INTEGRATED ALGEBRA

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

INTEGRATED ALGEBRA

Thursday, January 28, 2010 — 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. Then turn to
the last page of this booklet, which is the answer sheet for Part I. Fold the last page
along the perforations and, slowly and carefully, tear off the answer sheet. Then
fill in the heading of your answer sheet.

This examination has four parts, with a total of 39 questions. You must answer
all questions in this examination. Write 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 graphs and drawings, which should be done in pencil. Clearly indicate the
necessary steps, including appropriate formula substitutions, diagrams, graphs,
charts, etc.

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.

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

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

Answer all 30 questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. For each question, write on the separate answer sheet the numeral preceding the word or expression that best completes the statement or answers the question. [60]

1 The box-and-whisker plot below represents the math test scores of 20 students.

What percentage of the test scores are less than 72?
(1) 25 (3) 75
(2) 50 (4) 100

2 A bag contains eight green marbles, five white marbles, and two red marbles. What is the probability of drawing a red marble from the bag?
(1) $\frac{1}{15}$ (3) $\frac{2}{13}$
(2) $\frac{2}{15}$ (4) $\frac{13}{15}$

3 Julia went to the movies and bought one jumbo popcorn and two chocolate chip cookies for $5.00. Marvin went to the same movie and bought one jumbo popcorn and four chocolate chip cookies for $6.00. How much does one chocolate chip cookie cost?
(1) $0.50$ (3) $1.00$
(2) $0.75$ (4) $2.00$
4 Given:

\[ Q = \{0, 2, 4, 6\} \]
\[ W = \{0, 1, 2, 3\} \]
\[ Z = \{1, 2, 3, 4\} \]

What is the intersection of sets \( Q \), \( W \), and \( Z \)?

(1) \{2\}  
(2) \{0, 2\}  
(3) \{1, 2, 3\}  
(4) \{0, 1, 2, 3, 4, 6\} 

5 Roger is having a picnic for 78 guests. He plans to serve each guest at least one hot dog. If each package, \( p \), contains eight hot dogs, which inequality could be used to determine how many packages of hot dogs Roger will need to buy?

(1) \( p \geq 78 \)  
(2) \( 8p \geq 78 \)  
(3) \( 8 + p \geq 78 \)  
(4) \( 78 - p \geq 8 \) 

6 In a science fiction novel, the main character found a mysterious rock that decreased in size each day. The table below shows the part of the rock that remained at noon on successive days.

<table>
<thead>
<tr>
<th>Day</th>
<th>Fractional Part of the Rock Remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>( \frac{1}{2} )</td>
</tr>
<tr>
<td>3</td>
<td>( \frac{1}{4} )</td>
</tr>
<tr>
<td>4</td>
<td>( \frac{1}{8} )</td>
</tr>
</tbody>
</table>

Which fractional part of the rock will remain at noon on day 7?

(1) \( \frac{1}{128} \)  
(2) \( \frac{1}{64} \)  
(3) \( \frac{1}{14} \)  
(4) \( \frac{1}{12} \)
7 In the diagram below, what is the slope of the line passing through points $A$ and $B$?

(1) $-2$  
(2) $2$  
(3) $-\frac{1}{2}$  
(4) $\frac{1}{2}$

Use this space for computations.
8 Which equation shows a correct trigonometric ratio for angle $A$ in the right triangle below?

\[
\begin{align*}
(1) \quad \sin A &= \frac{15}{17} \\
(2) \quad \tan A &= \frac{8}{17} \\
(3) \quad \cos A &= \frac{15}{17} \\
(4) \quad \tan A &= \frac{15}{8}
\end{align*}
\]

9 Debbie solved the linear equation $3(x + 4) - 2 = 16$ as follows:

\[
\begin{align*}
[\text{Line 1}] \quad 3(x + 4) - 2 &= 16 \\
[\text{Line 2}] \quad 3(x + 4) &= 18 \\
[\text{Line 3}] \quad 3x + 4 &= 18 \\
[\text{Line 4}] \quad 3x &= 14 \\
[\text{Line 5}] \quad x &= 4\frac{2}{3}
\end{align*}
\]

She made an error between lines

(1) 1 and 2
(2) 2 and 3
(3) 3 and 4
(4) 4 and 5

Use this space for computations.
10 The value of the expression $-|a - b|$ when $a = 7$ and $b = -3$ is
(1) $-10$  (2) $10$
(3) $-4$  (4) $4$

11 Which expression represents $\frac{12x^3 - 6x^2 + 2x}{2x}$ in simplest form?
(1) $6x^2 - 3x$  (2) $10x^2 - 4x$
(3) $6x^2 - 3x + 1$  (4) $10x^2 - 4x + 1$

12 Which ordered pair is a solution of the system of equations shown in the graph below?
(1) $(-3, 1)$  (2) $(-3, 5)$
(3) $(0, -1)$  (4) $(0, -4)$
13 Which equation represents the line that passes through the points \((-3,7)\) and \((3,3)\)?

