cost $4.50 each. Maria has $550 to purchase both adult-sized and youth-sized T-shirts. If she purchases 45 youth-sized T-shirts, determine algebraically the maximum number of adult-sized T-shirts she can purchase.

27 A news report suggested that an adult should drink a minimum of 4 pints of water per day. Based on this report, determine the *minimum* amount of water an adult should drink, in fluid ounces, per week.

28 Express $(3x - 4)(x + 7) - \frac{1}{4}x^2$ as a trinomial in standard form.

29 John was given the equation $4(2a + 3) = -3(a - 1) + 31 - 11a$ to solve. Some of the steps and their reasons have already been completed. State a property of numbers for each missing reason.

$$4(2a + 3) = -3(a - 1) + 31 - 11a \qquad \text{Given}$$

$$8a + 12 = -3a + 3 + 31 - 11a \qquad \text{_____}$$

$$8a + 12 = 34 - 14a \qquad \text{Combining like terms}$$

$$22a + 12 = 34 \qquad \text{_____}$$

30 State whether the product of $\sqrt{3}$ and $\sqrt{9}$ is rational or irrational. Explain your answer.

31 Use the method of completing the square to determine the exact values of x for the equation $x^2 - 8x + 6 = 0$.

32 A formula for determining the finite sum, S, of an arithmetic sequence of numbers is $S = \dfrac{n}{2}(a + b)$, where n is the number of terms, a is the first term, and b is the last term. Express b in terms of a, S, and n.

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 Michael threw a ball into the air from the top of a building. The height of the ball, in feet, is modeled by the equation $h = -16t^2 + 64t + 60$, where t is the elapsed time, in seconds. Graph this equation on the set of axes below.
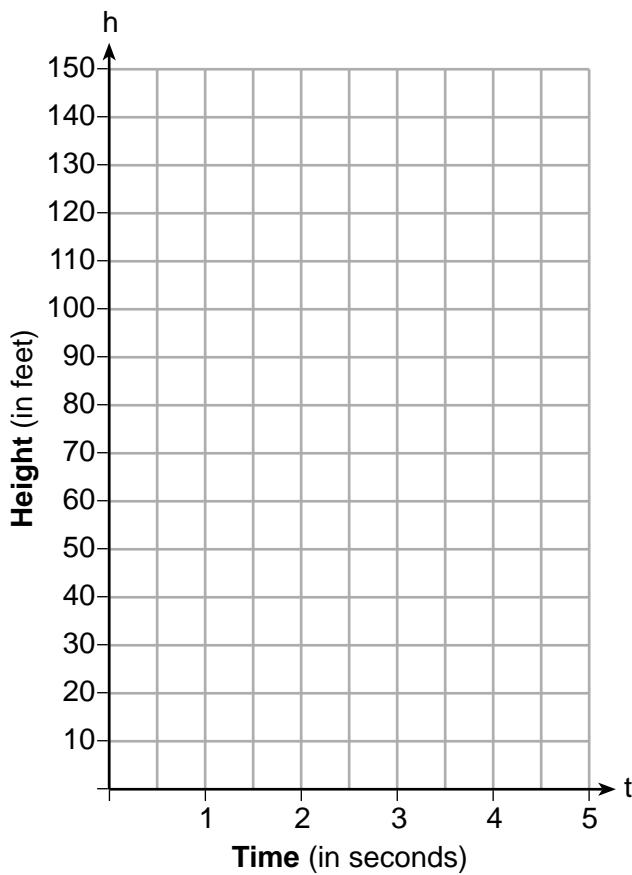
Determine the average rate of change, in feet per second, from when Michael released the ball to when the ball reached its maximum height.

34 Graph the system of inequalities:
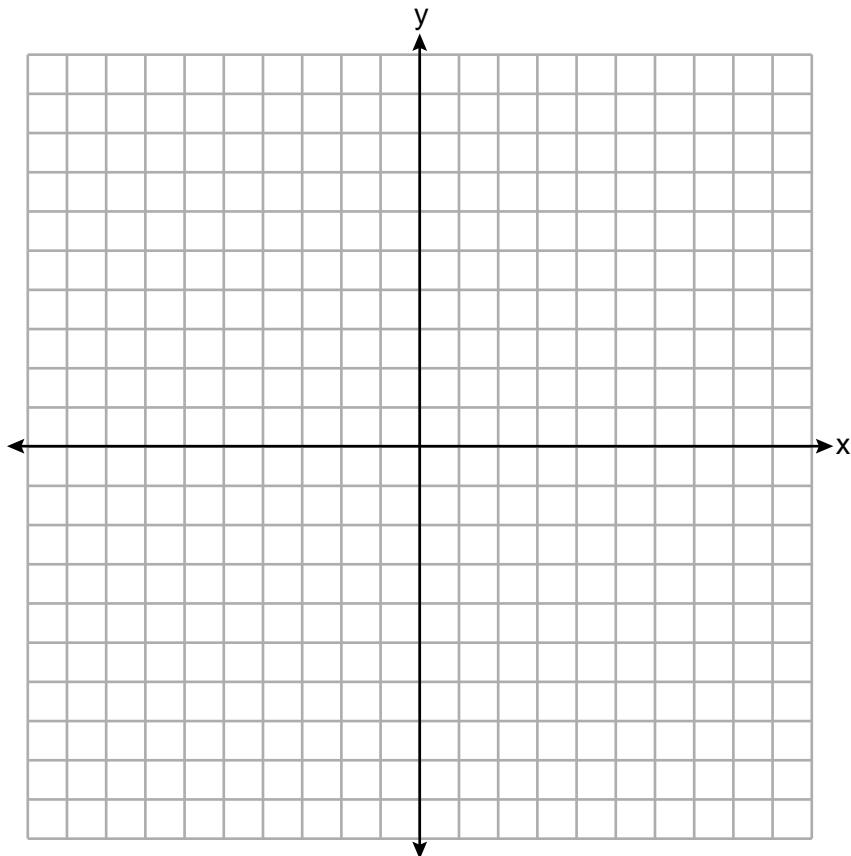
$$-x + 2y - 4 < 0$$
$$3x + 4y + 4 \geq 0$$

Stephen says the point (0,0) is a solution to this system. Determine if he is correct, and explain your reasoning.

35 The following table represents a sample of sale prices, in thousands of dollars, and number of new homes available at that price in 2017.

Sale Price, p (in thousands of dollars)	160	180	200	220	240	260	280
Number of New Homes Available f(p)	126	103	82	75	82	40	20

State the linear regression function, $f(p)$, that estimates the number of new homes available at a specific sale price, p. Round all values to the *nearest hundredth*.

State the correlation coefficient of the data to the *nearest hundredth*. Explain what this means in the context of the problem.

36 The length of a rectangular sign is 6 inches more than half its width. The area of this sign is 432 square inches. Write an equation in one variable that could be used to find the number of inches in the dimensions of this sign.

Solve this equation algebraically to determine the dimensions of this sign, in inches.

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 Two families went to Rollercoaster World. The Brown family paid $170 for 3 children and 2 adults. The Peckham family paid $360 for 4 children and 6 adults.

If x is the price of a child's ticket in dollars and y is the price of an adult's ticket in dollars, write a system of equations that models this situation.

Graph your system of equations on the set of axes below.
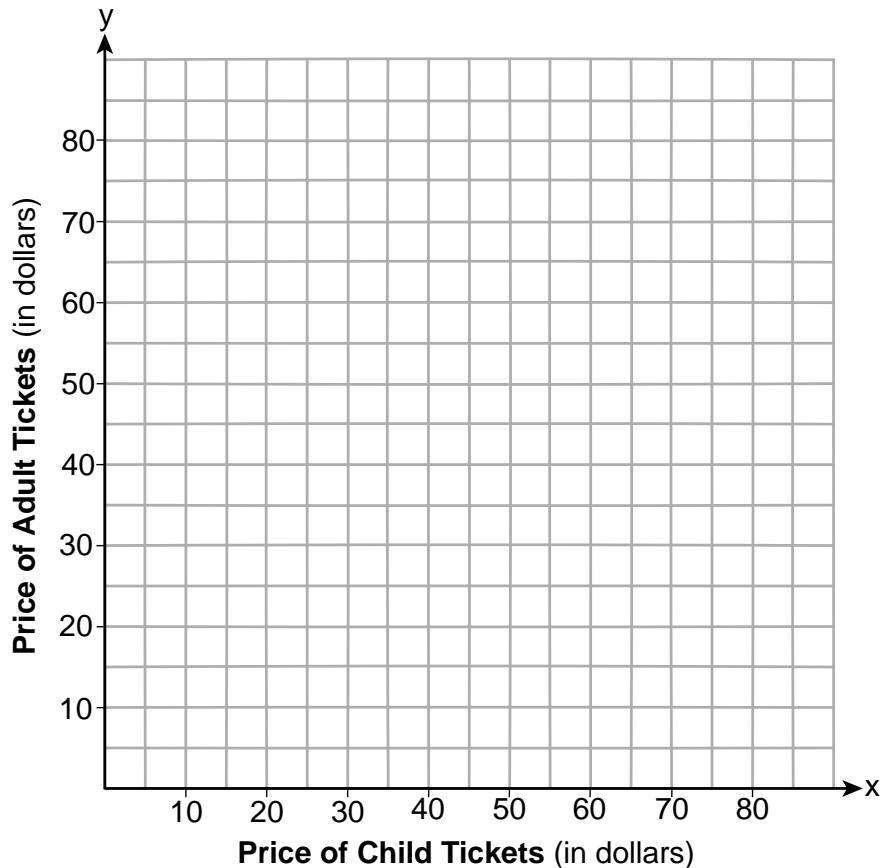
Price of Adult Tickets (in dollars)

Price of Child Tickets (in dollars)

State the coordinates of the point of intersection.

Explain what each coordinate of the point of intersection means in the context of the problem.

Scrap Graph Paper — this sheet will *not* be scored.
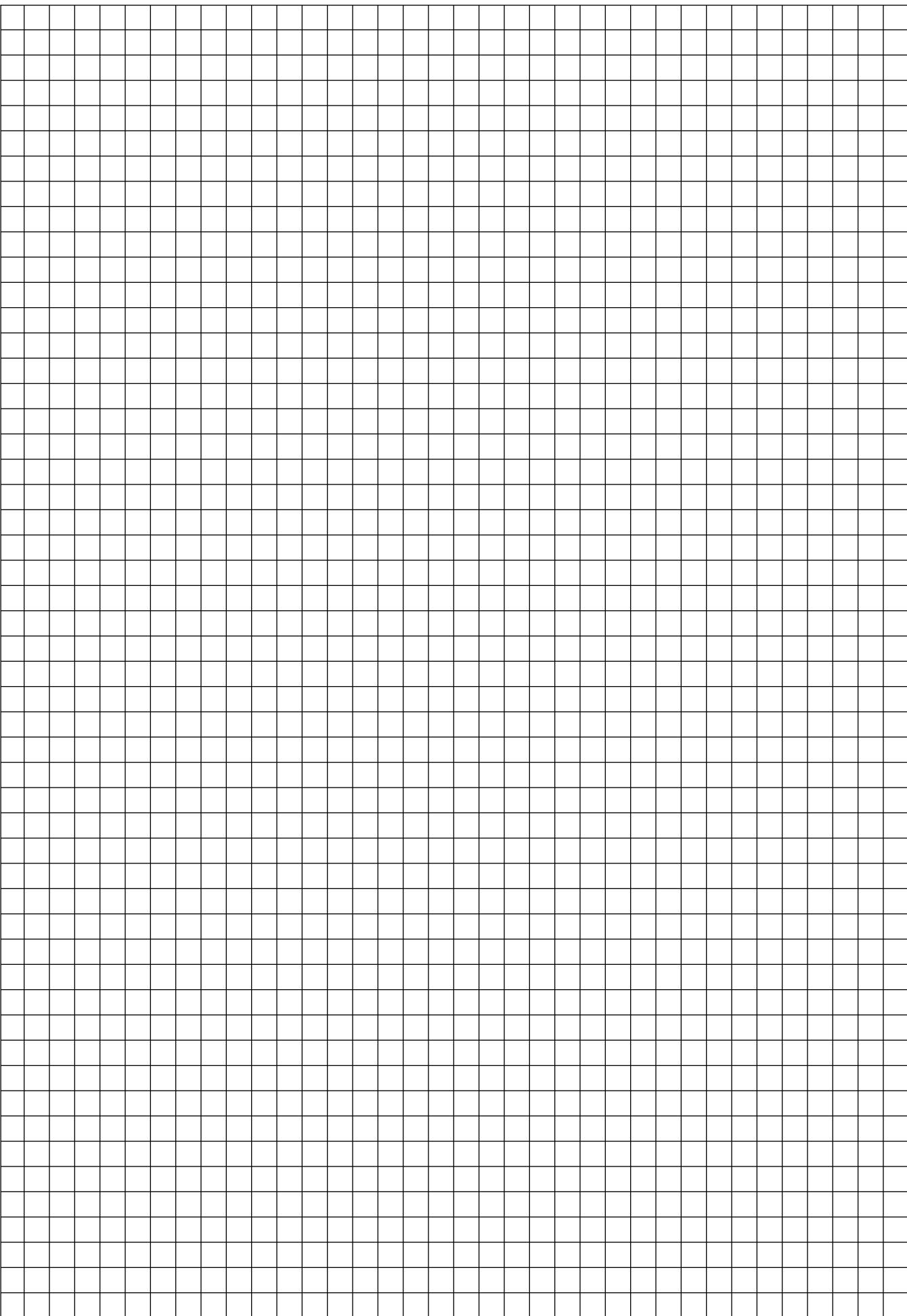
High School Math Reference Sheet

1 inch = 2.54 centimeters   1 kilometer = 0.62 mile   1 cup = 8 fluid ounces
1 meter = 39.37 inches   1 pound = 16 ounces   1 pint = 2 cups
1 mile = 5280 feet   1 pound = 0.454 kilogram   1 quart = 2 pints
1 mile = 1760 yards   1 kilogram = 2.2 pounds   1 gallon = 4 quarts
1 mile = 1.609 kilometers   1 ton = 2000 pounds   1 gallon = 3.785 liters
                                                            1 liter = 0.264 gallon
                                                            1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$	Pythagorean Theorem	$a^2 + b^2 = c^2$
Parallelogram	$A = bh$	Quadratic Formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Circle	$A = \pi r^2$	Arithmetic Sequence	$a_n = a_1 + (n - 1)d$
Circle	$C = \pi d$ or $C = 2\pi r$	Geometric Sequence	$a_n = a_1 r^{n - 1}$
General Prisms	$V = Bh$	Geometric Series	$S_n = \frac{a_1 - a_1 r^n}{1 - r}$ where $r \neq 1$
Cylinder	$V = \pi r^2 h$	Radians	1 radian = $\frac{180}{\pi}$ degrees
Sphere	$V = \frac{4}{3}\pi r^3$	Degrees	1 degree = $\frac{\pi}{180}$ radians
Cone	$V = \frac{1}{3}\pi r^2 h$	Exponential Growth/Decay	$A = A_0 e^{k(t - t_0)} + B_0$
Pyramid	$V = \frac{1}{3}Bh$		

Tear Here

Tear Here

ALGEBRA I

FOR TEACHERS ONLY

The University of the State of New York
REGENTS HIGH SCHOOL EXAMINATION

ALGEBRA I

Wednesday, January 22, 2020 — 1:15 to 4:15 p.m., only

RATING GUIDE

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. This guidance is intended 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/.

Mechanics of Rating

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

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 constructed-response 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/ on Wednesday, January 22, 2020. 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.

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 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*, 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]** A correct graph is drawn.

[1] Appropriate work is shown, but one graphing 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]** 55, and correct algebraic 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] A correct equation or inequality is written, but no further correct work is shown.

or

[1] 55, but a method other than algebraic is used.

or

[1] 55, 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.

