ERRATA SHEET

Notice to Teachers

Mathematics A
Scoring Key

Wednesday, June 19, 2002—1:15 p.m.

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The scoring rubric for question 23 of the Mathematics A examination should be modified as described below.

The section of the rubric for question 23 that reads "[1] Appropriate work is shown, but the answer is rounded to the nearest hour" should be omitted.

Students who solved the problem, showed appropriate work, and gave one of the correct answers specified on the key $\left(6\frac{2}{3} \text{ or } 6\,\text{hr}\,40\,\text{min}\,\text{or}\ 6.6\overline{6} \right)$ should receive full credit for the response, even if the student subsequently rounded the answer up to 7.

FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS A

Wednesday, June 19, 2002 — 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 printed at the end of this key. 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 40 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) 3	(6) 4	(11) 2	(16) 4
(2) 3	(7) 1	(12) 1	(17) 3
(3) 2	(8) 4	(13) 2	(18) 2
(4) 1	(9) 3	(14) 1	(19) 2
(5) 2	(10) 3	(15) 4	(20) 4

Part II

For each question, use the specific criteria to award a maximum of two credits.

(21) **[2]** False, and an appropriate explanation is given.

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

[0] False, but no explanation 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.

(22) **[2]** 20, and appropriate work is shown, such as $(180 \div 0.9) - 180$.

[1] A partial answer is found, such as 200 students are enrolled, but 180 is not subtracted from the answer.

or

[1] An appropriate equation is shown, but one computational error is made, but 180 is subtracted.

or

[1] An answer of 18 is found by subtracting 180×0.9 from 180.

or

[1] 20, 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.

(23) **[2]** $6\frac{2}{3}$ or 6 hr 40 min or $6.6\overline{6}$ or an equivalent answer, and appropriate work is shown.

[1] 400 min, but the answer is not converted into hours.

or

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

or

[1] Appropriate work is shown, but the answer is rounded to the nearest hour.

or

[1] $6\frac{2}{3}$ or 6 hr 40 min or $6.6\overline{6}$ or an equivalent answer, 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.

(24) **[2]** 0, and an appropriate explanation is given, such as 0 is the number that when added to any number results in that number or does not change it, or 1 + 0 = 1, 2 + 0 = 2, and 3 + 0 = 3.

[1] 0, but no explanation or an incorrect explanation is given.

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

(25) **[2]** $y = 2x - 3$ or an equivalent equation, and appropriate work is shown, or an appropriate explanation is given, such as the slope is 2 and the y-intercept is –3.

[1] $y = 2x - 3$, but the slope and intercept are incorrect, or the explanation is not given or is incorrect, such as $m = 2$ and $b = -3$.

or

[1] The slope and intercept are explained correctly, but the equation is incorrect.

or

[1] $y = 2x - 3$, but no work is shown and no explanation is given.

[0] The equation is incorrect, and the explanation of slope and intercept is not given or is 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.

Part III

For each question, use the specific criteria to award a maximum of three credits.

(26)   **[3]** 65, and appropriate work is shown, such as setting the given angles equal to each other and determining the value of x to be 16, and correct substitution is shown.

[2] The given angles are set equal to each other, the correct value of x is determined, but no substitution is shown.

or

[2] The given angles are set equal to each other, and substitution is shown, but one computational or substitution error is made.

[1] The given angles are set equal to each other, but no further work is shown.

or

[1] An incorrect equation is solved appropriately, such as $5x - 15 + 2x + 33 = 180$.

or

[1] 65, 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)   **[3]** 7, 11, 16, and yes, and appropriate work is shown, and an appropriate explanation of the Triangle Inequality theorem is given.

[2] 7, 11, 16, and yes, and appropriate work is shown, but no explanation or an incorrect explanation of the Triangle Inequality theorem is given.

or

[2] One computational error is made, but appropriate substitution is shown, and an appropriate explanation is given.

or

[2] The correct equation is written but not solved, but the Triangle Inequality theorem is stated correctly.

[1] Appropriate work is shown, and $x = 4$ is determined, but no further work is shown.

or

[1] The Triangle Inequality theorem is stated correctly but not evaluated for the sides, or the correct equation is written, but no further work is shown.

or

[1] 7, 11, 16, and yes, 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)   **[3]** 2,827.4, and appropriate work is shown, such as $50^2\pi - 40^2\pi$.

[2] The areas of both circles are found correctly, but the two areas are not subtracted.

or

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

[1] The correct area is found for only one of the circles.

or

[1]   The circumference formula is used, but the appropriate difference is shown, such as $100\pi - 80\pi = 20\pi$.

or

[1] 2,827.4, 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.

[OVER]

(29) **[3]** –7 and 4, and appropriate work is shown, such as factoring.

[2] Correct factoring $(x + 7)(x - 4)$ is shown, but only one correct value of x is found.

or

[2] Correct factoring is shown, but the negative value of x is rejected.

[1] Correct factoring is shown, but the values of x are not found.

or

[1] Incorrect factoring is shown, but appropriate values are found.

or

[1] Only one value is found by trial and error.

or

[1] –7 and 4, 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.

