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

Print Your Name:

Print Your School's Name:

Print your name and the name of your school in the boxes 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.

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. Any work done on this sheet of scrap graph paper will *not* be scored. All work should be written in pen, except graphs and drawings, which should be done in pencil.

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. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc.

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 minimum of a scientific calculator, a straightedge (ruler), and a compass must be available for your use while taking this examination.

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

Part I

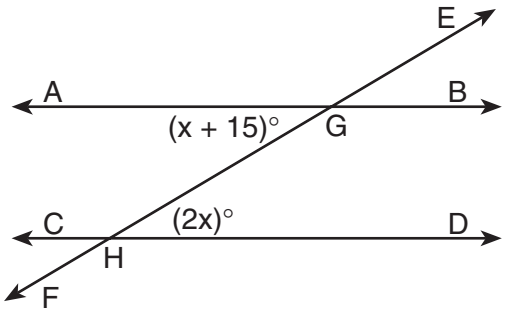
Answer all questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. For each question, write on the separate answer sheet the numeral preceding the word or expression that best completes the statement or answers the question. [60]

Use this space for computations.

1 If $2(x + 3) = x + 10$, then x equals

(1) 14
(2) 7
(3) 5
(4) 4

2 In the accompanying diagram, parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are intersected by transversal $\overleftrightarrow{EF}$ at points G and H, respectively, $m\angle AGH = x + 15$, and $m\angle GHD = 2x$.



Which equation can be used to find the value of x?

(1) $2x = x + 15$
(2) $2x + x + 15 = 180$
(3) $2x + x + 15 = 90$
(4) $2x(x + 15) = 0$

3 On February 18, from 9 a.m. until 2 p.m., the temperature rose from –14°F to 36°F. What was the total increase in temperature during this time period?

(1) 50°
(2) 36°
(3) 32°
(4) 22°

4 Which statement about quadrilaterals is true?

(1) All quadrilaterals have four right angles.
(2) All quadrilaterals have equal sides.
(3) All quadrilaterals have four sides.
(4) All quadrilaterals are parallelograms.

Use this space for computations.

5 In a school building, there are 10 doors that can be used to enter the building and 8 stairways to the second floor. How many different routes are there from outside the building to a class on the second floor?

(1) 1
(2) 10
(3) 18
(4) 80

6 What is the value of $\frac{x^2 - 4y}{2}$, if $x = 4$ and $y = -3$?

(1) –2
(2) 2
(3) 10
(4) 14

7 Given the true statements: "Jason goes shopping or he goes to the movies" and "Jason does not go to the movies."

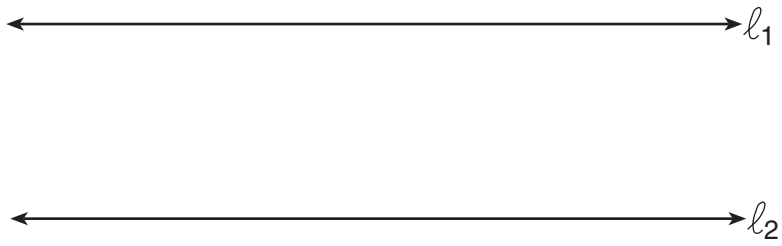
Which statement must also be true?

(1) Jason stays home.
(2) Jason goes shopping.
(3) Jason does not go shopping.
(4) Jason does not go shopping and he does not go to the movies.

8 An equation of the line that has a slope of 3 and a y-intercept of –2 is

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

9 In the accompanying diagram, line ℓ_1 is parallel to line ℓ_2.

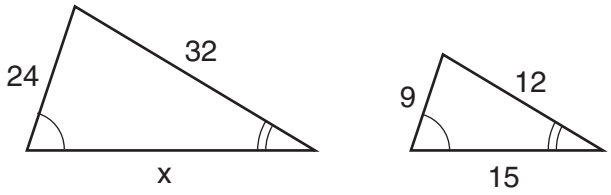


Which term describes the locus of all points that are equidistant from line ℓ_1 and line ℓ_2?

(1) line
(2) circle
(3) point
(4) rectangle

10 The accompanying diagram shows two similar triangles.

Use this space for computations.



Which proportion could be used to solve for x?