(27) **[2]** 448, 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] Correct work is shown to find 64, the number of ounces per day, but no further correct work is shown.

or

[1] 448, 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.

(28) **[2]** $\frac{11}{4}x^2 + 17x - 28$ or an equivalent expression in standard form is written, 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] Appropriate work is shown, but the answer is not in standard form.

or

[1] $\frac{11}{4}x^2 + 17x - 28$, 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.

(29) **[2]** Distributive and addition are stated.

[1] Only one property is correct.

[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]** Irrational, 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] Irrational, but the explanation is incomplete.

[0] Irrational, 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.

(31) **[2]** $4 \pm \sqrt{10}$, and correct work using the method of completing the square 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] Appropriate work is shown to find $(x - 4)^2 - 10 = 0$ or $(x - 4)^2 = 10$, but no further correct work is shown.

or

[1] Appropriate work is shown, but only one solution is stated.

or

[1] Appropriate work is shown, but the answer is stated as a decimal.

or

[1] $4 \pm \sqrt{10}$, but a method other than completing the square is used.

or

[1] $4 \pm \sqrt{10}$, 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]** $b = \dfrac{2S}{n} - a$ or $b = \dfrac{2S - na}{n}$, 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] Appropriate work is shown, but an expression is written.

or

[1] $b = \dfrac{2S}{n} - a$, 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.

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]** A correct graph is drawn, 32, and correct work is shown.

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

or

[3] A correct graph is drawn and 32, but no work is shown.

[2] Appropriate work is shown to find 32, but no further correct work is shown.

or

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

[1] 32, 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.

(34) **[4]** Both inequalities are graphed correctly and at least one is labeled, and an explanation indicating a positive response 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 two or more computational, graphing, or labeling errors are made.

or

[2] One inequality is graphed and labeled correctly, but no further correct work is shown.

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

or

[1] A correct explanation is written, 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]** $f(p) = -0.79p + 249.86$, -0.95, and a correct explanation is written in the context of the problem.

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

or

[3] Appropriate work is shown, but an expression is written.

or

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

or

[3] Appropriate work is shown, but the function is not written in terms of p and $f(p)$.

[2] A correct function is written, but no further correct work is shown.

[1] -0.95, but no further correct work is shown.

or

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

or

[1] A correct explanation in context is written, 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.

(36) **[4]** A correct equation in one variable is written, 24 and 18, and correct algebraic work is shown.

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

or

[3] A correct equation in one variable is written, and 24 and 18 are stated, but no correct algebraic work is shown.

or

[3] Appropriate work is shown, but only one dimension is found.

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

or

[2] A correct equation in one variable is written, but no further correct work is shown.

[1] An appropriate system in two variables is written, but no further correct work is shown.

or

[1] 24 and 18, but a method other than algebraic is used.

or

[1] 24 and 18 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.

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]** $3x + 2y = 170$ and $4x + 6y = 360$ are written and graphed correctly, at least one is labeled, and (30,40) is stated, and a correct explanation in context is written.

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

or

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

or

[5] Appropriate work is shown, but the coordinates are not stated.

or

[5] One equation is incorrect, but the system is graphed and solved appropriately.

[4] Appropriate work is shown, but two or more computational, graphing, or labeling errors are 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] A correct system of equations is written and (30,40) is stated, but no further correct work is shown.

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

or

[1] (30,40) is stated, but no further correct work is shown.

or

[1] A correct explanation is written, 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.

Map to the Learning Standards
Algebra I
January 2020

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

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

Regents Examination in Algebra I

January 2020

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

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

Wednesday, January 22, 2020 — 1:15 to 4:15 p.m.

MODEL RESPONSE SET

Table of Contents
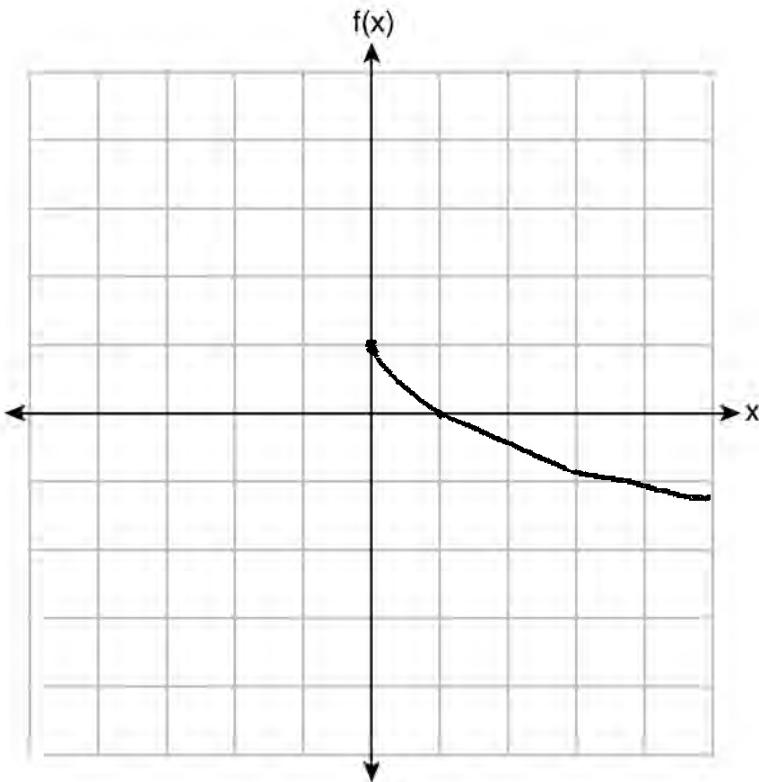
25 Graph $f(x) = -\sqrt{x} + 1$ on the set of axes below.

Score 2: The student gave a complete and correct response.
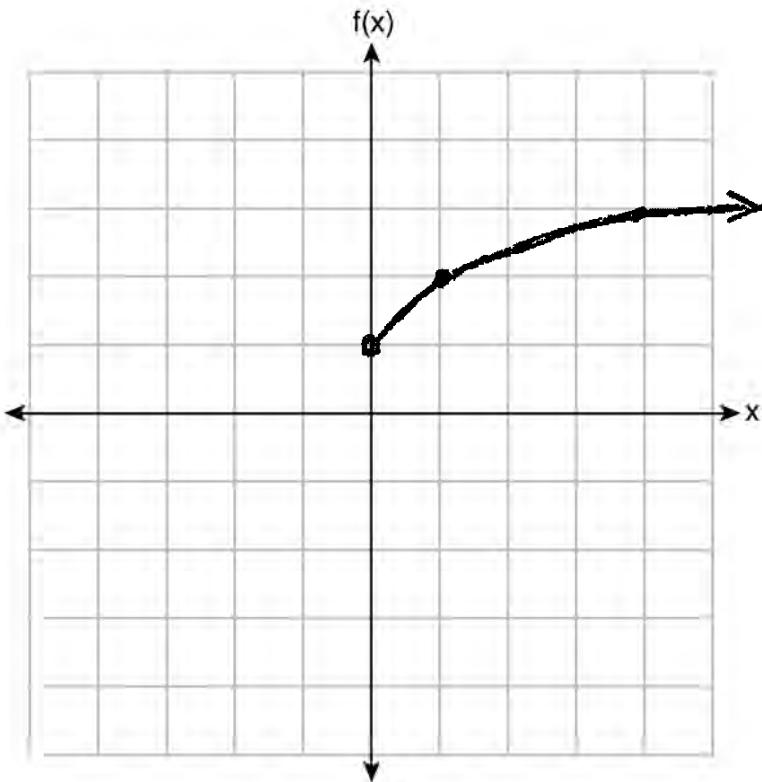
25 Graph $f(x) = -\sqrt{x} + 1$ on the set of axes below.

Score 1: The student graphed $f(x) = \sqrt{x} + 1$.

25 Graph $f(x) = -\sqrt{x} + 1$ on the set of axes below.
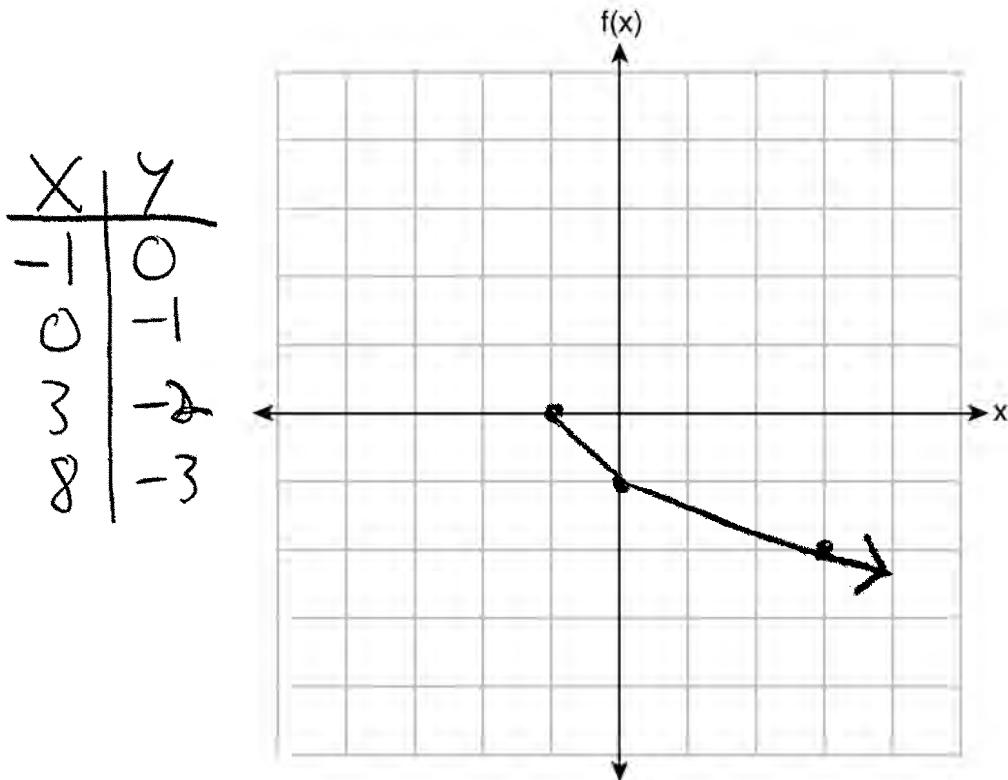
Score 1: The student graphed $f(x) = -\sqrt{x+1}$.

25 Graph $f(x) = -\sqrt{x} + 1$ on the set of axes below.
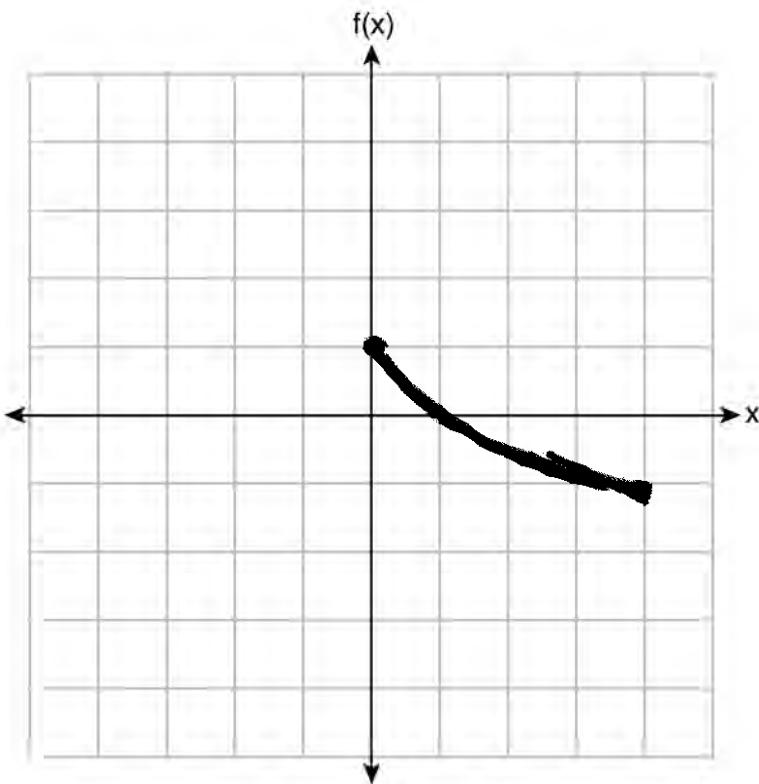
Score 1: The student only graphed $f(x) = -\sqrt{x} + 1$ over the interval $0 \leq x \leq 4$.

25 Graph $f(x) = -\sqrt{x} + 1$ on the set of axes below.
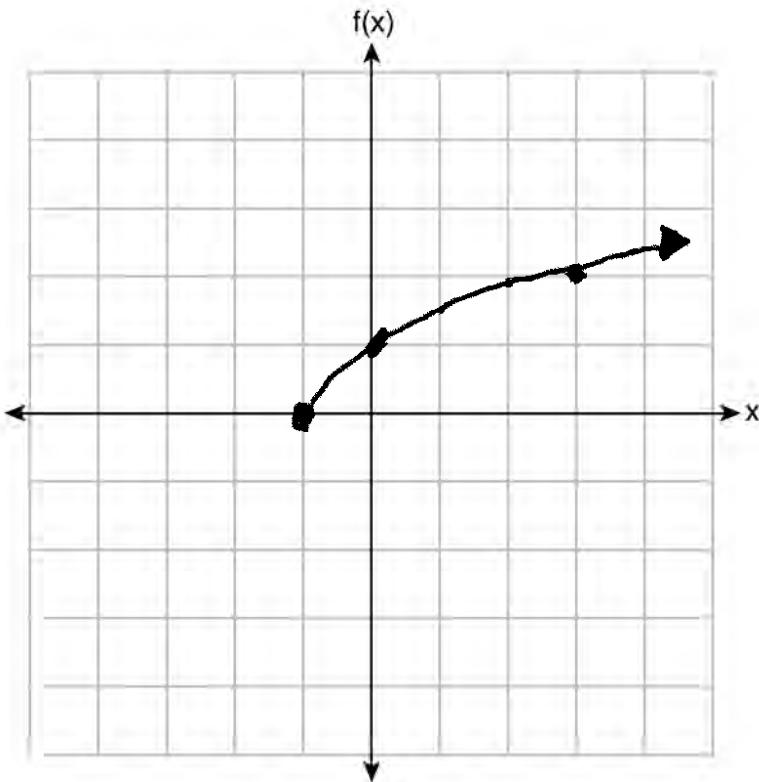
Score 0: The student made two errors by graphing $f(x) = \sqrt{x+1}$.
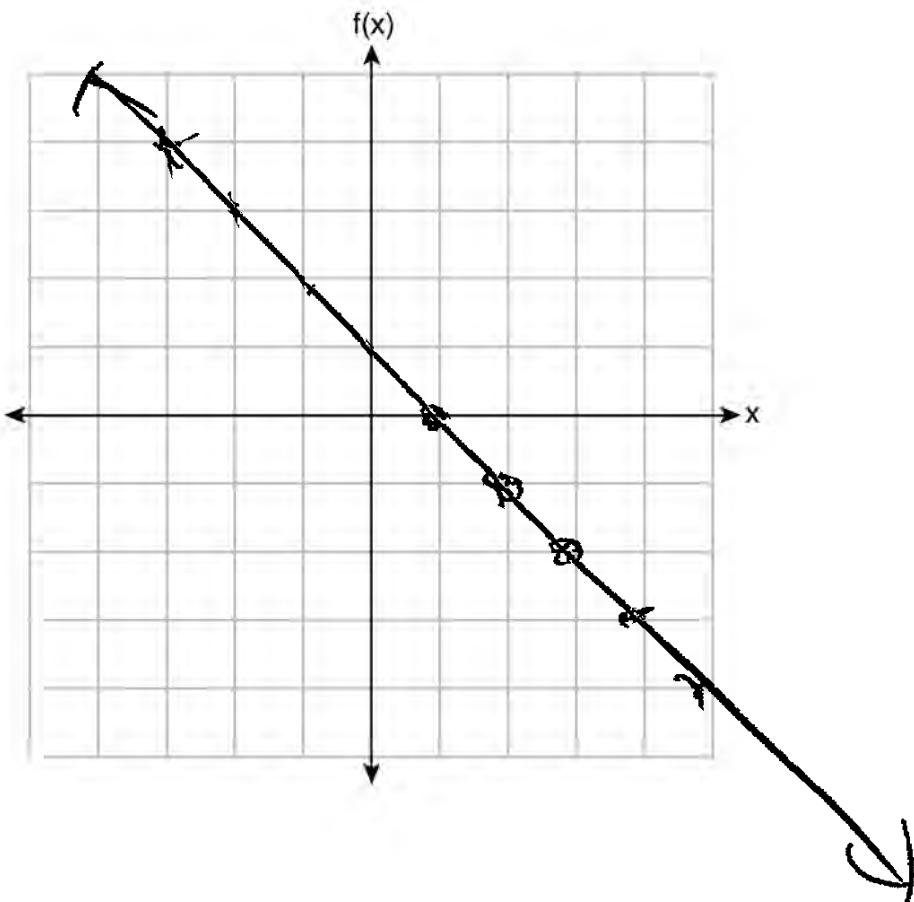
25 Graph $f(x) = -\sqrt{x} + 1$ on the set of axes below.