(1) \(y = \frac{2}{3}x + 1\)  
(2) \(y = \frac{2}{3}x + 9\)  
(3) \(y = -\frac{2}{3}x + 5\)  
(4) \(y = -\frac{2}{3}x + 9\)

14 Which data table represents univariate data?

- Side Length of a Square | Area of Square |
  |                  |            |
  2 | 4               |
  3 | 9               |
  4 | 16              |
  5 | 25              |

- Age Group | Frequency |
  20–29     | 9         |
  30–39     | 7         |
  40–49     | 10        |
  50–59     | 4         |

- Hours Worked | Pay |
  20 | $160 |
  25 | $200 |
  30 | $240 |
  35 | $280 |

- People | Number of Fingers |
  2    | 20               |
  3    | 30               |
  4    | 40               |
  5    | 50               |
15 What is the equation of the axis of symmetry of the parabola shown in the diagram below?

(1) $x = -0.5$  
(2) $x = 2$  
(3) $x = 4.5$  
(4) $x = 13$

16 The members of the senior class are planning a dance. They use the equation $r = pn$ to determine the total receipts. What is $n$ expressed in terms of $r$ and $p$?

(1) $n = r + p$  
(2) $n = r - p$  
(3) $n = \frac{p}{r}$  
(4) $n = \frac{r}{p}$
17 The graph of the equation \( y = |x| \) is shown in the diagram below.

Which diagram could represent a graph of the equation \( y = a|x| \) when \(-1 < a < 0\)?

- (1)
- (2)
- (3)
- (4)
18 Which relation represents a function?
(1) {(0,3), (2,4), (0,6)}
(2) {(-7,5), (-7,1), (-10,3), (-4,3)}
(3) {(2,0), (6,2), (6,-2)}
(4) {(-6,5), (-3,2), (1,2), (6,5)}

19 Which scatter plot shows the relationship between \(x\) and \(y\) if \(x\) represents a student score on a test and \(y\) represents the number of incorrect answers a student received on the same test?
20 Which expression is equivalent to $3^2 \cdot 3^4$?

(1) $9^{12}$  
(2) $9^7$  
(3) $3^{12}$  
(4) $3^7$

21 Which point is on the line $4y - 2x = 0$?

(1) $(-2,-1)$  
(2) $(-2,1)$  
(3) $(-1,-2)$  
(4) $(1,2)$

22 If Ann correctly factors an expression that is the difference of two perfect squares, her factors could be

(1) $(2x + y)(x - 2y)$  
(2) $(2x + 3y)(2x - 3y)$  
(3) $(x - 4)(x - 4)$  
(4) $(2y - 5)(y - 5)$

23 Which ordered pair is in the solution set of the following system of linear inequalities?

\[
\begin{align*}
y &< 2x + 2 \\
y &\geq -x - 1
\end{align*}
\]

(1) $(0,3)$  
(2) $(2,0)$  
(3) $(-1,0)$  
(4) $(-1,-4)$
24 The expression \(6\sqrt{50} + 6\sqrt{2}\) written in simplest radical form is

(1) \(6\sqrt{52}\)  
(2) \(12\sqrt{52}\)  
(3) \(17\sqrt{2}\)  
(4) \(36\sqrt{2}\)

25 What is the sum of \(\frac{3x^2}{x - 2}\) and \(\frac{x^2}{x - 2}\)?

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

26 Which equation represents a line parallel to the graph of \(2x - 4y = 16\)?

(1) \(y = \frac{1}{2}x - 5\)  
(2) \(y = -\frac{1}{2}x + 4\)  
(3) \(y = -2x + 6\)  
(4) \(y = 2x + 8\)

27 An example of an algebraic expression is

(1) \(\frac{2x + 3}{7} = \frac{13}{x}\)  
(2) \((2x + 1)(x - 7)\)  
(3) \(4x - 1 = 4\)  
(4) \(x = 2\)
28 What is the solution set of \( \frac{x + 2}{x - 2} = \frac{-3}{x} \)?