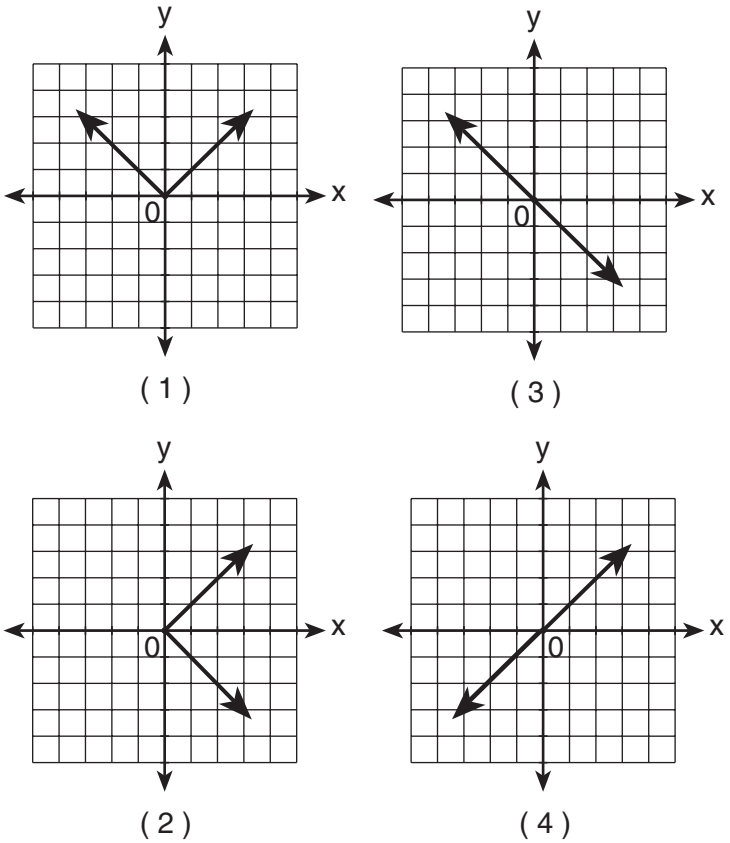
(1) $\frac{x}{24} = \frac{9}{15}$

(2) $\frac{24}{9} = \frac{15}{x}$

(3) $\frac{32}{x} = \frac{12}{15}$

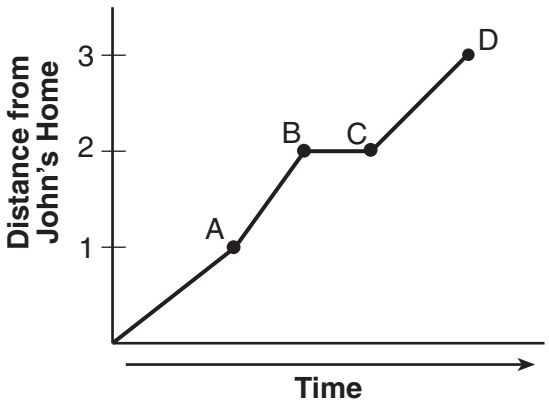
(4) $\frac{32}{12} = \frac{15}{x}$

11 Which graph is symmetric with respect to the y-axis?



12 John left his home and walked 3 blocks to his school, as shown in the accompanying graph.

Use this space for computations.



What is one possible interpretation of the section of the graph from point *B* to point *C*?

(1) John arrived at school and stayed throughout the day.
(2) John waited before crossing a busy street.
(3) John returned home to get his mathematics homework.
(4) John reached the top of a hill and began walking on level ground.

13 The expression $8^{-4} \bullet 8^{6}$ is equivalent to

(1) 8^{-24}
(2) 8^{-2}
(3) 8^{2}
(4) 8^{10}

14 What is a common factor of $x^2 - 9$ and $x^2 - 5x + 6$?

(1) $x + 3$
(2) $x - 3$
(3) $x - 2$
(4) x^2

15 Which statement is the converse of "If the sum of two angles is 180°, then the angles are supplementary"?

(1) If two angles are supplementary, then their sum is 180°.
(2) If the sum of two angles is not 180°, then the angles are not supplementary.
(3) If two angles are not supplementary, then their sum is not 180°.
(4) If the sum of two angles is not 180°, then the angles are supplementary.

