The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS B

Wednesday, August 13, 2003 — 8:30 to 11:30 a.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. Write all your work in pen, except graphs and drawings, which should be done in pencil.

This examination has four parts, with a total of 34 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. The formulas that you may need to answer some questions in this examination are found on page 19.

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

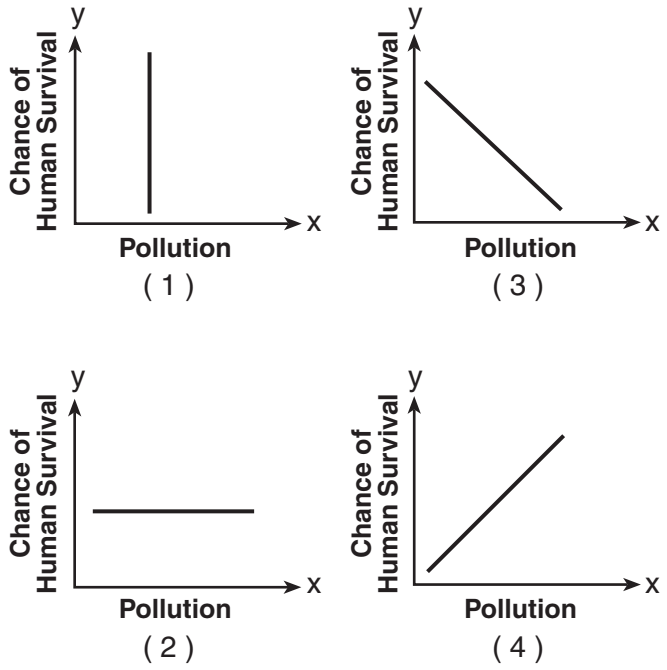
DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.

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. [40]

1 Which graph does *not* represent a function of x?

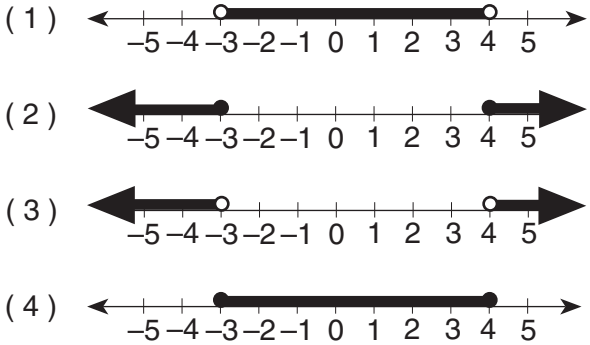
Use this space for computations.



2 What is the value of x in the equation $\sqrt{5-2x} = 3i$?

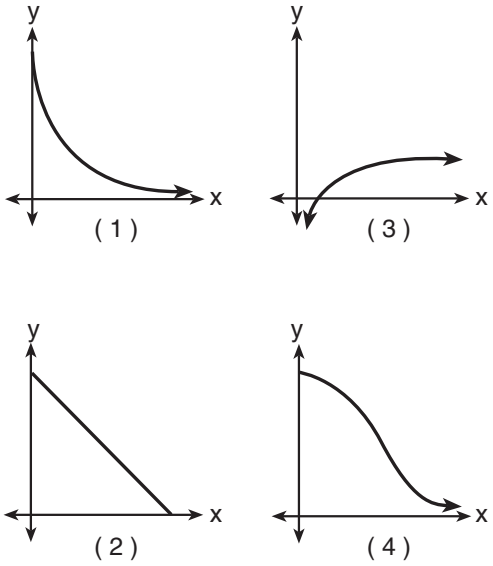
(1) 1
(2) 7
(3) –2
(4) 4

3 Which graph represents the solution set of $|2x - 1| < 7$?



4 The strength of a medication over time is represented by the equation $y = 200(1.5)^{-x}$, where x represents the number of hours since the medication was taken and y represents the number of micrograms per millimeter left in the blood. Which graph best represents this relationship?

Use this space for computations.