(1) \{-2, 3\}  (3) \{-1, 6\}
(2) \{-3, -2\}  (4) \{-6, 1\}

29 How many square inches of wrapping paper are needed to entirely cover a box that is 2 inches by 3 inches by 4 inches?

(1) 18  (3) 26
(2) 24  (4) 52

30 Which situation describes a correlation that is not a causal relationship?

(1) the length of the edge of a cube and the volume of the cube
(2) the distance traveled and the time spent driving
(3) the age of a child and the number of siblings the child has
(4) the number of classes taught in a school and the number of teachers employed
31 Angela wants to purchase carpeting for her living room. The dimensions of her living room are 12 feet by 12 feet. If carpeting is sold by the square yard, determine how many square yards of carpeting she must purchase.

- 3 feet = 1 yard
- 9 square feet = 1 square yard
32 In right triangle $ABC$, $AB = 20$, $AC = 12$, $BC = 16$, and $m\angle C = 90$.

Find, to the nearest degree, the measure of $\angle A$. 
Jon is buying tickets for himself for two concerts. For the jazz concert, 4 tickets are available in the front row, and 32 tickets are available in the other rows. For the orchestra concert, 3 tickets are available in the front row, and 23 tickets are available in the other rows. Jon is randomly assigned one ticket for each concert.

Determine the concert for which he is more likely to get a front-row ticket. Justify your answer.
34 Find the roots of the equation \( x^2 - x = 6 \) algebraically.
Ms. Mosher recorded the math test scores of six students in the table below.

<table>
<thead>
<tr>
<th>Student</th>
<th>Student Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrew</td>
<td>72</td>
</tr>
<tr>
<td>John</td>
<td>80</td>
</tr>
<tr>
<td>George</td>
<td>85</td>
</tr>
<tr>
<td>Amber</td>
<td>93</td>
</tr>
<tr>
<td>Betty</td>
<td>78</td>
</tr>
<tr>
<td>Roberto</td>
<td>80</td>
</tr>
</tbody>
</table>

Determine the mean of the student scores, to the nearest tenth.

Determine the median of the student scores.

Describe the effect on the mean and the median if Ms. Mosher adds 5 bonus points to each of the six students’ scores.
Using his ruler, Howell measured the sides of a rectangular prism to be 5 cm by 8 cm by 4 cm. The actual measurements are 5.3 cm by 8.2 cm by 4.1 cm. Find Howell's relative error in calculating the volume of the prism, to the nearest thousandth.
Part IV

Answer all 3 questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. [12]

37 A password consists of three digits, 0 through 9, followed by three letters from an alphabet having 26 letters.

If repetition of digits is allowed, but repetition of letters is not allowed, determine the number of different passwords that can be made.

If repetition is not allowed for digits or letters, determine how many fewer different passwords can be made.
38 Graph the solution set for the inequality $4x - 3y > 9$ on the set of axes below.

Determine if the point $(1,-3)$ is in the solution set. Justify your answer.
39 Find three consecutive positive even integers such that the product of the second and third integers is twenty more than ten times the first integer. [Only an algebraic solution can receive full credit.]
Reference Sheet

Trigonometric Ratios

\[
\sin A = \frac{\text{opposite}}{\text{hypotenuse}}
\]

\[
\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}
\]

\[
\tan A = \frac{\text{opposite}}{\text{adjacent}}
\]

Area

trapezoid \( A = \frac{1}{2} h(b_1 + b_2) \)

Volume

cylinder \( V = \pi r^2 h \)

Surface Area

rectangular prism \( SA = 2lw + 2hw + 2lh \)

cylinder \( SA = 2\pi r^2 + 2\pi rh \)

Coordinate Geometry

\[
m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}
\]
Scrap Graph Paper — This sheet will *not* be scored.
Scrap Graph Paper — This sheet will not be scored.
The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

INTEGRATED ALGEBRA

Thursday, January 28, 2010 — 1:15 to 4:15 p.m., only

ANSWER SHEET

Student ........................................ Sex: □ Male □ Female  Grade .........
Teacher ........................................ School ......................................

Your answers to Part I should be recorded on this answer sheet.

Part I

Answer all 30 questions in this part.

1 ..................... 9 ..................... 17 ..................... 25 .....................
2 ..................... 10 ..................... 18 ..................... 26 .....................
3 ..................... 11 ..................... 19 ..................... 27 .....................
4 ..................... 12 ..................... 20 ..................... 28 .....................
5 ..................... 13 ..................... 21 ..................... 29 .....................
6 ..................... 14 ..................... 22 ..................... 30 .....................
7 ..................... 15 ..................... 23 .....................
8 ..................... 16 ..................... 24 .....................