16 Which number is irrational?

Use this space for computations.

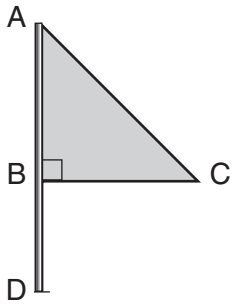
(1) $\sqrt{9}$

(2) $\sqrt{8}$

(3) 0.3333

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

17 Triangle *ABC* represents a metal flag on pole *AD*, as shown in the accompanying diagram. On a windy day the triangle spins around the pole so fast that it looks like a three-dimensional shape.



Which shape would the spinning flag create?

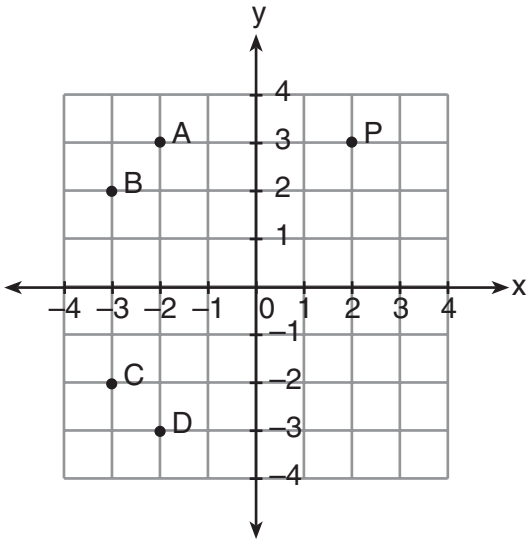
(1) sphere

(2) pyramid

(3) right circular cylinder

(4) cone

18 In the accompanying graph, if point *P* has coordinates (a,b), which point has coordinates $(-b,a)$?



(1) *A*

(2) *B*

(3) *C*

(4) *D*

19 What is the solution set of the equation $3x^2 - 34x - 24 = 0$?

(1) $\{-2,6\}$

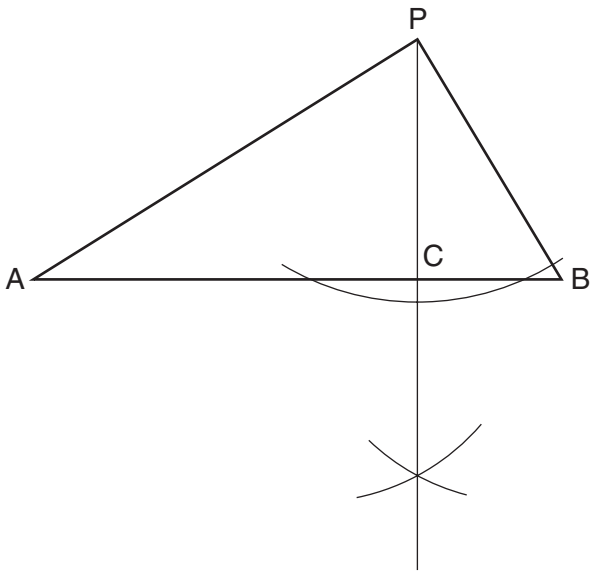
(2) $\{-12,\frac{2}{3}\}$

(3) $\{-\frac{2}{3},12\}$

(4) $\{-6,2\}$

Use this space for computations.

20 In the accompanying diagram of a construction, what does $\overline{PC}$ represent?



(1) an altitude drawn to $\overline{AB}$

(2) a median drawn to $\overline{AB}$

(3) the bisector of $\angle APB$

(4) the perpendicular bisector of $\overline{AB}$

21 If $2ax - 5x = 2$, then x is equivalent to

(1) $\frac{2 + 5a}{2a}$

(2) $\frac{1}{a-5}$

(3) $\frac{2}{2a-5}$

(4) $7 - 2a$

22 If $a > 0$, then $\sqrt{9a^2 + 16a^2}$ equals

(1) $\sqrt{7a}$

(2) $5\sqrt{a}$

(3) $5a$

(4) $7a$

Use this space for computations.