5 Written in simplest form, the expression $\frac{x^2y^2 - 9}{3 - xy}$ is equivalent to

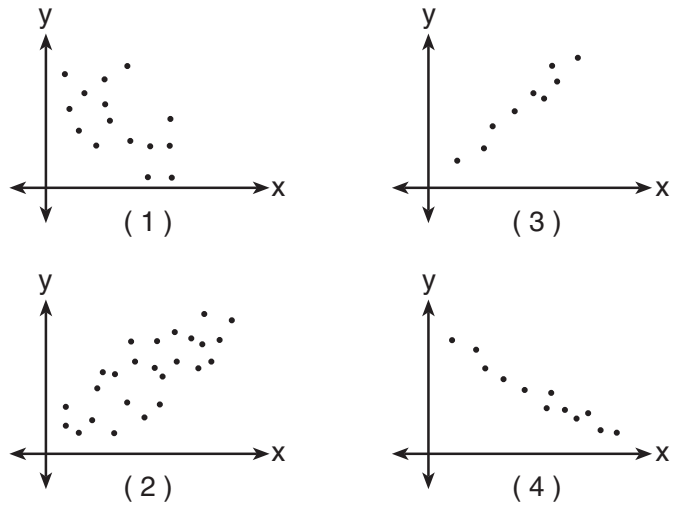
(1) -1

(2) $\frac{1}{3 + xy}$

(3) $-(3 + xy)$

(4) $3 + xy$

6 Which graph represents data used in a linear regression that produces a correlation coefficient closest to –1?



Use this space for computations.

7 Which expression is equal to $\frac{2+\sqrt{3}}{2-\sqrt{3}}$?

(1) $\frac{1-4\sqrt{3}}{7}$

(2) $\frac{7+4\sqrt{3}}{7}$

(3) $1-4\sqrt{3}$

(4) $7+4\sqrt{3}$

8 Which transformation is *not* an isometry?

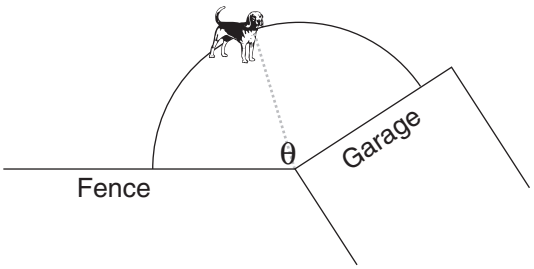
(1) rotation

(2) line reflection

(3) dilation

(4) translation

9 A dog has a 20-foot leash attached to the corner where a garage and a fence meet, as shown in the accompanying diagram. When the dog pulls the leash tight and walks from the fence to the garage, the arc the leash makes is 55.8 feet.



(Not drawn to scale)

What is the measure of angle θ between the garage and the fence, in radians?

(1) 0.36

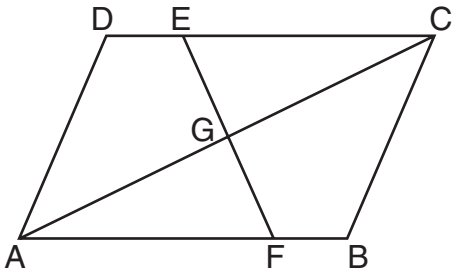
(2) 2.79

(3) 3.14

(4) 160

10 In the accompanying diagram of parallelogram $ABCD$, $\overline{DE} \cong \overline{BF}$.

Use this space for computations.



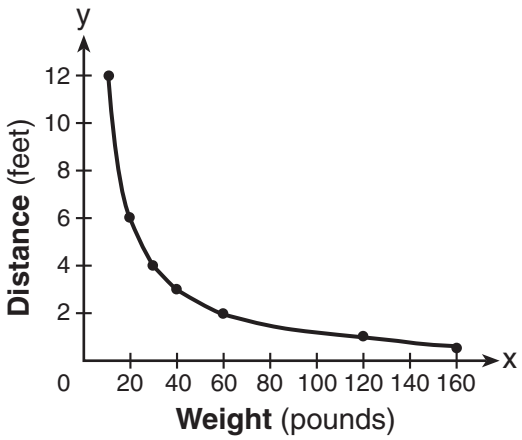
Triangle EGC can be proved congruent to triangle FGA by

(1) HL ≅ HL
(2) AAA ≅ AAA
(3) AAS ≅ AAS
(4) SSA ≅ SSA

11 An architect commissions a contractor to produce a triangular window. The architect describes the window as $\triangle ABC$, where $m\angle A = 50$, $BC = 10$ inches, and $AB = 12$ inches. How many distinct triangles can the contractor construct using these dimensions?