Score 0: The student did not show enough grade-level work to receive any credit.

26 Maria orders T-shirts for her volleyball camp. Adult-sized T-shirts cost $6.25 each and youth-sized T-shirts cost $4.50 each. Maria has $550 to purchase both adult-sized and youth-sized T-shirts. If she purchases 45 youth-sized T-shirts, determine algebraically the maximum number of adult-sized T-shirts she can purchase.

Adult size = x

Youth size = y

$$6.25x + 4.50y \leq 550$$

$$6.25x + 4.50(45) \leq 550$$

$$6.25x + 202.5 \leq 550$$

$$\begin{array}{r} -202.5 \quad -202.5 \end{array}$$

$$\frac{6.25x}{6.25} \leq \frac{347.50}{6.25}$$

$$x \leq 55.6$$

The maximum # of Adult size tshirts Maria can order is 55.

26 Maria orders T-shirts for her volleyball camp. Adult-sized T-shirts cost $6.25 each and youth-sized T-shirts cost $4.50 each. Maria has $550 to purchase both adult-sized and youth-sized T-shirts. If she purchases 45 youth-sized T-shirts, determine algebraically the maximum number of adult-sized T-shirts she can purchase.

$$45(4.50) + x(6.25) = 550$$
$$202.50 + 6.25x = 550$$
$$6.25x = 347.50$$
$$x = 55.6$$

Score 1: The student wrote a correct equation, but did not state the correct number of adult T-shirts.

26 Maria orders T-shirts for her volleyball camp. Adult-sized T-shirts cost $6.25 each and youth-sized T-shirts cost $4.50 each. Maria has $550 to purchase both adult-sized and youth-sized T-shirts. If she purchases 45 youth-sized T-shirts, determine algebraically the maximum number of adult-sized T-shirts she can purchase.

adult
$6.25 youth
$4.50

$550 total

550.00
~ 202.50

347.50
÷ 6.25

55.6

45
×4.50

202.50

Maria will be able to order 55 adult t-shirst

Score 1: The student used a method other than algebraic to get 55.

26 Maria orders T-shirts for her volleyball camp. Adult-sized T-shirts cost $6.25 each and youth-sized T-shirts cost $4.50 each. Maria has $550 to purchase both adult-sized and youth-sized T-shirts. If she purchases 45 youth-sized T-shirts, determine algebraically the maximum number of adult-sized T-shirts she can purchase.

$$\underline{\text{Adult}} \qquad \underline{\text{Youth}} \qquad \underline{\text{Total}} \qquad \underline{\text{Ordered}}$$
$$6.25 \qquad\qquad 4.50 \qquad\qquad 550 \qquad\qquad 45 \text{ youth}$$

$$45 \times 4.50 = 202.50$$
$$550 - 202.50 = 297.50$$
$$297.50 \div 6.25 = 47.6$$

Maria can order 47 adult shirts

Score 0: The student made a computational error and solved the problem arithmetically.

27 A news report suggested that an adult should drink a minimum of 4 pints of water per day. Based on this report, determine the *minimum* amount of water an adult should drink, in fluid ounces, per week.

16 ounces per pint

16 ounces
× 4 pints
──────
64 ounces

64 ounces
× 7 days
──────
448 ounces

The minimum number of ounces per week is 448 ounces

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

27 A news report suggested that an adult should drink a minimum of 4 pints of water per day. Based on this report, determine the *minimum* amount of water an adult should drink, in fluid ounces, per week.

$$\frac{4 \text{ pints}}{1 \text{ day}} \times \frac{7 \text{ days}}{1 \text{ week}} \times \frac{2 \text{ cups}}{1 \text{ pint}} \times \frac{8 \text{ fl oz}}{1 \text{ cup}} = \boxed{\frac{448 \text{ oz}}{1 \text{ week}}}$$

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

27 A news report suggested that an adult should drink a minimum of 4 pints of water per day. Based on this report, determine the *minimum* amount of water an adult should drink, in fluid ounces, per week.

$$\frac{4 \text{ pints}}{1 \text{ day}} = \frac{7 \text{ days}}{1 \text{ week}} = \frac{64 \text{ ounces}}{4 \text{ pints}}$$

$$\frac{4 \cdot 7 \cdot 64}{4}$$

Score 1: The student made an error by writing equal signs between the fractions, but gave a solution equivalent to 448.

27 A news report suggested that an adult should drink a minimum of 4 pints of water per day. Based on this report, determine the *minimum* amount of water an adult should drink, in fluid ounces, per week.

$$\frac{4 \text{ pints}}{1 \text{ day}}, \frac{7 \text{ days}}{1 \text{ week}} = \frac{28 \text{ pints}}{1 \text{ week}}$$

$$\frac{28 \text{ pints}}{1 \text{ week}}, \frac{2 \text{ cups}}{1 \text{ pint}}$$

$$\frac{56 \text{ cups}}{\text{week}}$$

Score 1:   The student did not convert 56 cups to 448 ounces.

27 A news report suggested that an adult should drink a minimum of 4 pints of water per day. Based on this report, determine the *minimum* amount of water an adult should drink, in fluid ounces, per week.

$$4 \text{ pints} = 16 \text{ cups}$$

$$16 \times 8 = 128 \text{ fluid ounces}$$

$$1 \text{ cup} = 8 \text{ ounces}$$

Score 0: The student made an error converting pints to cups and did not determine the number of fluid ounces per week.

28 Express $(3x - 4)(x + 7) - \frac{1}{4}x^2$ as a trinomial in standard form.

$$3x^2 + 21x - 4x - 28 - \frac{1}{4}x^2$$

$$2.75x^2 + 17x - 28$$

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

28 Express $(3x - 4)(x + 7) - \frac{1}{4}x^2$ as a trinomial in standard form.

$$3x^2 + 21x - 4x - 28$$

$$\boxed{(3x^2 + 17x - 28) - \frac{1}{4}x^2}$$

Score 1: The student did not write their answer as a trinomial.

28 Express $(3x - 4)(x + 7) - \frac{1}{4}x^2$ as a trinomial in standard form.

$$(3x-4)(x+7) - \frac{1}{4}x^2$$

$$3x^2 \boxed{+ 21x} \boxed{- 4x} + 28 - \frac{1}{4}x^2$$

$$17x + 3x^2 - 28 - \frac{1}{4}x^2$$

$$-28 + 17x + 2.75x^2$$

Score 1: The student did not write the trinomial in standard form.

28 Express $(3x - 4)(x + 7) - \frac{1}{4}x^2$ as a trinomial in standard form.

$$3x^2 + 21 - 4x - 28 - \frac{1}{4}x^2$$

$$\boxed{2.75x^2 - 7 - 4x}$$

Score 0: The student made an error when multiplying $3x$ and 7 and did not express their answer in standard form.

29 John was given the equation $4(2a + 3) = -3(a - 1) + 31 - 11a$ to solve. Some of the steps and their reasons have already been completed. State a property of numbers for each missing reason.

$$4(2a + 3) = -3(a - 1) + 31 - 11a \qquad \text{Given}$$

Distrbution

$$8a + 12 = -3a + 3 + 31 - 11a$$

$$8a + 12 = 34 - 14a \qquad \text{Combining like terms}$$

Addition

$$22a + 12 = 34$$

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

29 John was given the equation $4(2a + 3) = -3(a - 1) + 31 - 11a$ to solve. Some of the steps and their reasons have already been completed. State a property of numbers for each missing reason.

$4(2a + 3) = -3(a - 1) + 31 - 11a$ Given

$8a + 12 = -3a + 3 + 31 - 11a$ Distribution

$8a + 12 = 34 - 14a$ Combining like terms
   $+14a$ $+14a$

$22a + 12 = 34$ Equally adding to both sides

$$4(2a+3) = -3(a-1) +31 -11a$$

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

29 John was given the equation $4(2a + 3) = -3(a - 1) + 31 - 11a$ to solve. Some of the steps and their reasons have already been completed. State a property of numbers for each missing reason.

$$4(2a + 3) = -3(a - 1) + 31 - 11a \qquad \text{Given}$$

$$8a + 12 = -3a + 3 + 31 - 11a \qquad \underline{\text{Distribution}}$$

$$8a + 12 = 34 - 14a \qquad \text{Combining like terms}$$

$$22a + 12 = 34 \qquad \underline{\text{Zero Property of Addition.}}$$

Score 1: The student wrote one property correctly.

29 John was given the equation $4(2a + 3) = -3(a - 1) + 31 - 11a$ to solve. Some of the steps and their reasons have already been completed. State a property of numbers for each missing reason.

$4(2a + 3) = -3(a - 1) + 31 - 11a$ Given

$8a + 12 = -3a + 3 + 31 - 11a$ _Solve parenthesis_

$8a + 12 = 34 - 14a$ Combining like terms

$22a + 12 = 34$ _moving to one side of the =_

Score 0: The student wrote both properties incorrectly.

30 State whether the product of $\sqrt{3}$ and $\sqrt{9}$ is rational or irrational. Explain your answer.

multiply

$\sqrt{3} = 1.732050808$

$\sqrt{9} = 3$

$\sqrt{3} \cdot 3 = 5.196152423$

Cannot be put into
fraction

The product of $\sqrt{3}$ and $\sqrt{9}$ is
irrational because when you multiply
them you get the number
5.196152423 which cannot be
put into a fraction.

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

30 State whether the product of $\sqrt{3}$ and $\sqrt{9}$ is rational or irrational. Explain your answer.

$\overset{I}{\sqrt{3}}$ $\overset{R}{\sqrt{9}}$

IRRATIONAL because $I \cdot R = I$

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

30 State whether the product of $\sqrt{3}$ and $\sqrt{9}$ is rational or irrational. Explain your answer.

$\sqrt{3} = 1.732050808$

$\sqrt{9} = 3$

$\sqrt{3}$ is irrational because it has decimals that do not repeat or stop.

$\sqrt{9}$ is rational because its answer is 3 and 3 is a whole number.

Score 1: The student correctly classified and explained both $\sqrt{3}$ and $\sqrt{9}$, but did not address their product.

30 State whether the product of $\sqrt{3}$ and $\sqrt{9}$ is rational or irrational. Explain your answer.

$\sqrt{3}$ is irrational because it goes on forever. $\sqrt{9}$ is rational because it stops and has an exact amount.

Score 0: The student wrote an incomplete explanation for $\sqrt{3}$ and did not address the product of $\sqrt{3}$ and $\sqrt{9}$.

30 State whether the product of $\sqrt{3}$ and $\sqrt{9}$ is rational or irrational. Explain your answer.

$$\sqrt{3} \cdot \sqrt{9}$$

Irrational

Score 0: The student did not explain why the product is irrational.

Question 31

31 Use the method of completing the square to determine the exact values of x for the equation $x^2 - 8x + 6 = 0$.

$$\left(\frac{-8}{2}\right)^2$$

$$\underline{-6 \quad -6}$$

$$x^2 - 8x + \underline{16} = -6 + \underline{16}$$

$$x^2 - 8x + 16 = 10$$

$$(x-4)^2 = 10$$

$$x = 4 \pm \sqrt{10}$$

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

31 Use the method of completing the square to determine the exact values of x for the equation $x^2 - 8x + 6 = 0$.

$$x^2 - 8x + 6 = 0$$

$$x = \frac{8 \pm \sqrt{(-8)^2 - 4(1)(6)}}{2(1)}$$

$$x = \frac{8 \pm \sqrt{40}}{2}$$

$$\frac{8 + \sqrt{40}}{2}$$

$$\frac{8 - \sqrt{40}}{2}$$

Score 1: The student used a method other than completing the square to determine $\dfrac{8 \pm \sqrt{40}}{2}$, which is an equivalent answer.

31 Use the method of completing the square to determine the exact values of x for the equation $x^2 - 8x + 6 = 0$.

$$x^2 - \frac{8x}{2} + 6 = 0$$

$$x^2 - 8x - 4 = 6 - 4$$

$$(x \qquad)^2 = 2$$

$$x^2 - \frac{8x}{2} + 6 = 0$$

$$x^2 - 8x - 16 = 6 - 16$$

$$\sqrt{(x - 4)^2} = \sqrt{-10}$$

$$x - 4 = \pm\sqrt{10}$$

Score 0: The student made multiple errors.

31 Use the method of completing the square to determine the exact values of x for the equation $x^2 - 8x + 6 = 0$.

$a = 1$

$b = -8$

$c = 6$

$x = \dfrac{--8 \pm \sqrt{(-8)^2 - 4(1)(6)}}{2(1)}$

$x = \dfrac{8 \pm \sqrt{40}}{2}$

7.16227766   0.83772233398

Score 0: The student used the quadratic formula and expressed answers as decimals.

32 A formula for determining the finite sum, S, of an arithmetic sequence of numbers is $S = \frac{n}{2}(a + b)$, where n is the number of terms, a is the first term, and b is the last term. Express b in terms of a, S, and n.

$$2S = n(a+b)$$

$$\frac{2S}{n} = a+b$$

$$\frac{2S}{n} - a = b$$

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

32 A formula for determining the finite sum, S, of an arithmetic sequence of numbers is $S = \dfrac{n}{2}(a + b)$, where n is the number of terms, a is the first term, and b is the last term. Express b in terms of a, S, and n.

$$\left(\tfrac{2}{n}\right)S = \tfrac{n}{2}(a+b) \cdot \left(\tfrac{2}{n}\right)$$

$$\tfrac{2}{n}S = a+b$$

$$\underline{-a \qquad -a}$$

$$\boxed{S\left(\tfrac{2}{n}\right) - a = b}$$

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

32 A formula for determining the finite sum, S, of an arithmetic sequence of numbers is $S = \frac{n}{2}(a + b)$, where n is the number of terms, a is the first term, and b is the last term. Express b in terms of a, S, and n.

$$\frac{2}{n} \cdot \quad S = \frac{n}{2}(a + b)$$

$$\frac{n}{2}S = a + b$$
$$\frac{}{-a} \quad \frac{}{-a}$$

$$\frac{n}{2}S - a = b$$

Score 1: The student made a transcription error when going from the first to the second line.