23 What is the sum of $\frac{2}{x}$ and $\frac{x}{2}$?

(1) 1

(2) $\frac{2 + x}{2x}$

(3) $\frac{4 + x}{2x}$

(4) $\frac{4 + x^2}{2x}$

24 Five people have volunteered to work on an awards dinner at Madison High School. How many different committees of four can be formed from the five people?

(1) 1

(2) 5

(3) 10

(4) 20

25 The inequality $\frac{1}{2}x + 3 < 2x - 6$ is equivalent to

(1) $x < -\frac{5}{6}$

(2) $x > -\frac{5}{6}$

(3) $x < 6$

(4) $x > 6$

26 In the coordinate plane, the points (2,2) and (2,12) are the endpoints of a diameter of a circle. What is the length of the radius of the circle?

(1) 5

(2) 6

(3) 7

(4) 10

27 Which expression represents the number of yards in x feet?

(1) $\frac{x}{12}$

(2) $\frac{x}{3}$

(3) $3x$

(4) $12x$

28 Which equation illustrates the associative property of addition?

(1) $x + y = y + x$
(2) $3(x + 2) = 3x + 6$
(3) $(3 + x) + y = 3 + (x + y)$
(4) $3 + x = 0$

Use this space for computations.

29 If $2x^2 - x + 6$ is subtracted from $x^2 + 3x - 2$, the result is

(1) $x^2 + 2x - 8$
(2) $x^2 - 4x + 8$
(3) $-x^2 + 2x - 8$
(4) $-x^2 + 4x - 8$

30 The expression $(a^2 + b^2)^2$ is equivalent to

(1) $a^4 + b^4$
(2) $a^4 + a^2b^2 + b^4$
(3) $a^4 + 2a^2b^2 + b^4$
(4) $a^4 + 4a^2b^2 + b^4$

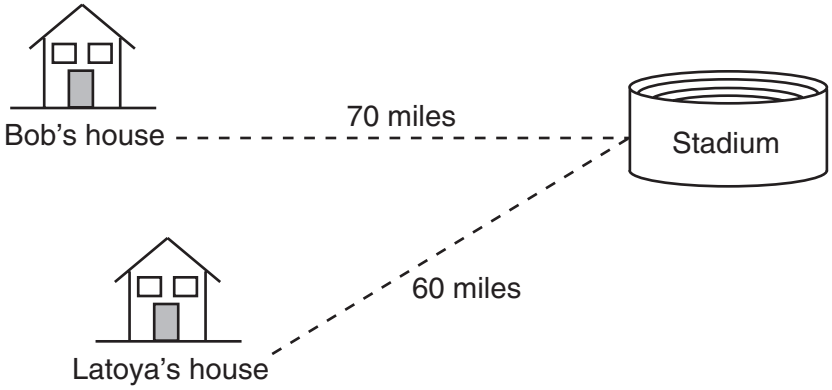
Part II

Answer all questions in this part. Each correct answer will receive 2 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. [10]

31 Julio's wages vary directly as the number of hours that he works. If his wages for 5 hours are $29.75, how much will he earn for 30 hours?

32 TOP Electronics is a small business with five employees. The mean (average) weekly salary for the five employees is $360. If the weekly salaries of four of the employees are $340, $340, $345, and $425, what is the salary of the fifth employee?

33 Bob and Latoya both drove to a baseball game at a college stadium. Bob lives 70 miles from the stadium and Latoya lives 60 miles from it, as shown in the accompanying diagram. Bob drove at a rate of 50 miles per hour, and Latoya drove at a rate of 40 miles per hour. If they both left home at the same time, who got to the stadium first?



34 A car dealer has 22 vehicles on his lot. If 8 of the vehicles are vans and 6 of the vehicles are red, and 10 vehicles are neither vans nor red, how many red vans does he have on his lot?

35 In Jackson County, Wyoming, license plates are made with two letters (*A* through *Z*) followed by three digits (0 through 9). The plates are made according to the following restrictions:

- the first letter must be *J* or *W*, and the second letter can be any of the 26 letters in the alphabet
- no digit can be repeated

How many different license plates can be made with these restrictions?