(1) 1
(2) 2
(3) more than 2
(4) 0

12 The accompanying graph shows the relationship between a person's weight and the distance that the person must sit from the center of a seesaw to make it balanced.



Which equation best represents this graph?

(1) $y = 12x^2$
(2) $y = -120x$
(3) $y = 2 \log x$
(4) $y = \frac{120}{x}$

Use this space for computations.

13 If f and g are two functions defined by $f(x) = 3x + 5$ and $g(x) = x^2 + 1$, then $g(f(x))$ is

(1) $x^2 + 3x + 6$
(2) $9x^2 + 30x + 26$
(3) $3x^2 + 8$
(4) $9x^2 + 26$

14 What is the product of $5 + \sqrt{-36}$ and $1 - \sqrt{-49}$, expressed in simplest $a + bi$ form?

(1) $-37 + 41i$
(2) $5 - 71i$
(3) $47 + 41i$
(4) $47 - 29i$

15 The expression $\frac{2 \cos \theta}{\sin 2\theta}$ is equivalent to

(1) $\csc \theta$
(2) $\sec \theta$
(3) $\cot \theta$
(4) $\sin \theta$

16 If $\sin x = \frac{12}{13}$, $\cos y = \frac{3}{5}$, and x and y are acute angles, the value of $\cos (x - y)$ is

(1) $\frac{21}{65}$
(2) $\frac{63}{65}$
(3) $-\frac{14}{65}$
(4) $-\frac{33}{65}$

17 The amount of ketchup dispensed from a machine at Hamburger Palace is normally distributed with a mean of 0.9 ounce and a standard deviation of 0.1 ounce. If the machine is used 500 times, approximately how many times will it be expected to dispense 1 or more ounces of ketchup?

(1) 5
(2) 16
(3) 80
(4) 100

18 A commercial artist plans to include an ellipse in a design and wants the length of the horizontal axis to equal 10 and the length of the vertical axis to equal 6. Which equation could represent this ellipse?

(1) $9x^2 + 25y^2 = 225$
(2) $9x^2 - 25y^2 = 225$
(3) $x^2 + y^2 = 100$
(4) $3y = 20x^2$

Use this space for computations.

19 A function is defined by the equation $y = \frac{1}{2}x - \frac{3}{2}$. Which equation defines the inverse of this function?

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

20 In the equation $ax^2 + 6x - 9 = 0$, imaginary roots will be generated if

(1) $-1 < a < 1$
(2) $a < 1$, only
(3) $a > -1$, only
(4) $a < -1$

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. [12]

21 The height, h, in feet, a ball will reach when thrown in the air is a function of time, t, in seconds, given by the equation $h(t) = -16t^2 + 30t + 6$. Find, to the *nearest tenth*, the maximum height, in feet, the ball will reach.

22 Find the value of $(x + 2)^0 + (x + 1)^{-\frac{2}{3}}$ when $x = 7$.

23 Express in simplest form: $\dfrac{\frac{x}{4} - \frac{4}{x}}{1 - \frac{4}{x}}$

24 The triangular top of a table has two sides of 14 inches and 16 inches, and the angle between the sides is 30°. Find the area of the tabletop, in square inches.