32 A formula for determining the finite sum, S, of an arithmetic sequence of numbers is $S = \frac{n}{2}(a + b)$, where n is the number of terms, a is the first term, and b is the last term. Express b in terms of a, S, and n.

$$S = \frac{n}{2}(a+b)$$

$$a+S = \frac{n}{2}(b)$$

$$2a+2S = n(b)$$

$$2a+2S = bn$$

$$2a = bn - 2S$$

$$\boxed{a = \frac{bn-2S}{2}}$$

In terms of S the equation stays the same $\boxed{S = \frac{n}{2}(a+b)}$

$$S = \frac{n}{2}(a+b)$$

$$\frac{S}{n} = 2(a+b)$$

$$\frac{S}{n} = 2a + 2b$$

$$\boxed{n = 2aS + 2bS}$$

Score 0: The student made multiple errors.

33 Michael threw a ball into the air from the top of a building. The height of the ball, in feet, is modeled by the equation $h = -16t^2 + 64t + 60$, where t is the elapsed time, in seconds. Graph this equation on the set of axes below.
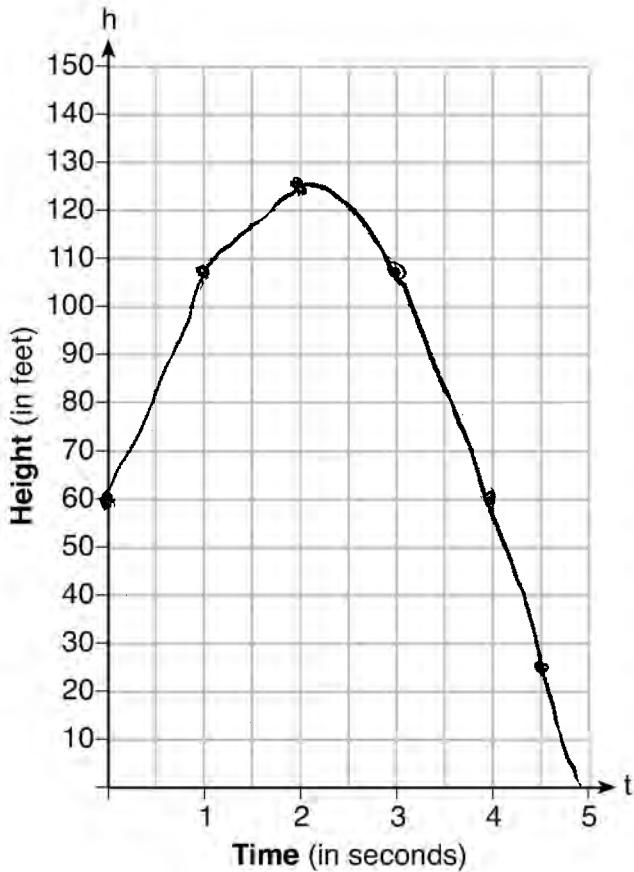

Determine the average rate of change, in feet per second, from when Michael released the ball to when the ball reached its maximum height.

$$\frac{124-60}{2-0} = \frac{64}{2} = 32\,{}^{ft}/_{sec}$$

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

33 Michael threw a ball into the air from the top of a building. The height of the ball, in feet, is modeled by the equation $h = -16t^2 + 64t + 60$, where t is the elapsed time, in seconds. Graph this equation on the set of axes below.

$$\frac{124-60}{2-0}$$

$$\frac{64}{2} = 32$$
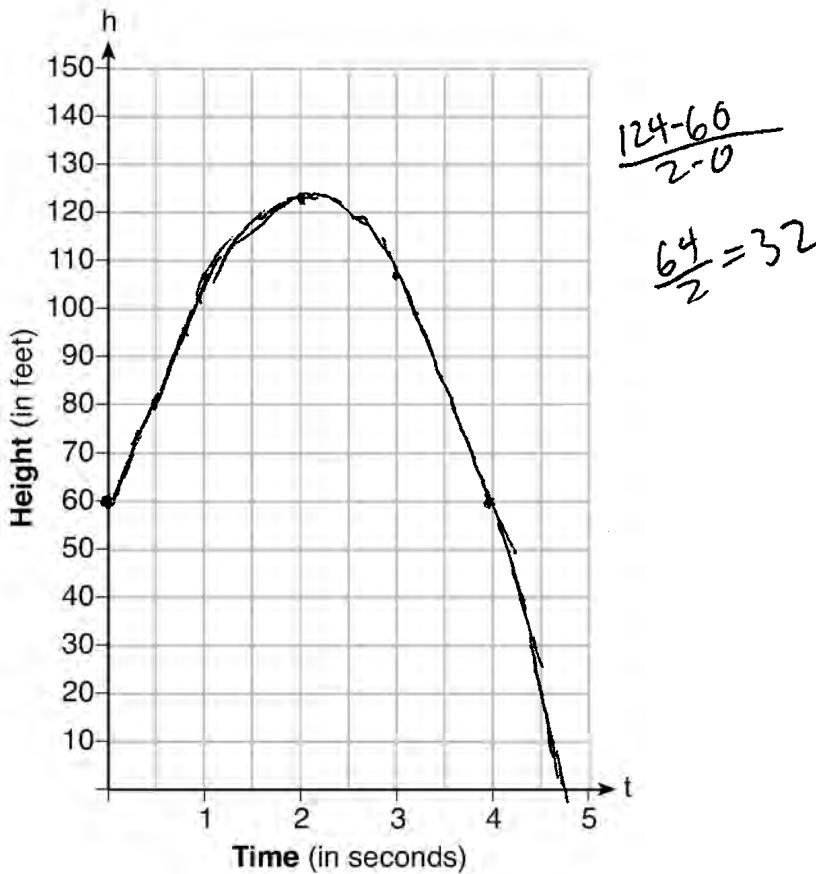
Determine the average rate of change, in feet per second, from when Michael released the ball to when the ball reached its maximum height.

32 ft/sec

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

33 Michael threw a ball into the air from the top of a building. The height of the ball, in feet, is modeled by the equation $h = -16t^2 + 64t + 60$, where t is the elapsed time, in seconds. Graph this equation on the set of axes below.
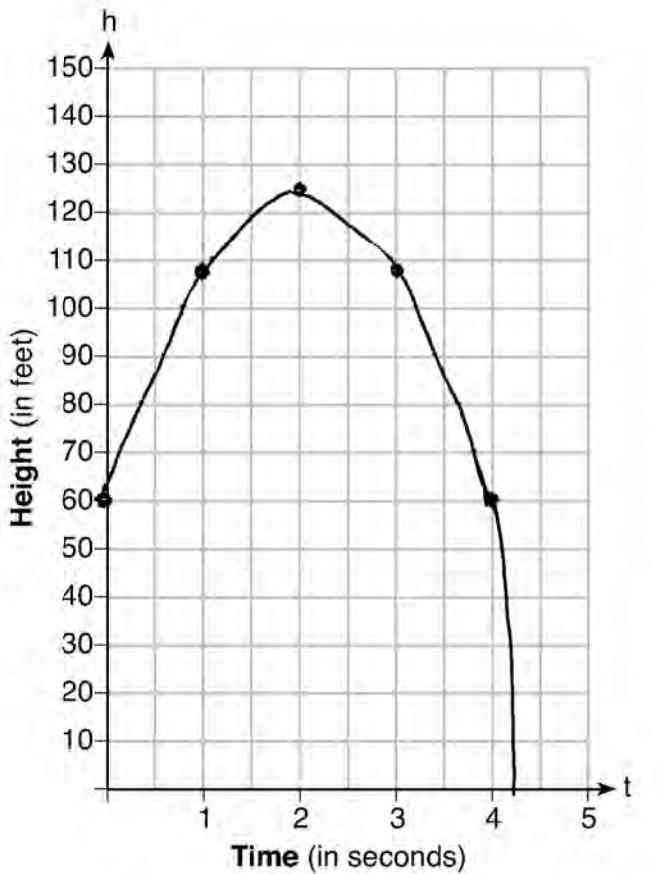
Determine the average rate of change, in feet per second, from when Michael released the ball to when the ball reached its maximum height.

$$(\overset{A}{0}, \overset{FA}{60}) \quad (\overset{B}{2}, \overset{FB}{124})$$

$$\frac{124 - 60 ft}{2 - 0 sec} = \frac{64}{2} = \boxed{32 \, Ft/sec}$$

Score 3: The student made an error when graphing points on the parabola past the point (4,60).

33 Michael threw a ball into the air from the top of a building. The height of the ball, in feet, is modeled by the equation $h = -16t^2 + 64t + 60$, where t is the elapsed time, in seconds. Graph this equation on the set of axes below.
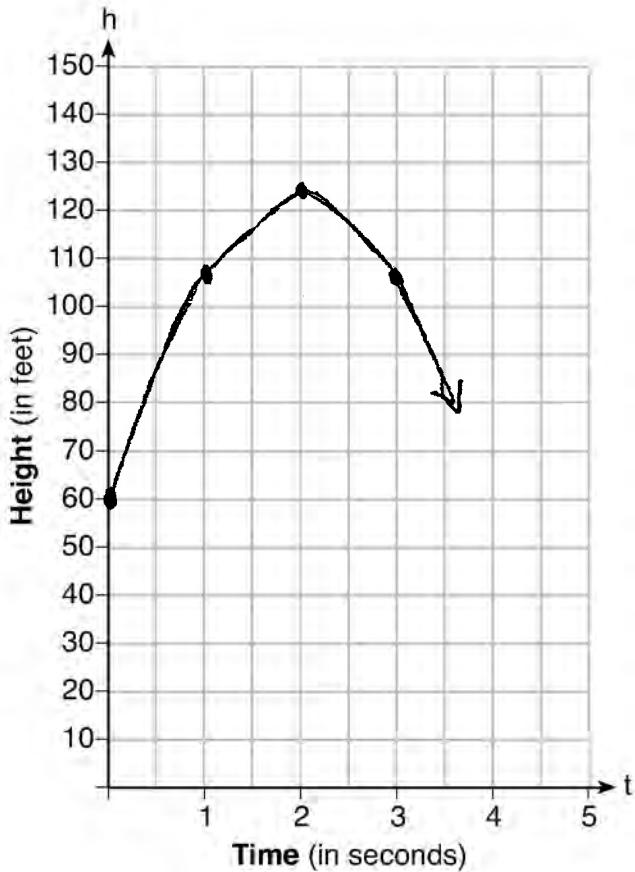
Determine the average rate of change, in feet per second, from when Michael released the ball to when the ball reached its maximum height.

$$\frac{124 - 60}{2 - 0} = \frac{64}{2} \Rightarrow \boxed{34 \text{ ft per second}}$$

Score 3: The student made a computational error when calculating the average rate of change.

33 Michael threw a ball into the air from the top of a building. The height of the ball, in feet, is modeled by the equation $h = -16t^2 + 64t + 60$, where t is the elapsed time, in seconds. Graph this equation on the set of axes below.
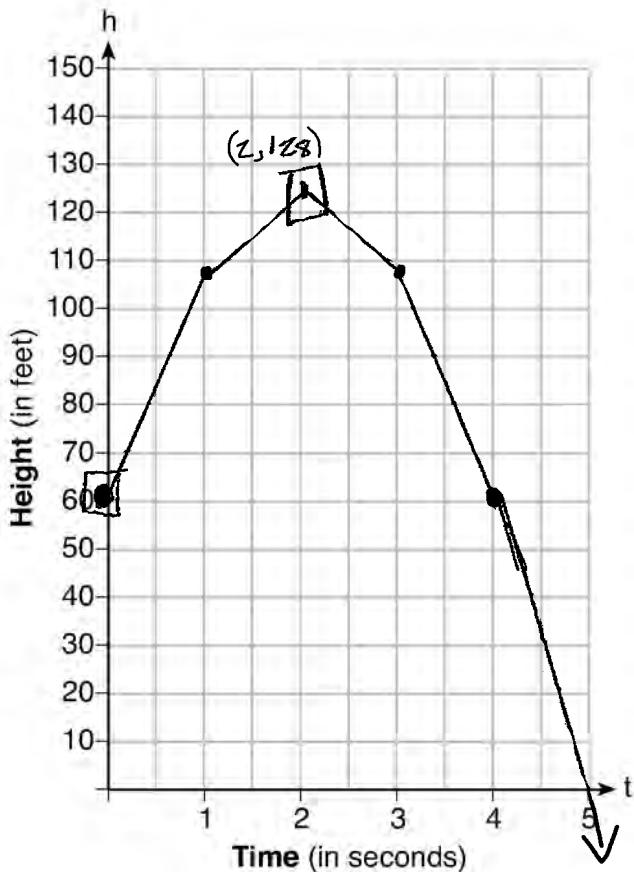

Determine the average rate of change, in feet per second, from when Michael released the ball to when the ball reached its maximum height.

$$\frac{128-60}{2-0} = \frac{68}{2} \quad 34ft/sec$$

Score 2: The student stated an appropriate rate of change based on an incorrect vertex and continued the graph below the horizontal axis.

33 Michael threw a ball into the air from the top of a building. The height of the ball, in feet, is modeled by the equation $h = -16t^2 + 64t + 60$, where t is the elapsed time, in seconds. Graph this equation on the set of axes below.

$ax^2 + bx + c$

$a = -16$
$b = 64$
$c = 60$

$4(-4t^2 + 16t - 15)$

$(2t + 3)(2t - 5)$
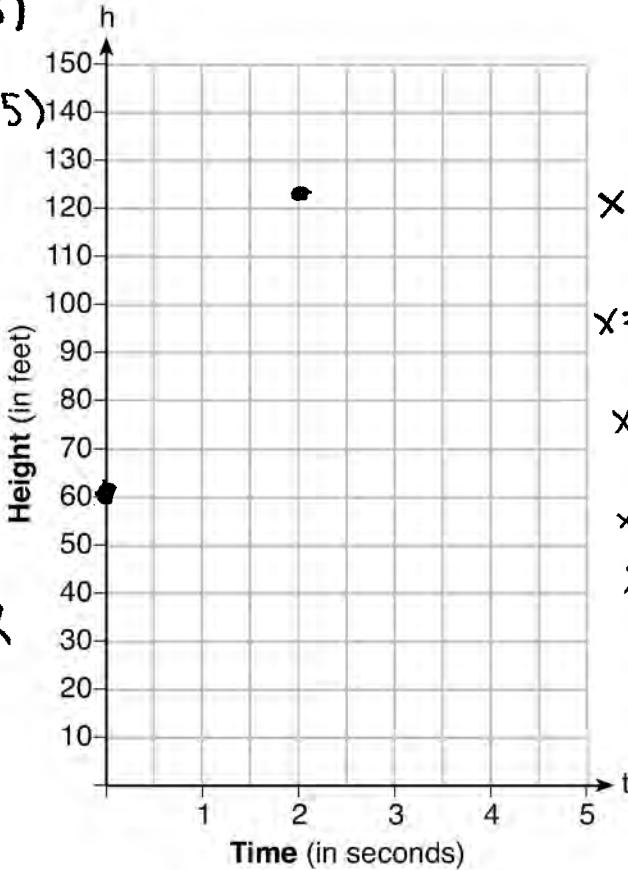
$X = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$X = \dfrac{-64 \pm \sqrt{(64)^2 - 4(-16)(60)}}{-32}$

$X = \dfrac{-64 + \sqrt{7936}}{-32}$

$X = \dfrac{-64 + \sqrt{7936}}{-32}$

$X = -.78388$

$X = \dfrac{-64 + \sqrt{7936}}{-32}$

$X =$

$X = \dfrac{-b}{2a}$

$X = \dfrac{-64}{-32}$

$X = 2$

Height (in feet) — vertical axis labeled 10 to 150 in increments of 10

Time (in seconds) — horizontal axis labeled 1 to 5

Determine the average rate of change, in feet per second, from when Michael released the ball to when the ball reached its maximum height.