Part III

Answer all questions in this part. Each correct answer will receive 3 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. [6]

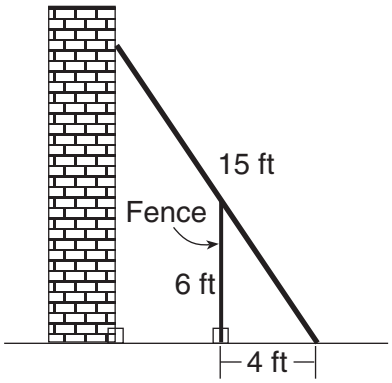
36 Using only 32-cent and 20-cent stamps, Charlie put $3.36 postage on a package he sent to his sister. He used twice as many 32-cent stamps as 20-cent stamps. Determine how many of *each* type of stamp he used.

37 A wheel has a radius of 5 feet. What is the minimum number of *complete* revolutions that the wheel must make to roll at least 1,000 feet?

Part IV

Answer all 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. [8]

38 In the accompanying diagram, the base of a 15-foot ladder rests on the ground 4 feet from a 6-foot fence.



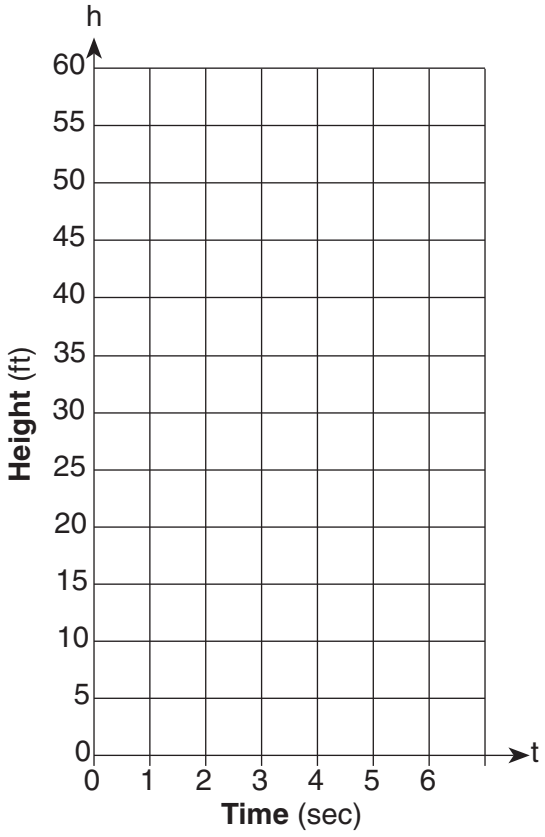
a If the ladder touches the top of the fence and the side of a building, what angle, to the *nearest degree*, does the ladder make with the ground?

b Using the angle found in part *a*, determine how far the top of the ladder reaches up the side of the building, to the *nearest foot*.

39 Tom throws a ball into the air. The ball travels on a parabolic path represented by the equation $h = -8t^2 + 40t$, where h is the height, in feet, and t is the time, in seconds.

a On the accompanying set of axes, graph the equation from $t = 0$ to $t = 5$ seconds, including all integral values of t from 0 to 5.

b What is the value of t at which h has its greatest value?