Your answers for Parts II, III, and IV should be written in the test booklet.

The declaration below must be signed when you have completed the examination.

I do hereby affirm, at the close of this examination, that I had no unlawful knowledge of the questions or answers prior to the examination and that I have neither given nor received assistance in answering any of the questions during the examination.

Signature
<table>
<thead>
<tr>
<th>Question</th>
<th>Maximum Credit</th>
<th>Credits Earned</th>
<th>Rater’s/Scorer’s Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part I 1–30</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part II 31</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part III 34</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part IV 37</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Total</td>
<td>87</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Raw Score: [ ]
Checked by: [ ]
Scale Score (from conversion chart): [ ]

Rater’s/Scorer’s Name (minimum of three): [ ] [ ] [ ]
FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

INTEGRATED ALGEBRA

Thursday, January 28, 2010 — 1:15 to 4:15 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 Integrated Algebra. More detailed information about scoring is provided in the publication Information Booklet for Scoring the Regents Examinations in Integrated Algebra and Geometry.

Use only red ink or red pencil in rating Regents papers. Do not attempt to correct the student’s work by making insertions or changes of any kind. 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. On the back of the student’s detachable answer sheet, raters must enter their initials in the boxes next to the questions they have scored and also write their name in the box under the heading “Rater’s/Scorer’s Name.”

Raters should record the student’s scores for all questions and the total raw score on the student’s detachable 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 http://www.emsc.nysed.gov/osa/ on Thursday, January 28, 2010. The student’s scale score should be entered in the box provided on the student’s detachable answer sheet. The scale score is the student’s final examination score.
Part I

Allow a total of 60 credits, 2 credits for each of the following. Allow credit if the student has written the correct answer instead of the numeral 1, 2, 3, or 4.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>1</td>
<td>(9)</td>
<td>2</td>
<td>(17)</td>
</tr>
<tr>
<td>(2)</td>
<td>2</td>
<td>(10)</td>
<td>1</td>
<td>(18)</td>
</tr>
<tr>
<td>(3)</td>
<td>1</td>
<td>(11)</td>
<td>3</td>
<td>(19)</td>
</tr>
<tr>
<td>(4)</td>
<td>1</td>
<td>(12)</td>
<td>2</td>
<td>(20)</td>
</tr>
<tr>
<td>(5)</td>
<td>2</td>
<td>(13)</td>
<td>3</td>
<td>(21)</td>
</tr>
<tr>
<td>(6)</td>
<td>2</td>
<td>(14)</td>
<td>3</td>
<td>(22)</td>
</tr>
<tr>
<td>(7)</td>
<td>4</td>
<td>(15)</td>
<td>2</td>
<td>(23)</td>
</tr>
<tr>
<td>(8)</td>
<td>3</td>
<td>(16)</td>
<td>4</td>
<td>(24)</td>
</tr>
</tbody>
</table>
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 [http://www.emsc.nysed.gov/osa/](http://www.emsc.nysed.gov/osa/) and select the link “Examination 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.

**General Rules for Applying Mathematics Rubrics**

I. **General Principles for Rating**

The rubrics for the constructed-response questions on the Regents Examinations in Integrated Algebra 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 Examinations in Integrated Algebra and Geometry*, 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, 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 any response. 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. A response with one conceptual error can receive no more than half credit.

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.

If a response shows two (or more) different major conceptual errors, it should be considered completely incorrect and receive no credit.

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; i.e., awarding half credit for the conceptual error and deducting 1 credit for each mechanical error (maximum of two deductions for mechanical errors).
Part II

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

(31)  [2] 16, and appropriate 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] 16, 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] 53, and appropriate work is shown.

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

   or

  [1] Appropriate work is shown, but one conceptual error is made, such as using an incorrect trigonometric function.

   or

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

   or

  [1] 53, 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.
(33)  [2] Orchestra, and appropriate work is shown as justification.

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

   or

[1] Appropriate work is shown, but one conceptual error is made, such as not dividing by the total number of tickets available.

   or

[1] Appropriate work is shown, but orchestra is not stated.

[0] Orchestra, 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.
Part III

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

(34)  [3] –2 and 3, and appropriate algebraic work is shown.