$\dfrac{60}{0} \rightarrow \dfrac{124}{2} = \dfrac{60}{1}$ $\dfrac{100 - 120}{1}$

(32 feet per second)

Score 1:   The student stated a correct average rate of change.

33 Michael threw a ball into the air from the top of a building. The height of the ball, in feet, is modeled by the equation $h = -16t^2 + 64t + 60$, where t is the elapsed time, in seconds. Graph this equation on the set of axes below.
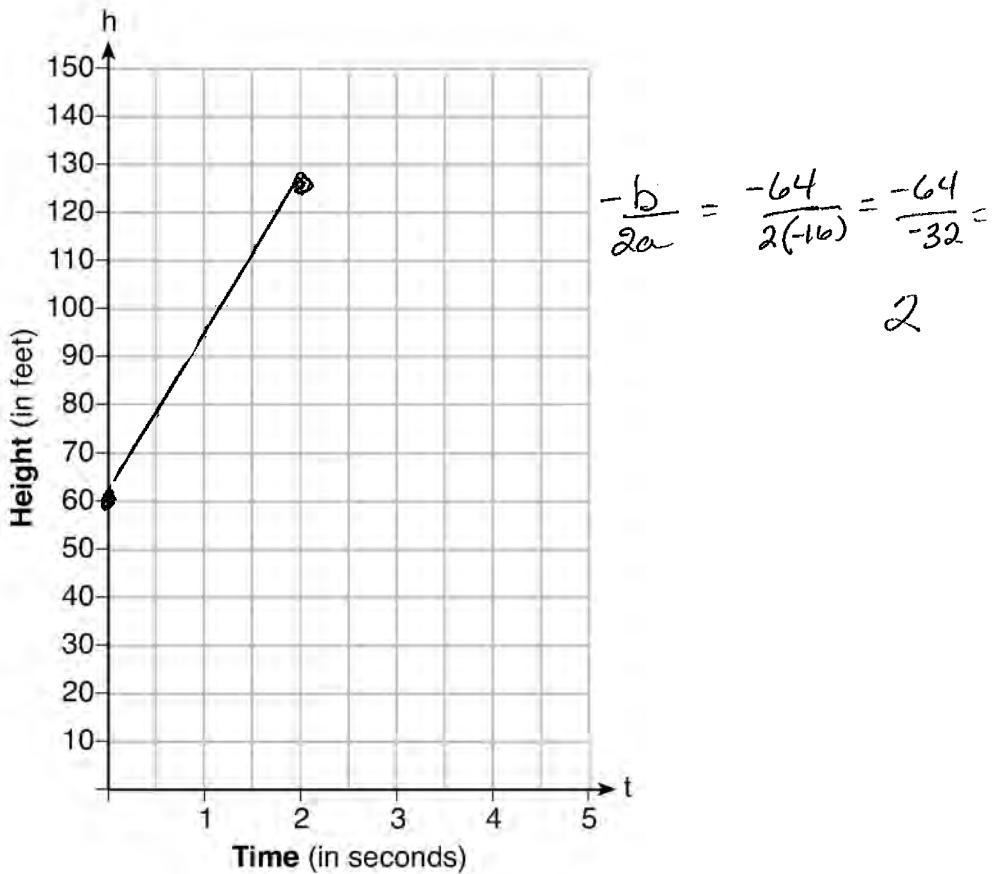
Determine the average rate of change, in feet per second, from when Michael released the ball to when the ball reached its maximum height.

Score 0: The student did not show enough grade-level work to receive any credit.

34 Graph the system of inequalities:

$$-x + 2y - 4 < 0$$
$$3x + 4y + 4 \geq 0$$

$3x+4y+4\geq0$
$-4-4$

$3x+4x\geq-4$
$-3x$
$-3x$

$4y\geq-4-3x$
4

$$y \geq \frac{-4-3x}{4}$$

$-x+2y-4<0$
$+x \qquad +x$
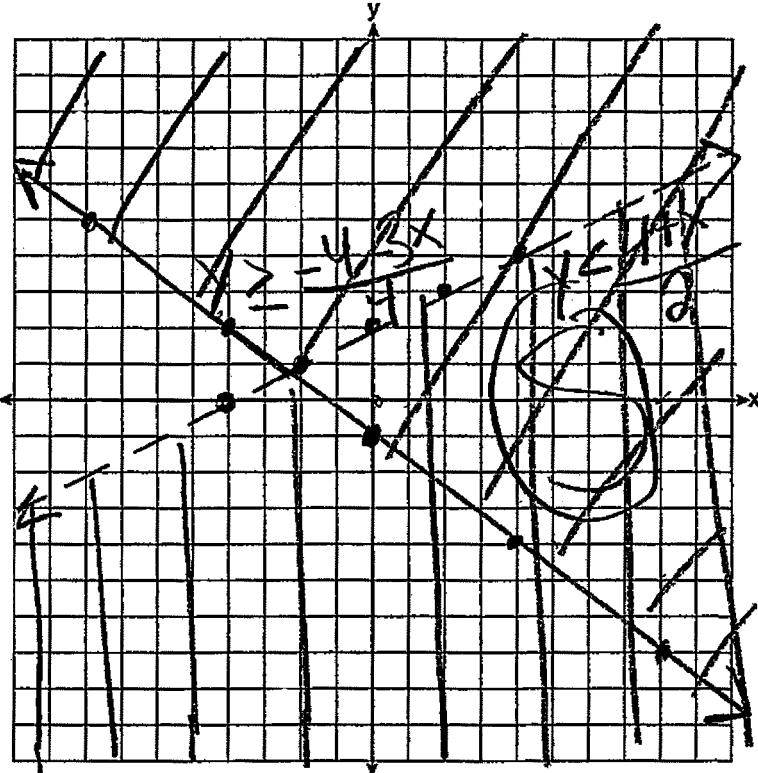
$2y-4 < 0+x$
$+4 \qquad +4$

$2y < 4+x$
$\overline{\phantom{2y<}2}$

$$y < \frac{4+x}{2}$$

Stephen says the point $(0,0)$ is a solution to this system. Determine if he is correct, and explain your reasoning.

Stephen is correct because $(0,0)$ is in the area of the solution and it is not on the line.

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

34 Graph the system of inequalities:

$$-x + 2y - 4 < 0$$
$$3x + 4y + 4 \geq 0$$

$3x + 4y + 4 \geq 0$
$3x + 4y \geq -4$
$4y \geq -3x - 4$
$Y \geq -\frac{3}{4}x - 1$

$-x + 2y - 4 < 0$
$-x + 2y < 4$
$2y < x + 4$
$Y < \frac{1}{2}x + 2$
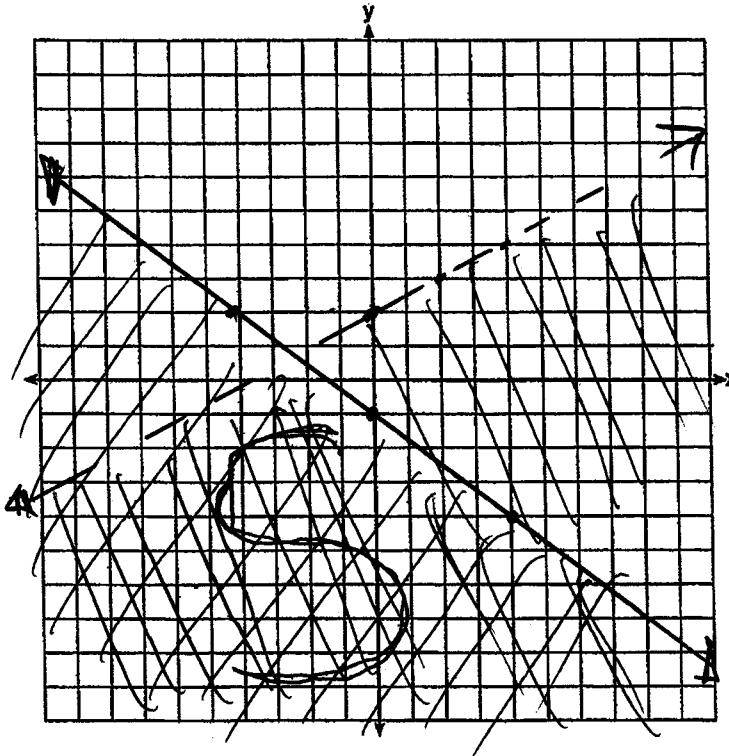
$-x + 2y - 4 < 0$

$3x + 4y + 4 \geq 0$

Stephen says the point (0,0) is a solution to this system. Determine if he is correct, and explain your reasoning.

No the point (0,0) is only in the solution of $-x + 2y - 4 < 0$.

Score 3: The student shaded $3x + 4y + 4 \geq 0$ incorrectly, but wrote an appropriate explanation based on the graph.

34 Graph the system of inequalities:

$$-x + 2y - 4 < 0$$
$$3x + 4y + 4 \geq 0$$

$-x + 2y - 4 < 0$

$2y - x - 4 < 0$
   $+4 \quad +4$

$2y - x < 0 + 4$
 $+x \qquad +x$

$2y < 0 + 4 + x$
$\frac{2y}{2} < \frac{0}{2} + \frac{4}{2} + \frac{x}{2}$

$y < 0 + 2 + \frac{x}{3}$

X	y
0	2
1	2.5
2	3
3	3.5
4	4
5	4.5
6	5

$3x + 4y + 4 \geq 0$
$-3x \qquad\qquad -3x$

$4y + 4 \geq 0 - 3x$
  $-4 \qquad -4$

$\frac{4y}{4} \geq \frac{0 - 3x - 4}{4 \quad 4 \quad 4}$

$y \geq 0 - \frac{3x}{4} - 1$

X	y
0	-4
2	-5.5
4	-7
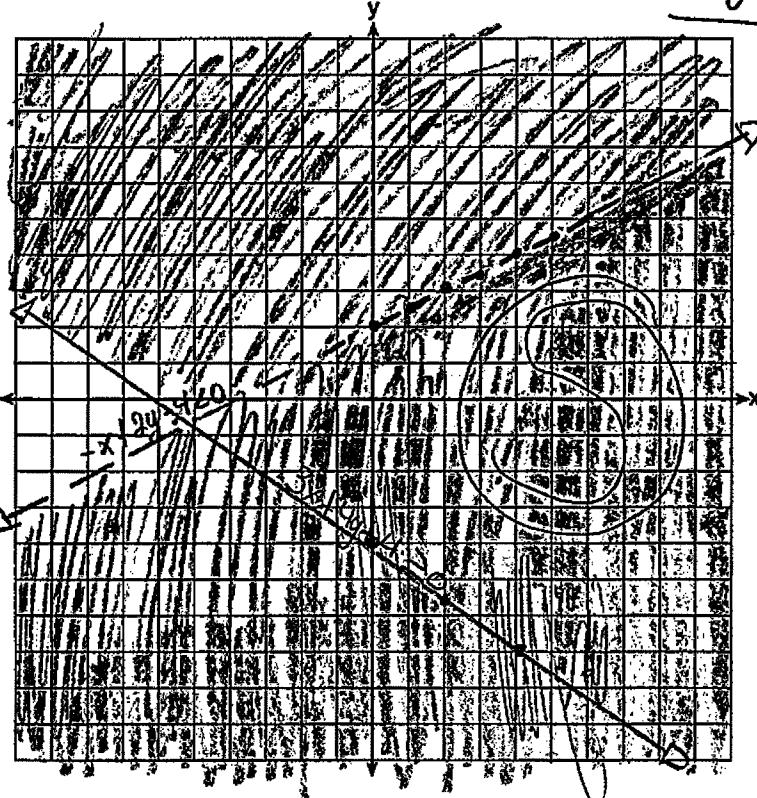
Stephen says the point (0,0) is a solution to this system. Determine if he is correct, and explain your reasoning.

Stephen is correct because (0,0) is in the areas were both graphs cross and were they are shaded.

Score 3: The student graphed the wrong y-intercept for $3x + 4y + 4 \geq 0$.

34 Graph the system of inequalities:

$$-x + 2y - 4 < 0$$
$$3x + 4y + 4 \geq 0$$

$2y < x + 4$

$3x + 4y \geq -4$
$-3x \qquad -3x$
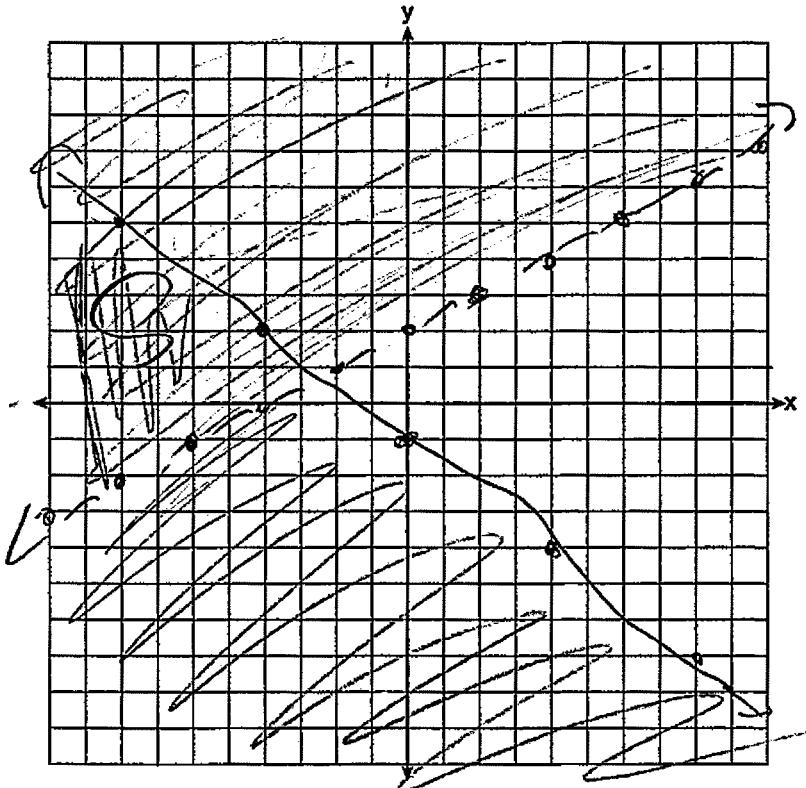
$-4 -4$

$\dfrac{4y}{4} \geq \dfrac{-3x}{4} - \dfrac{4}{4}$

$y \geq -\dfrac{3x}{4} - 1$

$y < \dfrac{1}{2}x + 2$

Stephen says the point (0,0) is a solution to this system. Determine if he is correct, and explain your reasoning.

No, because (0,0) isn't in the solution set.

Score 2: The student made two errors by shading both inequalities incorrectly and not labeling either inequality.