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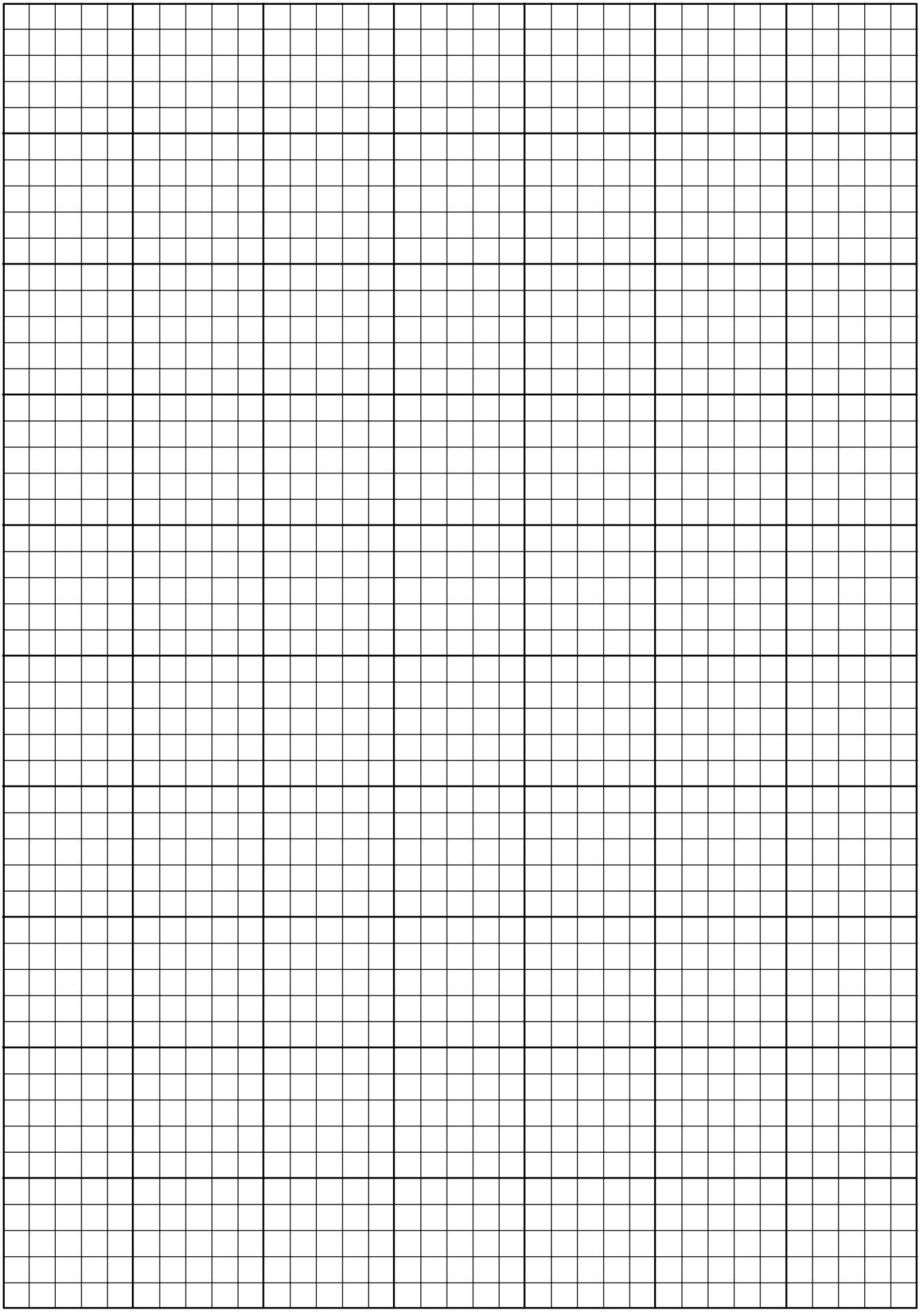
Scrap Graph Paper — This sheet will *not* be scored.