 [2] Appropriate work is shown, but one computational or factoring error is made, but two appropriate solutions are stated.

 or

 [2] Appropriate work is shown to find \((x - 3)(x + 2) = 0\), but no further correct work is shown.

 [1] Appropriate work is shown, but two or more computational or factoring errors are made, but two appropriate solutions are stated.

 or

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

 or

 [1] An appropriate quadratic equation in standard form (set equal to zero) is written, but no further correct work is shown.

 or

 [1] –2 and 3, but a method other than algebraic is used.

 or

 [1] –2 and 3, but no work is shown.

 [0] –2 or 3, 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.
[3] Mean = 81.3, median = 80, and appropriate work is shown, and an appropriate description is given, such as that both the mean and median will increase or that the mean becomes 86.3 and the median becomes 85.

[2] Appropriate work is shown, but one computational or rounding error is made, but an appropriate description is given.

or

[2] Mean = 81.3, median = 80, and appropriate work is shown, but the description is missing or is incorrect.

or

[2] Mean = 81.3 and median = 80, but no work is shown, but an appropriate description is given.

[1] Appropriate work is shown, but two or more computational or rounding errors are made, but an appropriate description is given.

or

[1] Appropriate work is shown, but one conceptual error is made, but an appropriate description is given.

or

[1] Mean = 81.3 and median = 80, but no work is shown, and no description is given.

[0] Mean = 81.3 or median = 80, but no work is shown, and no description 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.
INTEGRATED ALGEBRA – continued

(36) [3] 0.102, and appropriate work is shown.

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

or

[2] \( \frac{178.186 - 160}{178.186} \) or an equivalent expression, but the relative error is not found or is found incorrectly.

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

or

[1] Appropriate work is shown, but one conceptual error is made, such as dividing by 160.

or

[1] Appropriate work is shown to find 160 and 178.186, but no further correct work is shown.

or

[1] 0.102, 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.

[8]
Part IV

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

(37)  [4] 15,600,000 and 4,368,000, and appropriate work is shown.

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

or

[3] Appropriate work is shown to find 15,600,000 and 11,232,000, but the values are not subtracted.

[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.

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

or

[1] Appropriate work is shown to find 15,600,000 or 11,232,000, but no further correct work is shown.

or

[1] 10\times10\times10\times26\times25\times24 and 10\times9\times8\times26\times25\times24, but no further correct work is shown.

or

[1] 15,600,000 and 4,368,000, but no work is shown.

[0] 15,600,000 or 4,368,000, 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.
The inequality is graphed correctly, and “yes” and an appropriate justification is given, such as plotting the point or checking algebraically.

Appropriate work is shown, but one graphing error is made, such as drawing a solid line or shading incorrectly, but an appropriate answer and justification are given.

Appropriate work is shown, but two or more graphing errors are made, but an appropriate answer and justification are given.

or

Appropriate work is shown, but one conceptual error is made, but an appropriate answer and justification are given.

or

The inequality is graphed correctly, but no further correct work is shown.

Appropriate work is shown, but one conceptual error and one graphing error are made, but an appropriate answer and justification are given.

or

The line $4x - 3y = 9$ is graphed correctly, but no further correct work is shown.

or

Algebraic work is shown determining that $(1, -3)$ is in the solution set, but no graph is shown.

“Yes,” but no work is shown.

or

A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
INTEGRATED ALGEBRA – continued

(39)  [4] 6, 8, and 10, and appropriate algebraic work is shown.

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

 or

[3] Appropriate work is shown, but only one correct positive integer is found.

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

 or

[2] Appropriate work is shown, but one conceptual error is made, such as finding consecutive integers.

 or

[2] A correct quadratic equation in standard form (set equal to zero) is written, but no further correct work is shown.

 or

[2] 6, 8, and 10, but a method other than algebraic is used.

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

 or

[1] An appropriate equation is written, but no further correct work is shown.

 or

[1] 6, 8, and 10, but no work is shown.

