

FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS A

Tuesday, January 23, 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 the Regents Examination in Mathematics A*.

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) 3	(11) 2	(16) 4
(2) 1	(7) 4	(12) 1	(17) 4
(3) 4	(8) 2	(13) 2	(18) 1
(4) 3	(9) 1	(14) 3	(19) 3
(5) 2	(10) 3	(15) 2	(20) 4

Part II

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

(21) *a* [1] *B*, and an appropriate explanation is given.

b [1] 5 minutes

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.

(22) [2] \$40, and appropriate work is shown.

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

or

[1] \$40, 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) *a* [1] Either $(x - 2)(x + 1)(2x) = V$ or the same expression without “= *V*” is shown.

or

[1] $2x^3 - 2x^2 - 4x$ or an equivalent expression is shown.

b [1] 864

or

[1] The student substitutes appropriately into an incorrect part *a* equation.

[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] A' (0,–2) and B' (4,–6) are stated, and an appropriate graph is drawn.

[1] Only one endpoint, A' or B' , is graphed and stated correctly.

or

[1] Both endpoints are reflected in other than the x -axis, and the coordinates are graphed and stated correctly, such as:

y -axis A' (0,2) and B' (–4,6)

$y = x$ A' (2,0) and B' (6,4)

Origin A' (0,–2) and B' (–4,–6)

or

[1] Both points A' and B' are stated correctly, but no graph is drawn.

or

[1] An appropriate graph is drawn, but no coordinates or incorrect coordinates are labeled.

[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] 5, and appropriate work is shown, such as solving the linear equation $80x + 100x = 900$, using a diagram or proportion or trial and error.

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

or

[1] 5, 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.

- (26) [3] $\frac{8}{20}$ or an equivalent answer, and appropriate work is shown, such as using a tree diagram or writing the equation $\frac{6}{20} + \frac{2}{20} = \frac{8}{20}$.

[2] One computational error is made in finding $\frac{6}{20}$ or $\frac{2}{20}$, but an appropriate sum is found.

or

[2] $\frac{2}{20}$ and $\frac{6}{20}$ are found, but no sum is shown.

[1] $\frac{6}{20}$ or $\frac{2}{20}$, and appropriate work is shown.

or

[1] An appropriate answer is found, using replacement with a tree diagram or an equation such as $\frac{3}{5} \cdot \frac{3}{5} + \frac{2}{5} \cdot \frac{2}{5} = \frac{13}{25}$.

or

[1] $\frac{8}{20}$, 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.

- (27) a [2] A correct sketch is drawn that shows two possible locations, such as parallel lines and a perpendicular bisector. Students can draw their own sketch or use the diagram given.

[1] A correct sketch is drawn, but with no indication of where the treasure is buried.

or

[1] A partial sketch is drawn, showing either the distances from the fence or the distance from the trees.

b [1] 5 feet

or

[1] An appropriate answer is found for an incorrect 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.

- (28) [3] 120, and appropriate work is shown, such as $6t + 30 + 8t - 60 = 180$.
 [2] The student finds correctly the unknown, $t = 15$, but does not find the measure of angle 4.

or

- [2] Appropriate work is shown, but one computational error is made.
 [1] The student forms an incorrect equation, such as setting the two angles equal, and arrives at $t = 45$ and an angle of 300.

or

- [1] 120, 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) [3] At least one example is shown that makes the statement true, such as 2, 3, 5, 7, 9, or a defined variable; and one example is shown that makes the statement false, such as any even number other than 2, with a correct explanation that shows that the student can recognize odd numbers and prime numbers. The explanation can be in words or as a Venn diagram.

- [2] Two correct examples are shown, one that shows the statement is true and one that shows the statement is false, but no explanation or an inappropriate explanation is given.

or

- [2] Only one correct example is shown, but an appropriate explanation is given.
 [1] Only one correct example is shown, and 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.

MATHEMATICS A – *continued*

- (30) [3] 20, and appropriate work is shown, such as an equation, trial and error, or a graph.
- [2] Appropriate work is shown, such as $12.95 + 0.25x = 14.95 + 0.15x$, but one computational error is made.
- or***
- [2] Appropriate work is shown, but an answer of \$17.95 is found.
- or***
- [2] 20, and only a check is shown.
- [1] The student starts appropriate work to find when the prices are equal but does not complete it, such as starting to solve the correct equation, showing one incorrect trial, or drawing an incomplete graph.
- 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.
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Part IV

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

(31) [4] 2 and -3 , and a correct quadratic equation is shown, such as $x(x + 1) = 6$, and solved algebraically.

[3] The student shows a correct quadratic equation but makes one algebraic error and carries it to solution or no solution for the equation generated.

or

[3] Correct work is shown, but only one root is found as the answer.

[2] A correct quadratic equation is used, but two or more errors are made.

or

[2] An incorrect quadratic equation of equal difficulty is shown and solved appropriately.

[1] The student cross multiplies but produces only a linear equation that is solved appropriately.

or

[1] 2 and -3 , but no algebraic 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] The student draws a histogram, a stem-and-leaf plot, or any other acceptable statistical graph, with proper labels and a title.
- [3] The student makes one or two minor errors, such as a lack of label, title, or connected dots.
- [2] The student makes several minor errors or one major error, such as not accounting for all 20 scores.
- [1] The student draws just the beginning of a graph.
- [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- (33) *a* [2] The student draws a circle with its center at (0,0) and a radius of 3.
- [1] The student draws a circle, but it has an incorrect center or radius.
- b* [2] 28, and appropriate work or the expression 9π is shown, which rounds to 28.
- or***
- [2] An appropriate area is shown for the incorrect figure in part *a*.
- [1] The correct expression is shown, but the answer is left as 9π , not rounded, or not rounded correctly.
- or***
- [1] An incorrect radius is used, but the area is rounded appropriately.
- 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.

- (34) *a* [2] The student writes an appropriate system of equations, such as $b = f + 100$ and $4b + 12f = 3,056$, and defines the variables.

or

- [2] The student writes an appropriate equation, such as $4(100 + x) + 12x = 3,056$, and defines the variable.

- [1] A correct equation or correct equations are shown, but the variables are not defined.

or

- [1] One error is made in the setup, such as $b + f = 100$.

- [0] The student only defines the variables.

- b* [2] 266, and appropriate work is shown, using an algebraic solution or a correct trial-and-error method.

or

- [2] Appropriate work is shown for an incorrect part *a* equation or system of equations.

- [1] Work is shown, but the answer is inappropriate, such as \$1,064.

or

- [1] 266, 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.

(35) [4] 28.2, and an appropriate equation is shown, such as $\tan 62 = \frac{x}{15}$.

[3] Appropriate work is shown, but the answer is rounded incorrectly.

or

[3] The student uses the correct tangent function and rounds the answer, but makes one computational error.

[2] The student uses the correct tangent function, but makes several errors.

or

[2] An incorrect trigonometric function is used, but appropriate work is shown.

[1] The tangent function is indicated, but the ratio is set up incorrectly.

or

[1] 28.2, 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.

MATHEMATICS A

Map to Learning Standards

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

Regents Examination in Mathematics A

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

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.