34 Graph the system of inequalities:

$$-x + 2y - 4 < 0$$
$$3x + 4y + 4 \geq 0$$

$x + 4y + 4 \geq 0$

$-4 \qquad -4$
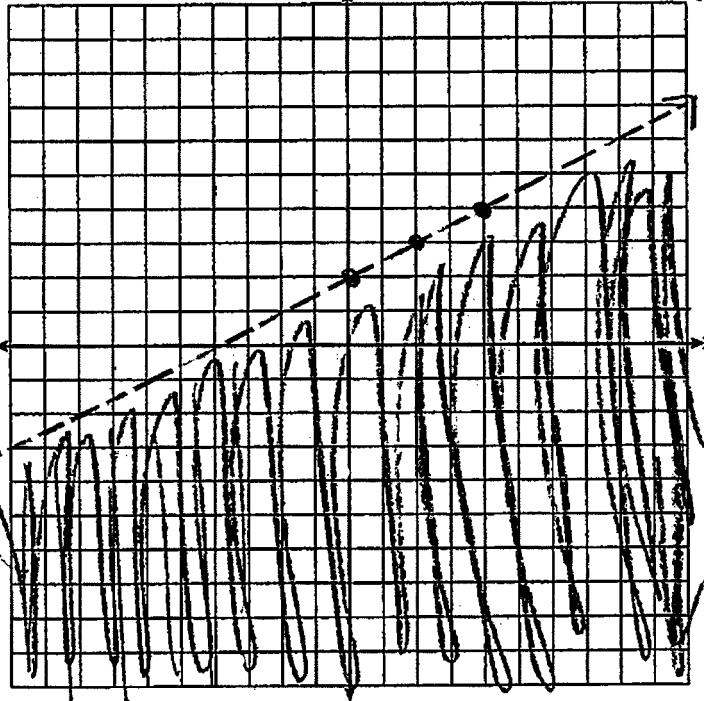
$3x + 4y \geq -4$

$x \qquad -3x$

$\dfrac{4y}{4} \geq \dfrac{-3x}{4} - \dfrac{4}{4}$

$y \geq -3/4x - 1$

$-x + 2y - 4 < 0$

$+4 \qquad +4$

$-x + 2y < 4$

$+x \qquad\qquad +x$

$\dfrac{2y}{2} < \dfrac{x}{2} + \dfrac{4}{2}$

$y < \frac{1}{2}x + 2$

Stephen says the point (0,0) is a solution to this system. Determine if he is correct, and explain your reasoning.

Stephen is correct because (0,0) isnt on the dotted line or non-shaded. Its on the shaded part of the graph.

Score 2: The student solved both inequalities for y correctly and wrote an appropriate explanation based on their graph of only one inequality, not the given system.

34 Graph the system of inequalities:

$$-x + 2y - 4 < 0$$
$$3x + 4y + 4 \geq 0$$

$-x + 2y - 4 = 0$
$ -2y \qquad -2y$
$\overline{-x - 4} = \overline{-2y}$
$ \div -2 \qquad \div -2$

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

$3x + 4y + 4 = 0$
$ -4y \qquad -4y$
$\overline{3x + 4} = \overline{-4y}$
$ \div -4 \qquad \div -4$

$\frac{3}{4}x - 1 = y$
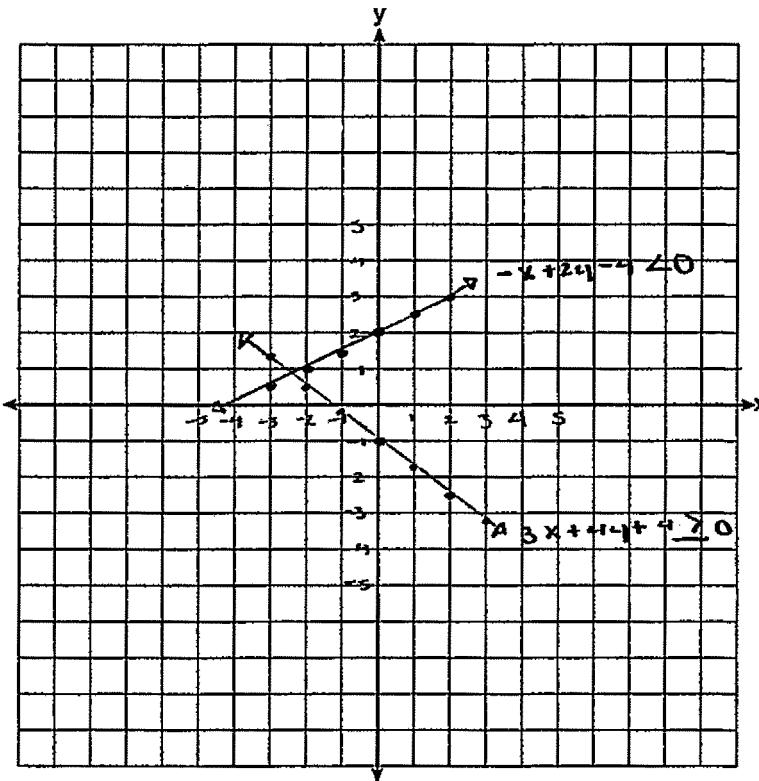
Stephen says the point (0,0) is a solution to this system. Determine if he is correct, and explain your reasoning.

He is not correct because none of the lines cross (0,0).

Score 1: The student graphed $-x + 2y - 4 = 0$ and $3x + 4y + 4 = 0$ correctly, but showed no further correct work.
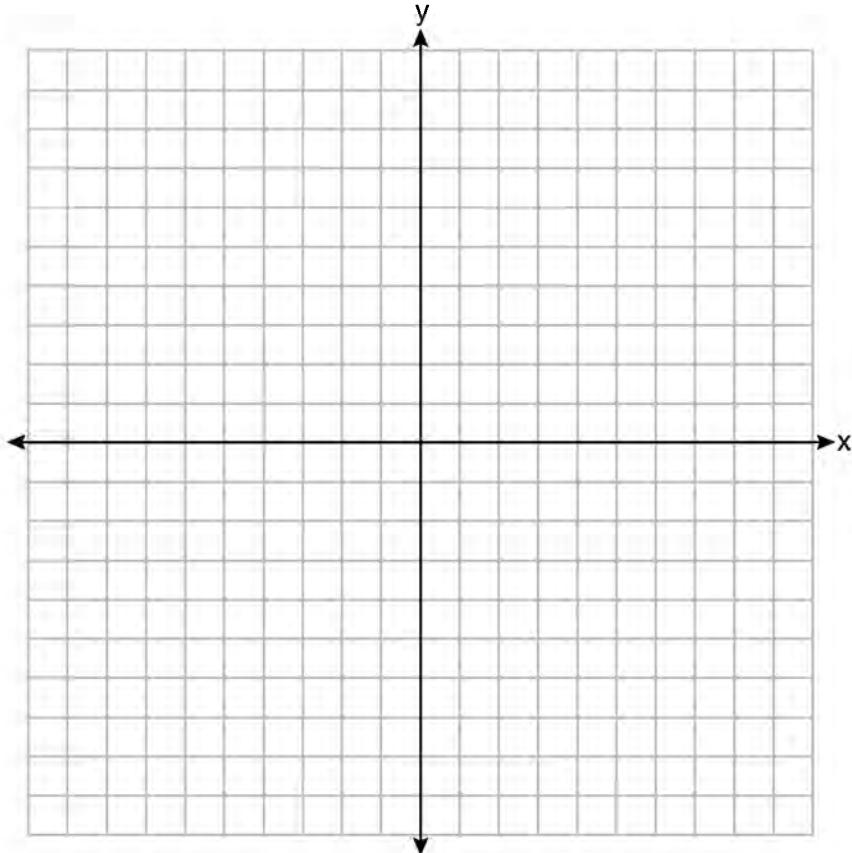
34 Graph the system of inequalities:

$$-x + 2y - 4 < 0$$
$$3x + 4y + 4 \geq 0$$

Stephen says the point $(0,0)$ is a solution to this system. Determine if he is correct, and explain your reasoning.

Yes he is correct because in the first equation it would be -0+2(0)-4<0 and -4<0 and zero is bigger than a negative number so that is right & for the second equation it would be 3(0)+4(0)+4≥0 and 4≥0 which is also right because 4 is bigger than zero.

Score 1: The student wrote a correct explanation.

34 Graph the system of inequalities:

$$-x + 2y - 4 < 0$$
$$3x + 4y + 4 \geq 0$$
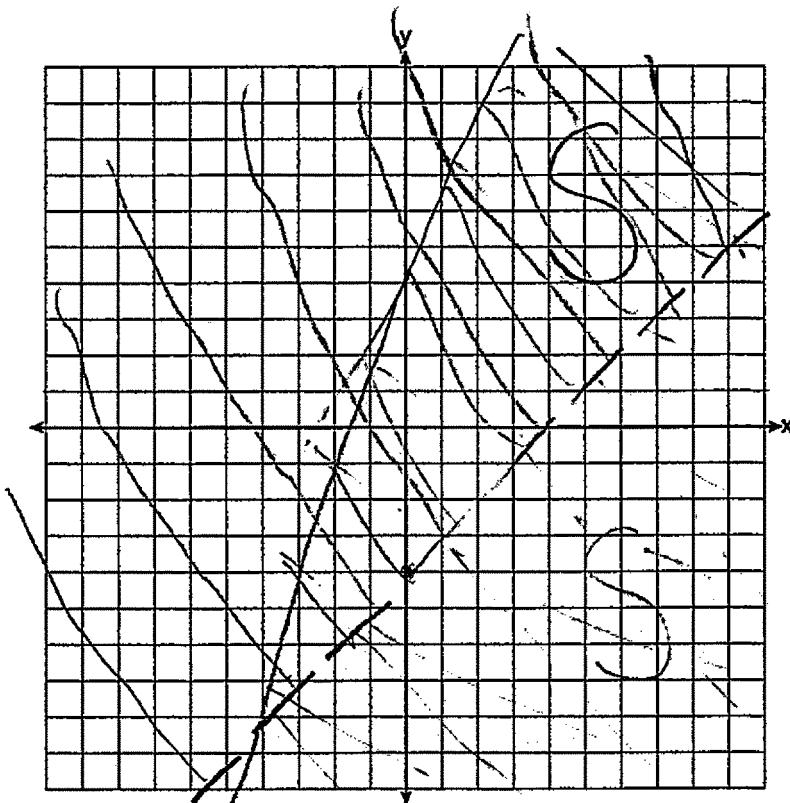
Stephen says the point (0,0) is a solution to this system. Determine if he is correct, and explain your reasoning.

He is Correct because
You Plug in o for the Varibles
and it will tell You where to Put
the lines to find the Solution.

Score 0: The student showed no correct work.

35 The following table represents a sample of sale prices, in thousands of dollars, and number of new homes available at that price in 2017.

Sale Price, p (in thousands of dollars)	160	180	200	220	240	260	280
Number of New Homes Available f(p)	126	103	82	75	82	40	20

State the linear regression function, $f(p)$, that estimates the number of new homes available at a specific sale price, p. Round all values to the *nearest hundredth*.

$$y = ax + b$$
$$[f(p)]$$

$$\boxed{f(p) = -.79p + 249.86}$$

State the correlation coefficient of the data to the *nearest hundredth*. Explain what this means in the context of the problem.

$$-.95$$

This is a strong negative correlation. This is because the higher the price of the house, the less homes are available

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

35 The following table represents a sample of sale prices, in thousands of dollars, and number of new homes available at that price in 2017.

Sale Price, p (in thousands of dollars)	160	180	200	220	240	260	280
Number of New Homes Available f(p)	126	103	82	75	82	40	20

State the linear regression function, $f(p)$, that estimates the number of new homes available at a specific sale price, p. Round all values to the *nearest hundredth*.

$$f(p) = -0.79p + 249.86$$

State the correlation coefficient of the data to the *nearest hundredth*. Explain what this means in the context of the problem.

The correlation coefficent is -0.95. This means in the context of this problem is as the price increases the number of homes available decreases

Score 3: The student did not indicate the strength of the correlation coefficient in their explanation.

35 The following table represents a sample of sale prices, in thousands of dollars, and number of new homes available at that price in 2017.

Sale Price, p (in thousands of dollars)	160	180	200	220	240	260	280
Number of New Homes Available f(p)	126	103	82	75	82	40	20

State the linear regression function, $f(p)$, that estimates the number of new homes available at a specific sale price, p. Round all values to the *nearest hundredth*.

$$y = -0.79x + 249.86$$

State the correlation coefficient of the data to the *nearest hundredth*. Explain what this means in the context of the problem.

The correlation coefficient is -0.95. It means the higher the house prices the less available, and the equation is a good fit for this data.

Score 3: The student wrote a regression equation in terms of x and y.

35 The following table represents a sample of sale prices, in thousands of dollars, and number of new homes available at that price in 2017.

Sale Price, p (in thousands of dollars)	160	180	200	220	240	260	280
Number of New Homes Available f(p)	126	103	82	75	82	40	20

State the linear regression function, $f(p)$, that estimates the number of new homes available at a specific sale price, p. Round all values to the *nearest hundredth*.

$y = ax + b$

$a = -.875$

$b = 271.2142857$

$r^2 = .9070783087$

$r = -.9524065879$

$f(p) = -.88p + 271.21$

State the correlation coefficient of the data to the *nearest hundredth*. Explain what this means in the context of the problem.

$-.95$ There is a strong relationship between the sale price and the number of homes at that price.

Score 3: The student made an error entering data in the calculator, but used the table in the calculator display appropriately.

35 The following table represents a sample of sale prices, in thousands of dollars, and number of new homes available at that price in 2017.

Sale Price, p (in thousands of dollars)	160	180	200	220	240	260	280
Number of New Homes Available f(p)	126	103	82	75	82	40	20

State the linear regression function, $f(p)$, that estimates the number of new homes available at a specific sale price, p. Round all values to the *nearest hundredth*.

$$f(p) = -.79p + 249.86$$

State the correlation coefficient of the data to the *nearest hundredth*. Explain what this means in the context of the problem.

.95   this means that the linear regression line can rather accurately predict the price of homes depending on number of homes available

Score 2: The correlation coefficient is incorrect, and the explanation is written backwards.

35 The following table represents a sample of sale prices, in thousands of dollars, and number of new homes available at that price in 2017.

Sale Price, p (in thousands of dollars)	160	180	200	220	240	260	280
Number of New Homes Available f(p)	126	103	82	75	82	40	20

23   21   7   7   42 20)

State the linear regression function, $f(p)$, that estimates the number of new homes available at a specific sale price, p. Round all values to the *nearest hundredth*.

$$-.79p + 244.86$$

State the correlation coefficient of the data to the *nearest hundredth*. Explain what this means in the context of the problem.

.95   Very strong relationship

Score 1: The student wrote an appropriate expression.

35 The following table represents a sample of sale prices, in thousands of dollars, and number of new homes available at that price in 2017.

Sale Price, p (in thousands of dollars)	160	180	200	220	240	260	280
Number of New Homes Available f(p)	126	103	82	75	82	40	20

State the linear regression function, $f(p)$, that estimates the number of new homes available at a specific sale price, p. Round all values to the *nearest hundredth*.

$$y = -.8x + 249.9$$

State the correlation coefficient of the data to the *nearest hundredth*. Explain what this means in the context of the problem.

Its a negative correlation

Score 0: The student made multiple errors.

36 The length of a rectangular sign is 6 inches more than half its width. The area of this sign is 432 square inches. Write an equation in one variable that could be used to find the number of inches in the dimensions of this sign.

let x = width

let $\frac{1}{2}x + 6$ = length

$\frac{1}{2}x^2 + 6x - 432 = 0$

Solve this equation algebraically to determine the dimensions of this sign, in inches.

$\frac{1}{2}x^2 + 6x - 432 = 0$

$\dfrac{216}{12 \quad 18}$

$\frac{1}{2}x^2 + 18x \mid -12x - 432 = 0$

$\dfrac{\quad}{\frac{1}{2}x} \qquad \dfrac{\quad}{-12}$

Width = 24
length = 18

$\frac{1}{2}x(x+36) - 12(x+36) = 0$

$\dfrac{(x+36)(\frac{1}{2}x - 12)}{\quad}$

reject $\Big\langle$
$x + 36 = 0$
$-36 \ -36$
$x = -36$

$\frac{1}{2}x - 12 = 0$
$\phantom{\frac{1}{2}x} + 12 \ +12$
$\frac{1}{2}x = 12$
$x = 24$

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

36 The length of a rectangular sign is 6 inches more than half its width. The area of this sign is 432 square inches. Write an equation in one variable that could be used to find the number of inches in the dimensions of this sign.