(30) **[3]** 3, and appropriate work is shown, such as using a 3:4:5 right triangle, correct proportions, or the Pythagorean theorem with a proportion.

[2] Appropriate work is shown, and the value of the side is determined to be 5, but $n = 3$ is not found.

[1] A correct proportion is set up, but no answer or an incorrect answer is found.

or

[1] 3, 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.

(31) *a* **[2]** 59, and the equation $\tan x = \frac{280}{170}$ is shown, or the Pythagorean theorem is used first to find the hypotenuse, and either sine or cosine is used correctly to find *x*.

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

or

[1] 59, but no work is shown.

b **[2]** 122, if the Pythagorean theorem is used or if a trigonometric function of the angle is used before it was rounded to 59°.

or

[2] 120, if $\cos 59 = \frac{170}{\text{hyp}}$ is used.

or

[2] 123, if $\sin 59 = \frac{280}{\text{hyp}}$ is used.

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

or

[1] 122 or 120 or 123, 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.

(32) *a* **[1]** $c = 10m + 100$ for Ron's Rental and $c = 20m + 20$ for Josie's Rental.

    b **[2]** Two lines, rays, or segments are graphed and labeled correctly, using values arrived at by using a table or by using the slope and y-intercept.

       [1] Two lines, rays, or segments are graphed correctly, but they are not labeled.

or

       [1] One line, ray, or segment is graphed and labeled correctly, using values arrived at by using a table or by using the slope and y-intercept.

    c **[1]** 8

or

       [1] An appropriate number of months is found, based on an incorrect graph in part *b*.

    a, b, and *c*

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

(33)   **[4]** $167.50, and appropriate work is shown, such as $350x + (150)(130) = 1.25(62,500)$ or trial and error with at least three trials with appropriate checks.

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

    [2] Appropriate work is shown, but more than one computational error is made.

or

    [2] $167.50, but only one trial with an appropriate check is shown.

    [1] $167.50, 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]** No, and an appropriate explanation is given, such as $P(15) = \frac{6}{56} < P(2) = \frac{12}{56}$.

[3] One of the two probabilities is found correctly, but one computational error is made in finding the other, but an appropriate conclusion is drawn, based on the values found.

or

[3] Replacement is used to conclude $P(15) = \frac{6}{64} < P(2) = \frac{12}{64}$.

or

[3] The two probabilities are found correctly, but no conclusion or the incorrect conclusion is drawn.

[2] One of the probabilities is found correctly, but one computational error is made in finding the other, and no conclusion or the incorrect conclusion is drawn.

[1] An appropriate method is used, such as a tree diagram or sample space, but the probabilities are not determined or are determined incorrectly.

or

[1] $P(15) = \frac{6}{56} < P(2) = \frac{12}{56}$, but no work is shown.

[0] No, 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.

(35)   **[4]** (10,0) and (1,9), and both graphs are drawn correctly.

[3] Both graphs are drawn correctly, but only one solution is stated correctly.

or

[3] One graph of equal difficulty is drawn incorrectly, but the solutions are appropriate, based on the graphs.

[2] (10,0) and (1,9), but the problem is solved algebraically instead of graphically.

or

[2] One graph of equal difficulty is drawn incorrectly, and only one solution is appropriate, based on the graphs.

[1] Both the parabola and the line are graphed incorrectly, but the solutions are appropriate, based on the graphs.

or

[1] Incorrect solutions result from an algebraic method.

or

[1] (10,0) and (1,9), but no work is shown.

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

Map to Learning Standards

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

Regents Examination in Mathematics A

June 2002

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

Raw Score	Scaled Score	Raw Score	Scaled Score	Raw Score	Scaled Score
85	100	56	68	27	39
84	99	55	68	26	38
83	97	54	67	25	37
82	96	53	66	24	36
81	95	52	65	23	35
80	94	51	64	22	33
79	92	50	63	21	32
78	91	49	62	20	31
77	90	48	61	19	30
76	89	47	60	18	28
75	88	46	59	17	27
74	87	45	58	16	26
73	86	44	57	15	24
72	85	43	56	14	23
71	83	42	55	13	21
70	82	41	54	12	20
69	81	40	53	11	18
68	80	39	52	10	17
67	79	38	51	9	15
66	78	37	50	8	14
65	77	36	49	7	12
64	76	35	48	6	10
63	75	34	47	5	9
62	74	33	46	4	7
61	73	32	45	3	5
60	72	31	44	2	4
59	71	30	43	1	2
58	70	29	42	0	0
57	69	28	41		

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 scaled score that corresponds to that raw score. The scaled score is the student's final examination score. Enter this score in the space labeled "Scaled Score" on the student's answer sheet.

All student answer papers that receive a scaled score of 60 through 64 **must** be scored a second time. 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. The school principal is responsible for assuring that the student's final examination score is based on a fair, accurate, and reliable scoring of the student's answer paper.

Because scaled scores corresponding to raw scores in the conversion chart may change from one examination to another, it is crucial that for each administration, the conversion chart provided in the scoring key for that administration be used to determine the student's final score. The chart above is usable only for this administration of the mathematics A examination.