

FOR TEACHERS ONLY

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

MATHEMATICS A

Friday, June 15, 2001 — 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 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) 1	(6) 1	(11) 3	(16) 4
(2) 1	(7) 4	(12) 4	(17) 1
(3) 3	(8) 4	(13) 2	(18) 2
(4) 3	(9) 3	(14) 1	(19) 1
(5) 2	(10) 2	(15) 4	(20) 3

Part II

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

- (21) [2] 60, and appropriate work is shown, such as $300 - 120 - 90 - 30 = 60$.
- or***
- [2] 60, and an appropriate Venn diagram to illustrate the answer is shown.
- [1] Appropriate work is shown, but one computational error is made.
- or***
- [1] An appropriate Venn diagram is drawn, and 240 is determined to be the total number of students given, but no further work is shown.
- or***
- [1] 60, but no work is shown.
- [0] 240 is not subtracted from 300 and is given as the solution.
- 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] 57° , and appropriate work is shown, such as determining that $m\angle FYD \cong m\angle BXY$ and $\angle AXY$ is supplementary to $\angle BXY$.
- or***
- [2] 57° , and a correctly labeled diagram with appropriate angles is shown.
- [1] $\angle CYX$ or $\angle BXY$ is determined, but one computational error is made in subtracting to find $m\angle AXY$.
- or***
- [1] An angle is determined incorrectly, but an appropriate solution is found.
- or***
- [1] 57° , 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.

MATHEMATICS A – *continued*

- (23) [2] 42 nickels and 21 dimes, and appropriate work is shown, such as $0.1x + (0.05)2x = 4.20$ or a guess and a check with a minimum of two trials and appropriate checks or another appropriate method.
- [1] 42 nickels or 21 dimes, but appropriate work is shown.
- or**
- [1] Appropriate work is shown, but no answer or an incorrect answer is found.
- or**
- [1] 42 nickels and 21 dimes, 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] 45, and appropriate work is shown, such as a diagram or $\frac{1.2}{2} = \frac{x}{75}$.
- [1] Appropriate work is shown, but no answer or an incorrect answer is found.
- or**
- [1] 45, 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.
- (25) [2] 210, and appropriate work is shown, such as $7 \cdot 6 \cdot 5$ or ${}_7P_3$.
- [1] Appropriate work is shown, but no answer or an incorrect answer is found.
- or**
- [1] 210, 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.
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Part III

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

- (26) [3] 102, and appropriate work is shown, such as using the equation $2x + 10 + 3x = 180$ or an equivalent equation.
- [2] The equation $2x + 10 + 3x = 180$ is solved correctly for x , but $m\angle B$ is not determined or is determined incorrectly.
- [1] Appropriate work is shown, but one computational error is made or x is not determined.

or

- [1] The equation $2x + 10 + 3x = 360$ is solved correctly, and an answer of 210 is found.

or

- [1] 102, but no work is shown.

- [0] The equation $2x + 10 = 3x$ where $x = 10$ 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.

MATHEMATICS A – *continued*

- (27) [3] 1,095 and 1,209, and appropriate work is shown.
- [2] Appropriate work is shown, but one computational error is made.
- or***
- [2] Appropriate work is shown, but a whole-number solution is not found.
- or***
- [2] 5% of CD cases is rounded to 58, but 58 is added to or subtracted from 1,152 appropriately.
- or***
- [2] Appropriate work is shown, but only one correct solution is found.
- [1] Appropriate work is shown, but more than one computational error is made.
- or***
- [1] 5% of CD cases is rounded to 58, but 58 is added to or subtracted from 1,152, but one computational error is made.
- or***
- [1] 5% of 1,152 is found, but no further work is shown.
- or***
- [1] 1,095 and 1,209, 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.

MATHEMATICS A – *continued*

(28) [3] A correct graph is shown, and an answer between -6° and -2° is found.

[2] A correct formula is used, and -4°C or an equivalent answer is found, but no graph is shown.

or

[2] An appropriate graph is shown, and the correct answer is marked, but it is stated incorrectly, such as 5°C instead of -5°C .

or

[2] An appropriate graph is shown, but answers outside the given range are found.

or

[2] The line graph passes through at least one correct point, and an appropriate answer is found.

[1] The formula is used correctly, but the answer is not in the range, and no graph is shown.

or

[1] An answer between -6° and -2° is found, but no graph is shown.

[0] A completely incorrect graph is shown.

or

[0] No graph is shown and the formula is used incorrectly.

or

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

MATHEMATICS A – *continued*

(29) [3] 78.5 square feet or 2π or an equivalent answer, and appropriate work is shown.

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

or

[2] Appropriate work is shown, but the measure of one side of the square is used as the radius of the circle.

or

[2] Appropriate work is shown, but the perimeter is used to find a side of the square.

[1] The correct length of the side of the square is shown, but further work is missing or is incorrect.

or

[1] The equation for the circumference of the circle instead of the equation for the area of the circle is solved appropriately.

or

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

or

[1] 78.5 square feet or 25π , 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] $\frac{7}{20}$ or an equivalent answer, and appropriate work is shown, such as $\frac{15}{25} \cdot \frac{14}{24}$ or $\frac{{}_{15}C_2}{{}_{25}C_2}$.

[2] $\frac{15}{25} \cdot \frac{14}{24}$ or $\frac{{}_{15}C_2}{{}_{25}C_2}$ is shown, but one computational error is made or no further work is shown.

or

[2] ${}_{15}C_2$ and ${}_{25}C_2$ are computed correctly, but no further work is shown.

or

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

[1] The correct probabilities are found, but they are added instead of multiplied.

or

[1] Only one of the two parts of the probability is correct.

or

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

or

[1] $\frac{7}{20}$ 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.