[0] 6 or 8 or 10, 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.
Map to Core Curriculum

<table>
<thead>
<tr>
<th>Content Strand</th>
<th>Item Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Sense and Operations</td>
<td>10, 24, 37</td>
</tr>
<tr>
<td>Algebra</td>
<td>3, 4, 5, 6, 7, 8, 9, 11, 13, 16, 20, 21, 22, 23, 25, 26, 27, 28, 32, 34, 39</td>
</tr>
<tr>
<td>Geometry</td>
<td>12, 15, 17, 18, 29, 38</td>
</tr>
<tr>
<td>Measurement</td>
<td>31, 36</td>
</tr>
<tr>
<td>Statistics and Probability</td>
<td>1, 2, 14, 19, 30, 33, 35</td>
</tr>
</tbody>
</table>

Regents Examination in Integrated Algebra
January 2010
Chart for Converting Total Test Raw Scores to Final Examination Scores (Scale Scores)

The Chart for Determining the Final Examination Score for the January 2010 Regents Examination in Integrated Algebra will be posted on the Department’s web site http://www.emsc.nysed.gov/osa/ on Thursday, January 28, 2010. Conversion charts provided for previous administrations of the Integrated Algebra examination must NOT be used to determine students’ final scores for this administration.

Submitting 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:

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.
### Regents Examination in Integrated Algebra
January 2010

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

<table>
<thead>
<tr>
<th>Raw Score</th>
<th>Scale Score</th>
<th>Raw Score</th>
<th>Scale Score</th>
<th>Raw Score</th>
<th>Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>87</td>
<td>100</td>
<td>65</td>
<td>85</td>
<td>43</td>
<td>76</td>
</tr>
<tr>
<td>86</td>
<td>99</td>
<td>64</td>
<td>84</td>
<td>42</td>
<td>75</td>
</tr>
<tr>
<td>85</td>
<td>98</td>
<td>63</td>
<td>84</td>
<td>41</td>
<td>75</td>
</tr>
<tr>
<td>84</td>
<td>96</td>
<td>62</td>
<td>84</td>
<td>40</td>
<td>74</td>
</tr>
<tr>
<td>83</td>
<td>95</td>
<td>61</td>
<td>84</td>
<td>39</td>
<td>73</td>
</tr>
<tr>
<td>82</td>
<td>94</td>
<td>60</td>
<td>83</td>
<td>38</td>
<td>73</td>
</tr>
<tr>
<td>81</td>
<td>94</td>
<td>59</td>
<td>83</td>
<td>37</td>
<td>72</td>
</tr>
<tr>
<td>80</td>
<td>93</td>
<td>58</td>
<td>83</td>
<td>36</td>
<td>71</td>
</tr>
<tr>
<td>79</td>
<td>92</td>
<td>57</td>
<td>82</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>78</td>
<td>91</td>
<td>56</td>
<td>82</td>
<td>34</td>
<td>69</td>
</tr>
<tr>
<td>77</td>
<td>91</td>
<td>55</td>
<td>82</td>
<td>33</td>
<td>68</td>
</tr>
<tr>
<td>76</td>
<td>90</td>
<td>54</td>
<td>81</td>
<td>32</td>
<td>67</td>
</tr>
<tr>
<td>75</td>
<td>89</td>
<td>53</td>
<td>81</td>
<td>31</td>
<td>66</td>
</tr>
<tr>
<td>74</td>
<td>89</td>
<td>52</td>
<td>81</td>
<td>30</td>
<td>65</td>
</tr>
<tr>
<td>73</td>
<td>88</td>
<td>51</td>
<td>80</td>
<td>29</td>
<td>63</td>
</tr>
<tr>
<td>72</td>
<td>88</td>
<td>50</td>
<td>80</td>
<td>28</td>
<td>62</td>
</tr>
<tr>
<td>71</td>
<td>87</td>
<td>49</td>
<td>79</td>
<td>27</td>
<td>61</td>
</tr>
<tr>
<td>70</td>
<td>87</td>
<td>48</td>
<td>79</td>
<td>26</td>
<td>59</td>
</tr>
<tr>
<td>69</td>
<td>86</td>
<td>47</td>
<td>78</td>
<td>25</td>
<td>58</td>
</tr>
<tr>
<td>68</td>
<td>86</td>
<td>46</td>
<td>78</td>
<td>24</td>
<td>56</td>
</tr>
<tr>
<td>67</td>
<td>86</td>
<td>45</td>
<td>77</td>
<td>23</td>
<td>55</td>
</tr>
<tr>
<td>66</td>
<td>86</td>
<td>44</td>
<td>77</td>
<td>22</td>
<td>53</td>
</tr>
</tbody>
</table>

To determine the student’s final examination 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.

All student answer papers that receive a scale score of 60 through 64 must be scored a second time to ensure the accuracy of the score. For the second scoring, a different committee of teachers may score the student’s paper or the original committee may score the paper, except that no teacher may score the same open-ended questions that he/she scored in the first rating of the paper.

Because scale scores corresponding to raw scores in the conversion chart change from one examination 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 Integrated Algebra.