$6 + \frac{1}{2}X$

$\boxed{}$ X

$X(6 + .5X) = 432$

Solve this equation algebraically to determine the dimensions of this sign, in inches.

$$.5X^2 + 6X - 432 = 0$$

$$X = \frac{-6 \pm \sqrt{36 - 4(.5)(-432)}}{2(.5)}$$

$$X = \frac{-6 \pm \sqrt{900}}{1}$$

$X = -6 + 30$ $X = -6 - 30$

$X = 24$

$6 + \frac{1}{2}X = 18$

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

36 The length of a rectangular sign is 6 inches more than half its width. The area of this sign is 432 square inches. Write an equation in one variable that could be used to find the number of inches in the dimensions of this sign.

$$l = 6 + \frac{1}{2}w \qquad l \cdot w = 432$$

$$l - 6 = \frac{1}{2}w \qquad l(2l-12) = 432$$

$$2l - 12 = w$$

Solve this equation algebraically to determine the dimensions of this sign, in inches.

$$2l^2 - 12l - 432 = 0$$

$$2(l^2 - 6l - 216) = 0$$

$$l^2 - 6l - 216 = 0$$

$$(l + 12)(l - 18) = 0$$

$$l + 12 = 0 \qquad\qquad l - 18 = 0$$

$$l = -12 \; R \qquad\qquad l = 18$$

Score 3: The student used a system of equations to write a single equation, but only found one dimension.

36 The length of a rectangular sign is 6 inches more than half its width. The area of this sign is 432 square inches. Write an equation in one variable that could be used to find the number of inches in the dimensions of this sign.

$$L \cdot W = H$$
$$X \cdot \left(\tfrac{1}{2}X + 6\right) = 432$$

X

432    $\tfrac{1}{2}X + 6$
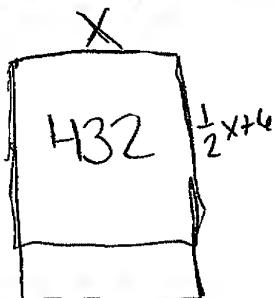
Solve this equation algebraically to determine the dimensions of this sign, in inches.

$$X \cdot \left(\tfrac{1}{2}X + 6\right) = 432$$
$$24 \cdot \left(\tfrac{1}{2}(24) + 6\right)$$
$$24 \cdot (12 + 6)$$
$$24 \cdot (18)$$
$$24 \cdot 18 = 432$$

Length = 18 inches
Width = 24 inches

Score 3:   The student wrote a correct equation and stated the dimensions of the sign, but showed no algebraic work.

36 The length of a rectangular sign is 6 inches more than half its width. The area of this sign is 432 square inches. Write an equation in one variable that could be used to find the number of inches in the dimensions of this sign.

$$432 = w\left(\tfrac{1}{2}w + 6\right)$$

Solve this equation algebraically to determine the dimensions of this sign, in inches.

$$432 = w\left(\tfrac{1}{2}w + 6\right)$$

$$432 \cdot 2 = \tfrac{1}{2 \cdot 2}w^2 + 6w \cdot 2$$

$$\frac{864}{12} = w^2 + \frac{12w}{12}$$

$$\sqrt{72} = \sqrt{w^2}$$

$$8.485281374 = w$$

Score 2: The student wrote a correct equation.

36 The length of a rectangular sign is 6 inches more than half its width. The area of this sign is 432 square inches. Write an equation in one variable that could be used to find the number of inches in the dimensions of this sign.

Solve this equation algebraically to determine the dimensions of this sign, in inches.

24 inch
18 inch

17   25   12
18   24
14   22   32

24
18
—
6

Score 1:   The student stated the correct dimensions.

36 The length of a rectangular sign is 6 inches more than half its width. The area of this sign is 432 square inches. Write an equation in one variable that could be used to find the number of inches in the dimensions of this sign.

$$6 + w \div 2 \cdot w = 432$$

Solve this equation algebraically to determine the dimensions of this sign, in inches.

Score 0: The student wrote an incorrect equation.

37 Two families went to Rollercoaster World. The Brown family paid $170 for 3 children and 2 adults. The Peckham family paid $360 for 4 children and 6 adults.

If x is the price of a child's ticket in dollars and y is the price of an adult's ticket in dollars, write a system of equations that models this situation.

$$+90 \quad +90$$
$$90 + 2y = 170$$
$$2y = 80$$
$$\frac{}{2}$$
$$y = 40$$

$$\boxed{\begin{array}{l} 3x + 2y = 170 \\ 4x + 6y = 360 \end{array}} \quad {}^{\times 3}$$

$$9x + 6y = 510$$
$$4x + 6y = 360$$
$$\overline{\qquad\qquad}$$
$$5x = 150$$

$$\frac{5x = 150}{5}$$
$$x = 30$$

Graph your system of equations on the set of axes below.

Children = $30
Adults = $40

$$3x + 2y = 170 \quad {}^{-3x}$$
$$\frac{2y = 170 - 3x}{2}$$
$$y = 85 - \frac{3}{2}x$$

$$4x + 6y = 360 \quad {}^{-4x}$$
$$\frac{6y = 360 - 4x}{6}$$
$$y = 60 - \frac{2}{3}x$$

Brown family

Point of intersection

peckham family

Price of Adult Tickets (in dollars)

Price of Child Tickets (in dollars)
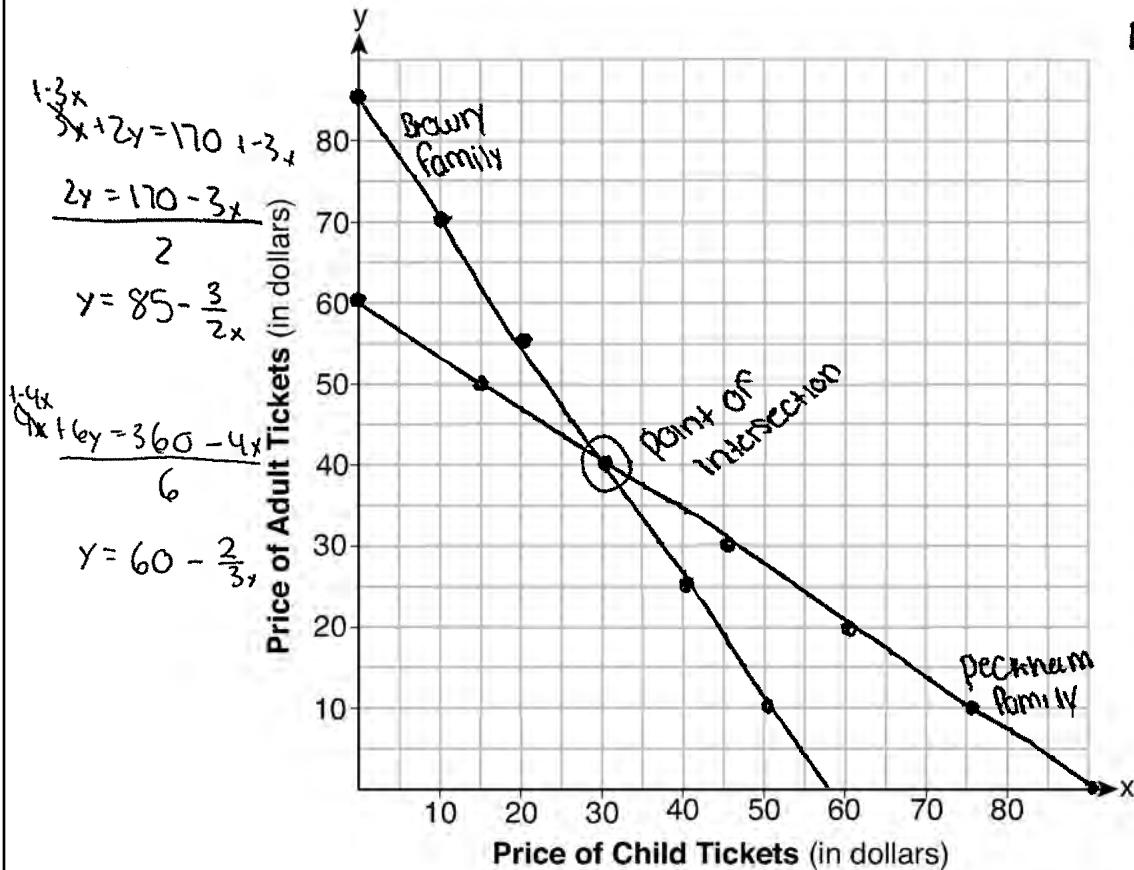
Question 37 is continued on the next page.

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

Question 37 continued

State the coordinates of the point of intersection.

$$(30, 40)$$

Explain what each coordinate of the point of intersection means in the context of the problem.

It means that the price of children tickets are $30 while the price of adults is $40.

37 Two families went to Rollercoaster World. The Brown family paid $170 for 3 children and 2 adults. The Peckham family paid $360 for 4 children and 6 adults.

If x is the price of a child's ticket in dollars and y is the price of an adult's ticket in dollars, write a system of equations that models this situation.

$$3x + 2y = 170$$
$$4x + 6y = 360$$

Graph your system of equations on the set of axes below.

$$3x + 2y = 170$$
$$-3x \qquad -3x$$
$$\overline{\qquad\qquad\qquad}$$
$$\frac{2y}{2} = \frac{170 - 3x}{2}$$
$$y = 85 - \frac{3}{2}x$$

$$4x + 6y = 360 \quad -4x$$
$$-4x$$
$$\overline{\qquad\qquad\qquad}$$
$$\frac{6y}{6} = \frac{360 - 4x}{6}$$
$$y = 60 - \frac{2}{3}x$$

Price of Adult Tickets (in dollars) vs **Price of Child Tickets** (in dollars)
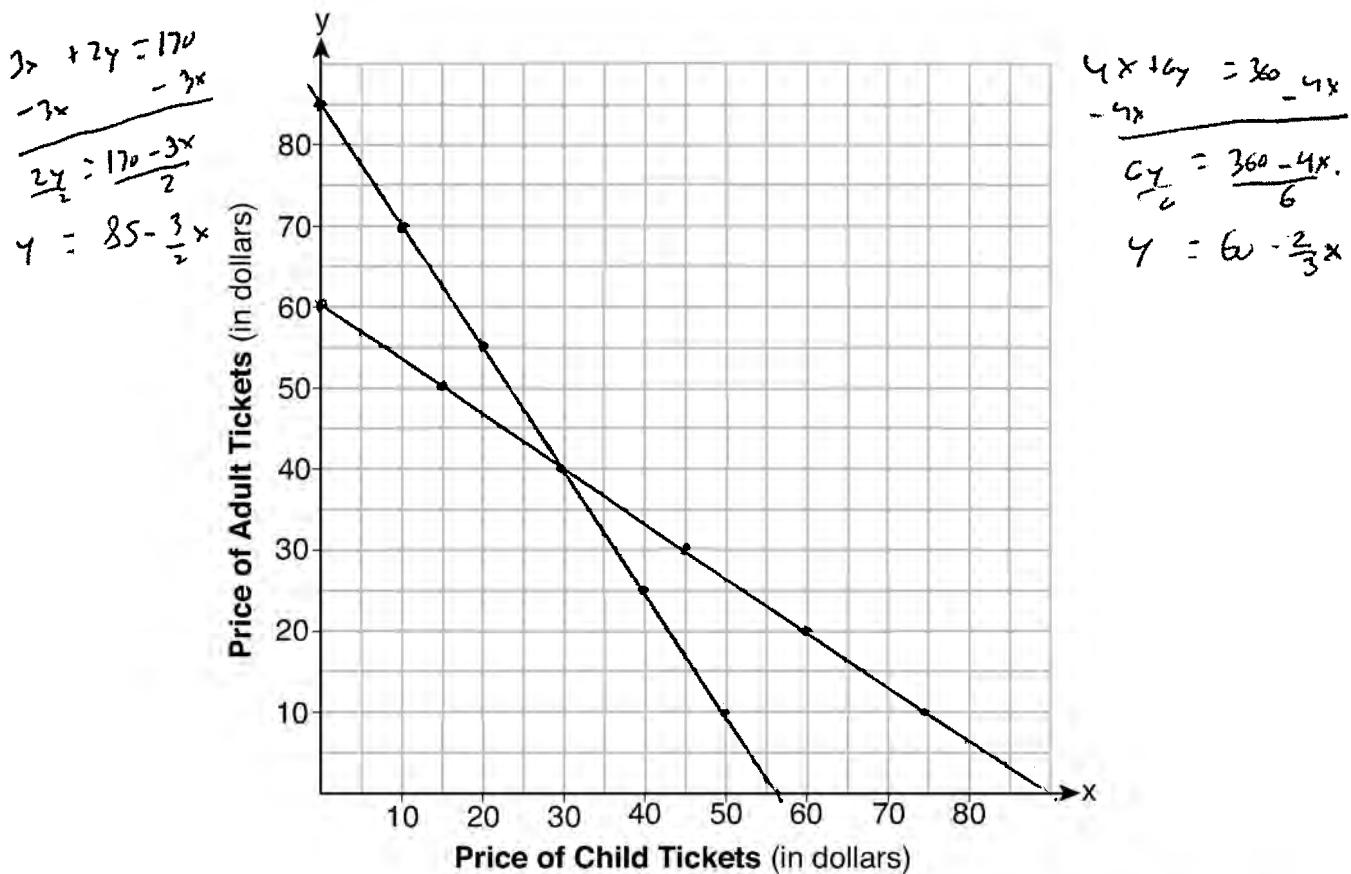
Question 37 is continued on the next page.

Score 5: The student did not label either equation on the line.

Question 37 continued

State the coordinates of the point of intersection.

$$(30, 40)$$

Explain what each coordinate of the point of intersection means in the context of the problem.

30 is what each child ticket costs and
40 is what each adult ticket
costs.

37 Two families went to Rollercoaster World. The Brown family paid $170 for 3 children and 2 adults. The Peckham family paid $360 for 4 children and 6 adults.

If x is the price of a child's ticket in dollars and y is the price of an adult's ticket in dollars, write a system of equations that models this situation.

$$4x + 6y = 360$$
$$3x + 2y = 170$$

Graph your system of equations on the set of axes below.

Price of Child Tickets (in dollars)

Price of Adult Tickets (in dollars)
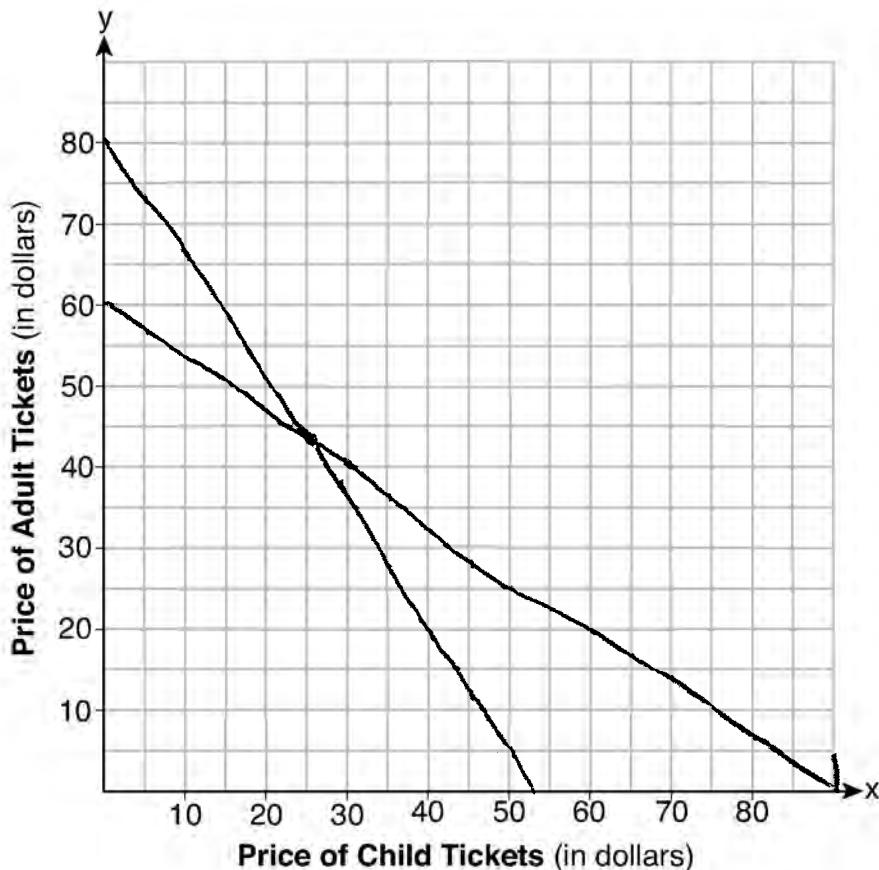
Question 37 is continued on the next page.