Part IV

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

- (31) [4] 3, 5, and 7, and appropriate work is shown, such as an appropriate quadratic equation or trial-and-error method.
- [3] An appropriate equation is written and solved, but one computational error is made.
- or*
- [3] An appropriate equation is written and solved, but the even solutions are also listed.
- [2] An incorrect quadratic equation is shown, but it is solved appropriately.
- or*
- [2] Integers are misrepresented, but the subsequent quadratic equation is solved appropriately.
- or*
- [2] An appropriate equation is written and solved, but more than one computational error is made.
- or*
- [2] The correct solution is given, but only one trial is shown with appropriate checks when a trial-and-error method is used.
- [1] A linear equation is solved appropriately.
- or*
- [1] 3, 5, and 7, 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.

MATHEMATICS A – *continued*

- (32) [4] \$148.54, and appropriate work is shown.
- [3] The correct pre-tax amount of \$137.54 is found, but no tax or an incorrect tax is shown.
- or***
- [3] Appropriate work is shown, but one computational error is made.
- [2] The correct area of 46 ft^2 is found, but no cost is shown.
- or***
- [2] Appropriate work is shown, but more than one computational error is made.
- or***
- [2] An incorrect area is determined, such as by adding or multiplying all sides, but then a final cost including tax is determined appropriately.
- [1] An incorrect area is shown, and one computational error is made.
- or***
- [1] \$148.54, 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) [4] \$5 for the sprayer and \$10 for the generator, and appropriate work is shown, such as x = hourly cost of sprayer and y = hourly cost of generator, and an appropriate system of equations is solved or a trial-and-error method is used, showing at least two trials with appropriate checks.

[3] Both correct equations are shown or an appropriate chart or trial-and-error method is used, but one computational error is made.

or

[3] Both correct equations are shown, and they are solved for one value, but no further work is shown.

[2] Only one of the two equations is correct, but they are solved appropriately for both values.

or

[2] Both correct equations are shown, but more than one computational error is made.

or

[2] \$5 for the sprayer and \$10 for the generator, but only one trial is shown with appropriate checks.

[1] Both equations are incorrect, but they are solved appropriately for both values.

or

[1] Both correct equations are shown, but they are not solved.

or

[1] \$5 for the sprayer and \$10 for the generator, 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] 260, and appropriate work is shown, such as applying the appropriate area formula, $A = \frac{1}{2}bh$ or $A = \frac{1}{2}h(b_1 + b_2)$, to find the length of \overline{AE} and using the Pythagorean theorem or stating the Pythagorean triple to determine AB .

[3] 300, because \overline{BE} is added to the perimeter.

or

[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] Only AB and AE are determined correctly.

[1] Only AB or AE is determined correctly.

or

[1] 260, 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) [4] $S'(0,6)$, $U'(-3,5)$, $N'(-3,0)$, and the correct graphs of both triangles are shown.
- [3] The correct graphs of both triangles are shown, but the coordinates of $\triangle S'U'N'$ are not stated correctly.
- or*
- [3] $\triangle SUN$ is graphed and labeled correctly, and the coordinates of $\triangle S'U'N'$ are stated correctly but not graphed correctly.
- or*
- [3] The coordinates of $\triangle S'U'N'$ are graphed and stated correctly, but $\triangle SUN$ is not graphed or labeled.
- or*
- [3] $\triangle SUN$ is graphed incorrectly, but the graph and the coordinates of $\triangle S'U'N'$ are appropriate, based on that error.
- [2] $\triangle S'U'N'$ is graphed correctly, but the coordinates of $\triangle S'U'N'$ are not stated, and $\triangle SUN$ is not graphed.
- or*
- [2] $\triangle SUN$ is graphed and labeled correctly, but $\triangle S'U'N'$ is reflected in the x -axis, and the coordinates $S'(0,-6)$, $U'(3,-5)$, $N'(3,0)$ are stated.
- or*
- [2] $\triangle SUN$ is graphed incorrectly, but $\triangle S'U'N'$ is graphed appropriately, based on that error, but the coordinates of $\triangle S'U'N'$ are not stated.
- [1] $\triangle SUN$ is graphed and labeled correctly, but no other work or completely incorrect work for $\triangle S'U'N'$ is shown.
- or*
- [1] $\triangle S'U'N'$ is graphed correctly, but the coordinates of $\triangle S'U'N'$ are not stated, and $\triangle SUN$ is not graphed or is graphed incorrectly.
- or*
- [1] $S'(0,6)$, $U'(-3,5)$, $N'(-3,0)$, but no work or graph 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.
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MATHEMATICS A

Map to Learning Standards

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

Regents Examination in Mathematics A

June 2001

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	77	27	39
84	99	55	76	26	38
83	99	54	75	25	36
82	99	53	73	24	35
81	98	52	72	23	34
80	97	51	71	22	32
79	97	50	70	21	31
78	96	49	69	20	29
77	96	48	67	19	28
76	95	47	66	18	26
75	94	46	65	17	25
74	93	45	64	16	23
73	93	44	62	15	22
72	92	43	61	14	20
71	91	42	60	13	19
70	90	41	59	12	18
69	90	40	57	11	16
68	89	39	56	10	15
67	88	38	55	9	13
66	87	37	53	8	12
65	86	36	52	7	10
64	85	35	51	6	9
63	84	34	49	5	7
62	83	33	48	4	6
61	82	32	46	3	4
60	81	31	45	2	3
59	80	30	44	1	1
58	79	29	42	0	0
57	78	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.