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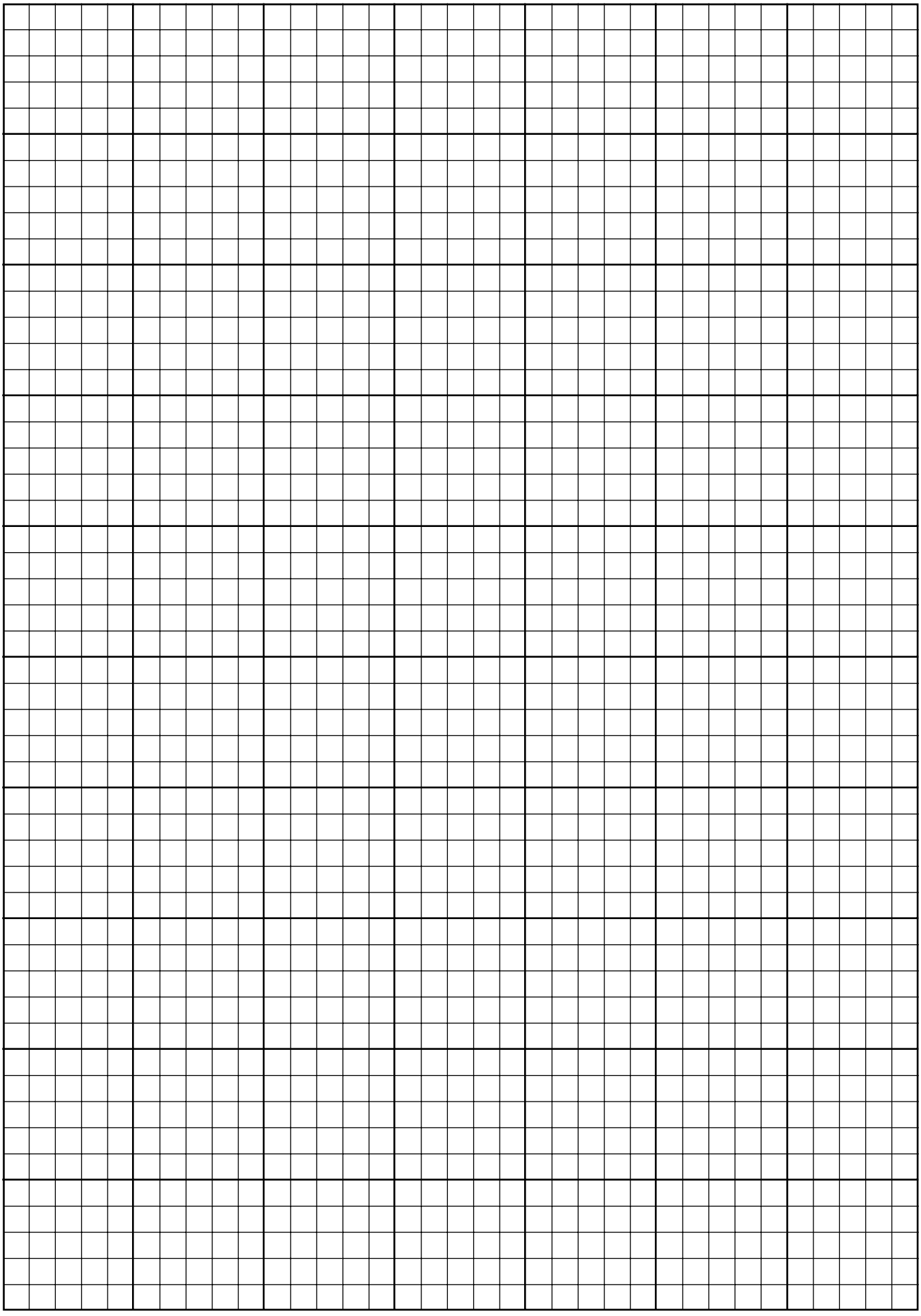

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The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS A

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

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 should 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.

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Signature

MATHEMATICS A			
Question	Maximum Credit	Credits Earned	Rater's/Scorer's Initials
Part I 1–30	60		
Part II 31	2		
32	2		
33	2		
34	2		
35	2		
Part III 36	3		
37	3		
Part IV 38	4		
39	4		
Maximum Total	84		

Rater's/Scorer's Name (minimum of three)

Total Raw Score | Checked by | Scaled Score

Notes to raters. . .

- **Each paper should be scored by a minimum of three raters.**
- **The table for converting the total raw score to the scaled score is provided in the scoring key for this examination.**
- **The scaled score is the student's final examination score.**

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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 $\frac{1450 + x}{5} = 360$ 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.

(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.

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[5]

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.

University of the State of New York
State Education Department

Regents Examination in Mathematics A
January 2004

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
84	100	55	80	27	54
83	99	54	79	26	52
82	98	53	78	25	51
81	97	52	78	24	49
80	97	51	77	23	48
79	96	50	76	22	46
78	95	49	76	21	45
77	94	48	75	20	43
76	94	47	74	19	42
75	93	46	73	18	40
74	92	45	72	17	38
73	92	44	72	16	36
72	91	43	71	15	34
71	90	42	70	14	33
70	90	41	69	13	31
69	89	40	68	12	29
68	88	39	67	11	27
67	88	38	66	10	24
66	87	37	65	9	22
65	86	36	64	8	20
64	86	35	63	7	18
63	85	34	62	6	15
62	84	33	61	5	13
61	84	32	60	4	11
60	83	31	59	3	8
59	82	30	57	2	5
58	82	29	56	1	3
57	81	28	55	0	0
56	80				

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.