FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS A

Monday, January 26, 2004 — 1:15 to 4:15 p.m., only

SCORING KEY

Mechanics of Rating

The following procedures are to be followed for scoring student answer papers for the Mathematics A examination. More detailed information about scoring is provided in the publication *Information Booklet for Administering and Scoring the Regents Examinations in Mathematics A and Mathematics B.*

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 checkmarks 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 scaled score by using the conversion chart. The conversion chart for this examination will be published after a score validation study is conducted. (See page 8.) The student's scaled score should be entered in the box provided on the student's detachable answer sheet. The scaled 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.

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

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]** $178.50, and appropriate work is shown, such as solving a proportion, using a table, or trial and error with at least three trials and appropriate checks.

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

or

　　　[1] An appropriate proportion is set up, but no solution or an incorrect solution is found.

or

　　　[1] An incorrect proportion is set up, but an appropriate solution is found.

or

　　　[1] $178.50, but no work is shown or fewer than three trials with appropriate checks are 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]** $350, and appropriate work is shown, such as $\dfrac{1450 + x}{5} = 360$ or trial and error with at least three trials and appropriate checks.

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

or

　　　[1] The total of the five salaries is shown to be $5 \bullet 360 = 1800$, but no further correct work is shown.

or

　　　[1] $350, but no work is shown or fewer than three trials with appropriate checks are 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]** Bob, and appropriate work is shown, such as using the distance formula to calculate the two travel times or setting up a proportion.

[1] Appropriate work is shown, but one computational or conceptual error is made, but an appropriate answer is found.

or

[1] Appropriate work is shown, but no answer or an incorrect answer is found.

[0] Bob, but no work or inappropriate work is shown.

or

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

(34) **[2]** 2, and appropriate work is shown, such as a Venn diagram, a listing, or an explanation.

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

or

[1] 2, 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.

(35) **[2]** 37,440 and appropriate work is shown, such as $2 \times 26 \times 10 \times 9 \times 8$ or $_2P_1 \times {_{26}P_1} \times {_{10}P_3}$.

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

or

[1] Appropriate work is shown for at least one restriction, such as 2×26 or $10 \times 9 \times 8$.

or

[1] 37,440 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 three credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(36)   **[3]** Four 20-cent and eight 32-cent stamps, and appropriate work is shown, such as a system of equations, or a linear equation such as $2x(.32) + .20x = 3.36$, or trial and error with at least three trials and appropriate checks.

[2] Appropriate work is shown, but one computational error is made, but appropriate quantities are found for each stamp.

or

[2] Appropriate work is shown, but the quantity for only one of the stamps is found.

or

[2] Appropriate work is shown, but the solutions are not labeled or the labels are reversed.

or

[2] The trial-and-error method is used to find correct solutions, but only two trials and appropriate checks are shown.

[1] Appropriate work is shown, but two or more computational errors are made, but appropriate quantities are found for each stamp.

or

[1] The trial-and-error method is attempted, and at least six systematic trials and appropriate checks are shown, but no solution is found.

or

[1] An incorrect equation or system of equations of equal difficulty is solved appropriately for both solutions.

or

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

or

[1] Four 20-cent and eight 32-cent stamps, but no work or only one trial with an appropriate check is shown.

[0] Four and eight, but no work is shown, and the solutions are not labeled.

or

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

[4]

(37) **[3]** 32, and appropriate work is shown, such as finding the circumference to be 10π and dividing 1,000 by 10π.

[2] Appropriate work is shown, but one computational or rounding error is made or the answer is expressed in terms of π.

[1] An incorrect circumference formula is used, but an appropriate number of revolutions is found.

or

[1] The circumference of the wheel is found to be 10π or an equivalent decimal, but no further correct work is shown.

or

[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.

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.

(38) *a* **[2]** 56, and appropriate work is shown, such as $\tan A = \frac{6}{4}$ or finding the hypotenuse and then using sine or cosine or using proportional sides of similar triangles.

[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.

or

[1] The length of the hypotenuse is found correctly, but no further correct work is shown.

or

[1] 56, but no work is shown.

b **[2]** 12, and appropriate work is shown, such as $\sin 56 = \frac{h}{15}$.

or

[2] An appropriate answer is found based on an incorrect angle found in part *a.*

[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.

or

[1] 12, but no work is shown.

a and *b*

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

(39) *a* **[3]** A parabola with points graphed at (0,0), (1,32), (2,48), (3,48), (4,32), and (5,0) is shown. [Points do not have to be labeled on the graph for full credit.]

[2] Appropriate work is shown, such as a table of values, but one graphing error is made.

or

[2] The correct points are graphed, but the parabola is drawn incorrectly, such as connecting (2,48) and (3,48) as a line segment or not connecting the points at all.

or

[2] At least four correct values are found, and the parabola is graphed appropriately.

or

[2] A correct table of values is shown for all values from 0 to 5, but no graph is drawn.

[1] Two or three correct values are found, and the parabola is graphed appropriately.

or

[1] A correct table of values is shown for an incorrectly transcribed equation, such as $h = 8t^2 + 40t$, but no graph is drawn.

b **[1]** 2.5 is found algebraically or identified from a table or from the graph of the parabola.

or

[1] An appropriate value of *t* is found, based on an incorrect graph.

or

[1] $2 < t < 3$ is given as the range of values based on the line segment drawn in part *a*.

a and *b*

[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 Learning Standards

Key Ideas	Item Numbers
Mathematical Reasoning	7, 15, 34
Number and Numeration	3, 16, 28
Operations	6, 11, 13, 14, 22, 23, 29, 30
Modeling/Multiple Representation	2, 4, 9, 10, 17, 18, 20, 21, 27
Measurement	8, 26, 31, 32, 33, 37, 38
Uncertainty	5, 24, 35
Patterns/Functions	1, 12, 19, 25, 36, 39

Regents Examination in Mathematics A

January 2004

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

The conversion chart for this examination will be published after the scores on a sample of student papers are analyzed. The conversion chart may be accessed on the State Education Department's web site on or about February 10, 2004, at http://www.emsc.nysed.gov/osa/home.html.