Score 4: The student graphed one line incorrectly and did not label either line.

Question 37 continued

State the coordinates of the point of intersection.

$$(30, 40)$$

Explain what each coordinate of the point of intersection means in the context of the problem.

30 is the price of a child's ticket, while
40 is an adult's ticket price.

37 Two families went to Rollercoaster World. The Brown family paid $170 for 3 children and 2 adults. The Peckham family paid $360 for 4 children and 6 adults.

If x is the price of a child's ticket in dollars and y is the price of an adult's ticket in dollars, write a system of equations that models this situation.

$$3x + 2y = 170$$
$$4x + 6y = 360$$

$$x = 30$$
$$y = 40$$

Graph your system of equations on the set of axes below.

Price of Adult Tickets (in dollars)

Price of Child Tickets (in dollars)
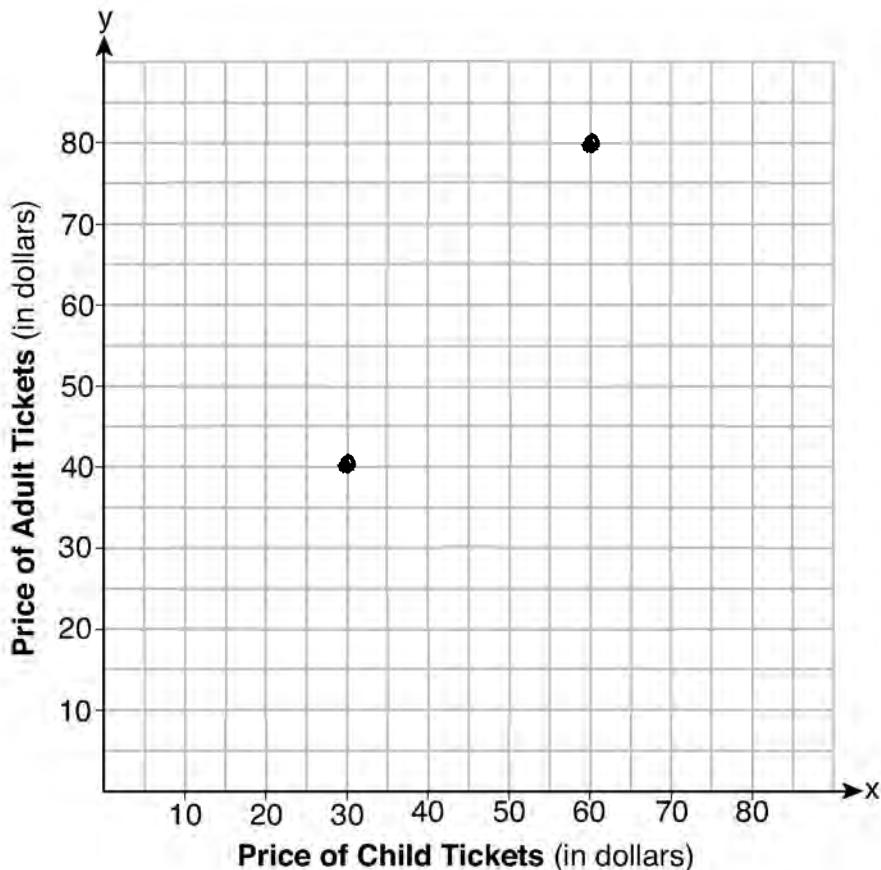
Question 37 is continued on the next page.

Score 3: The student wrote a correct system of equations and stated (30,40).

Question 37 continued

State the coordinates of the point of intersection.

$$(30, 40)$$

Explain what each coordinate of the point of intersection means in the context of the problem.

Each coordinate represents the price of the tickets

37 Two families went to Rollercoaster World. The Brown family paid $170 for 3 children and 2 adults. The Peckham family paid $360 for 4 children and 6 adults.

If x is the price of a child's ticket in dollars and y is the price of an adult's ticket in dollars, write a system of equations that models this situation.

let $c =$ children
let $a =$ adults

Brown family
$3c + 2a = 170$

Peckham family
$4c + 6a = 360$

$-3 \cdot$
$3c + 2a = 170$

$6c - 6a = 516$

$4c + 6a = 360$

$-2c = -150$
$\overline{-2} \qquad \overline{-2}$

$c = 75$

$c =$

Graph your system of equations on the set of axes below.

Price of Adult Tickets (in dollars) — y

Price of Child Tickets (in dollars) — x
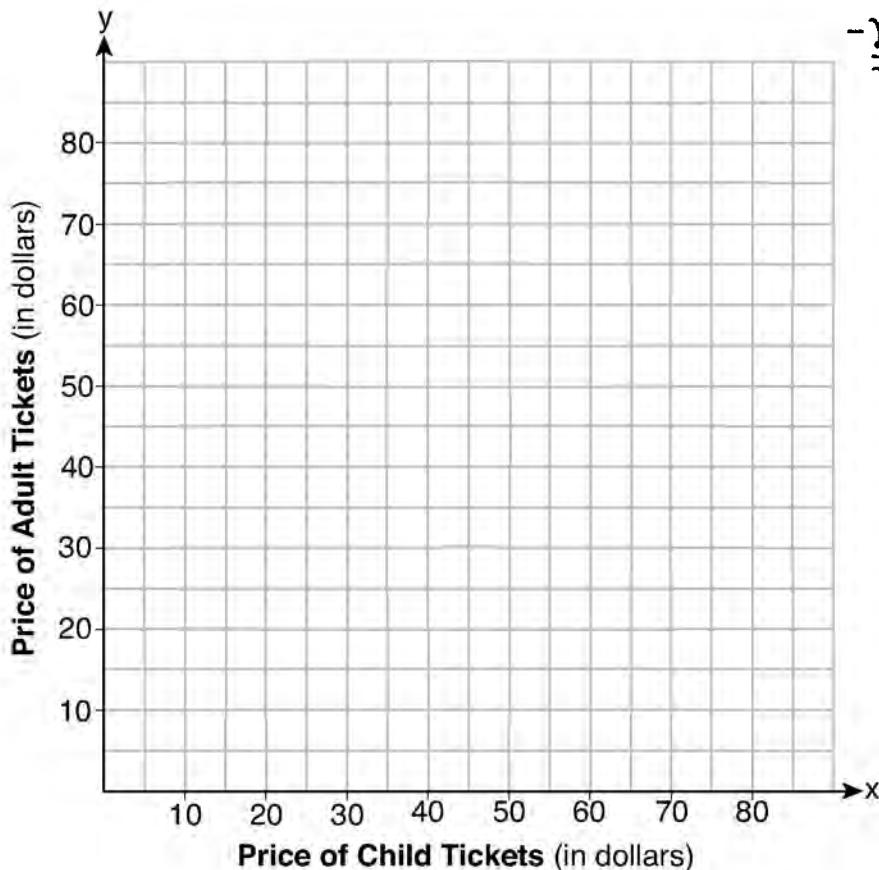
Question 37 is continued on the next page.

Score 2: The student redefined the variables and wrote a correct system of equations.

Question 37 continued

State the coordinates of the point of intersection.

Explain what each coordinate of the point of intersection means in the context of the problem.

37 Two families went to Rollercoaster World. The Brown family paid $170 for 3 children and 2 adults. The Peckham family paid $360 for 4 children and 6 adults.

If x is the price of a child's ticket in dollars and y is the price of an adult's ticket in dollars, write a system of equations that models this situation.

key → 170 for 3 kids, 2 adults

The price is $30 for kids and $40 for adults

x, y

$30 for kids
$40 for adults
30×3=90
170-90=80 ÷2=40
Brown family

$30 for kids
$40 for adults
30×4=120
360-120=240÷6=40
Peckham family

Graph your system of equations on the set of axes below.

Price of Adult Tickets (in dollars)

Price of Child Tickets (in dollars)
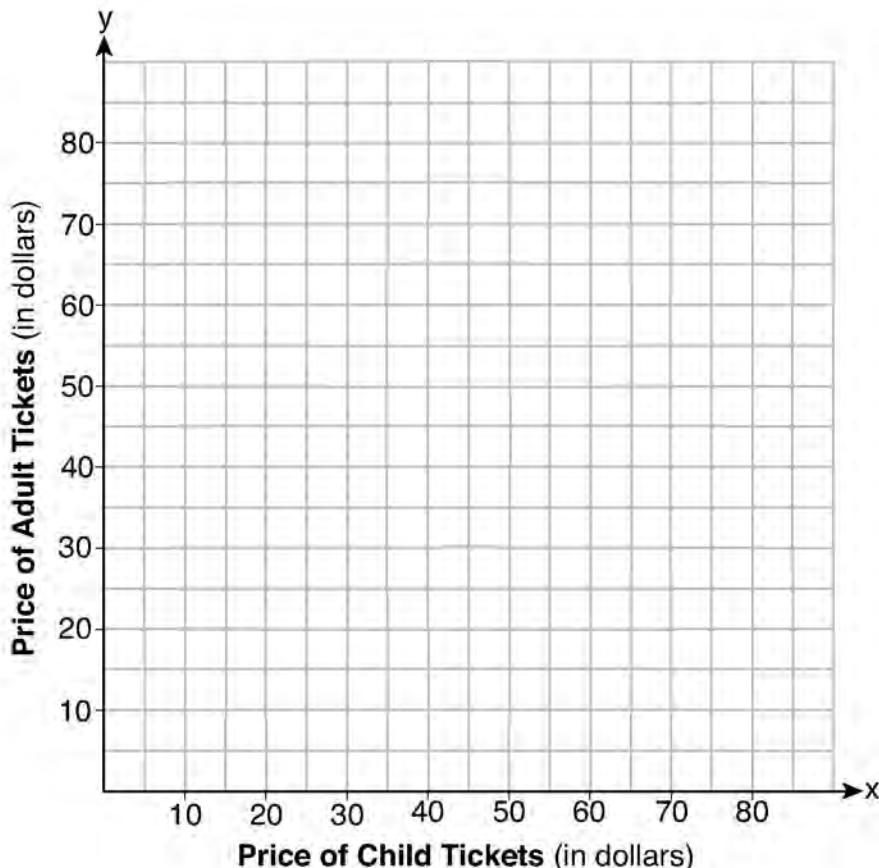
Question 37 is continued on the next page.

Score 1: The student wrote a correct explanation.

Question 37 continued

State the coordinates of the point of intersection.

Explain what each coordinate of the point of intersection means in the context of the problem.

37 Two families went to Rollercoaster World. The Brown family paid $170 for 3 children and 2 adults. The Peckham family paid $360 for 4 children and 6 adults.

If x is the price of a child's ticket in dollars and y is the price of an adult's ticket in dollars, write a system of equations that models this situation.

B-$170 3children, 2 adults
P-$360 4children, 6 adults

Graph your system of equations on the set of axes below.

Price of Child Tickets (in dollars)
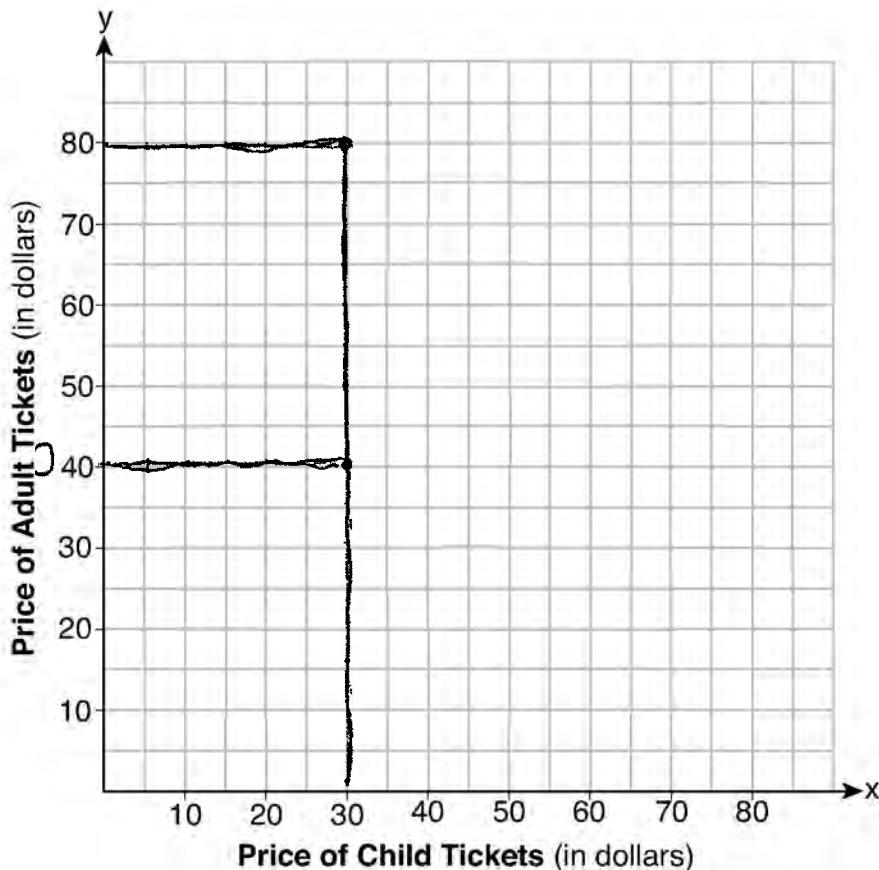
Question 37 is continued on the next page.

Score 0: The student stated 30, 40, but did not write them as coordinates, and no further work was correct.

Question 37 continued

State the coordinates of the point of intersection.

30,40

Explain what each coordinate of the point of intersection means in the context of the problem.

When the two coordinates intersect in this case it means both childrens tickets equal $30.

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

Regents Examination in Algebra I – January 2020

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

(Use for the January 2020 exam only.)

Raw Score	Scale Score	Performance Level	Raw Score	Scale Score	Performance Level	Raw Score	Scale Score	Performance Level
86	100	5	57	81	4	28	66	3
85	99	5	56	81	4	27	65	3
84	97	5	55	81	4	26	64	2
83	96	5	54	80	4	25	63	2
82	95	5	53	80	4	24	61	2
81	94	5	52	80	4	23	60	2
80	93	5	51	80	4	22	59	2
79	92	5	50	79	3	21	57	2
78	91	5	49	79	3	20	56	2
77	90	5	48	79	3	19	55	2
76	89	5	47	78	3	18	52	1
75	89	5	46	78	3	17	50	1
74	88	5	45	78	3	16	48	1
73	87	5	44	77	3	15	46	1
72	87	5	43	77	3	14	44	1
71	86	5	42	76	3	13	42	1
70	86	5	41	76	3	12	40	1
69	86	5	40	75	3	11	37	1
68	85	5	39	75	3	10	35	1
67	84	4	38	74	3	9	32	1
66	84	4	37	74	3	8	29	1
65	84	4	36	73	3	7	26	1
64	83	4	35	72	3	6	23	1
63	83	4	34	72	3	5	20	1
62	83	4	33	71	3	4	16	1
61	82	4	32	70	3	3	12	1
60	82	4	31	69	3	2	9	1
59	82	4	30	68	3	1	4	1
58	81	4	29	67	3	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.