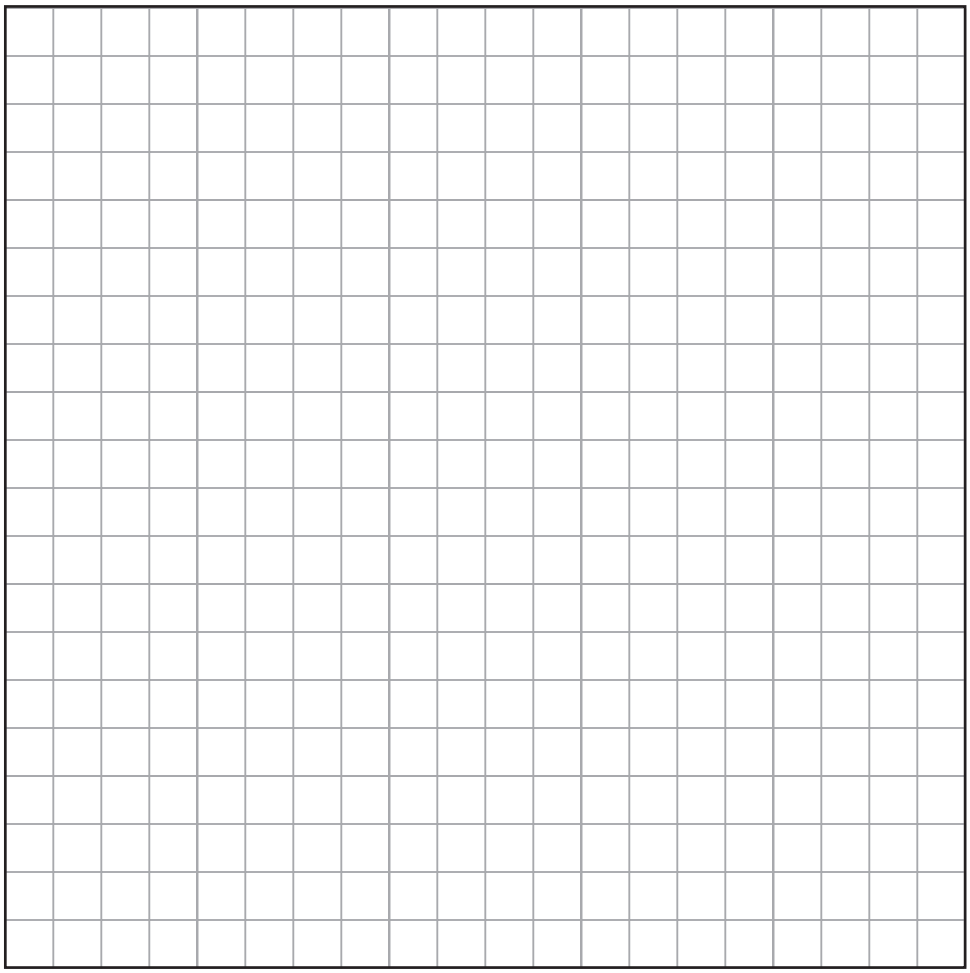
25 Meteorologists can determine how long a storm lasts by using the function $t(d) = 0.07d^{\frac{3}{2}}$, where d is the diameter of the storm, in miles, and t is the time, in hours. If the storm lasts 4.75 hours, find its diameter, to the *nearest tenth of a mile*.

26 Tom scored 23 points in a basketball game. He attempted 15 field goals and 6 free throws. If each successful field goal is 2 points and each successful free throw is 1 point, is it possible he successfully made all 6 of his free throws? Justify your answer.

Part III

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. [24]

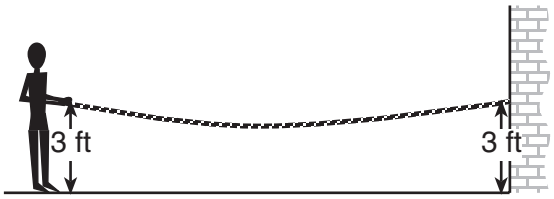
27 On the accompanying grid, graph and label $\overline{AB}$, where A is (0,5) and B is (2,0). Under the transformation $r_{x\text{-axis}} \circ r_{y\text{-axis}}(\overline{AB})$, A maps to A'', and B maps to B''. Graph and label $\overline{A''B''}$. What single transformation would map $\overline{AB}$ to $\overline{A''B''}$?



28 Express, in simplest $a + bi$ form, the roots of the equation $x^2 + 5 = 4x$.

29 A ship at sea is 70 miles from one radio transmitter and 130 miles from another. The angle between the signals sent to the ship by the transmitters is 117.4°. Find the distance between the two transmitters, to the *nearest mile*.

30 A student attaches one end of a rope to a wall at a fixed point 3 feet above the ground, as shown in the accompanying diagram, and moves the other end of the rope up and down, producing a wave described by the equation $y = a \sin bx + c$. The range of the rope's height above the ground is between 1 and 5 feet. The period of the wave is 4π. Write the equation that represents this wave.



31 The table below shows the results of an experiment that relates the height at which a ball is dropped, x, to the height of its first bounce, y.

Drop Height (x) (cm)	**Bounce Height (y)** (cm)
100	26
90	23
80	21
70	18
60	16

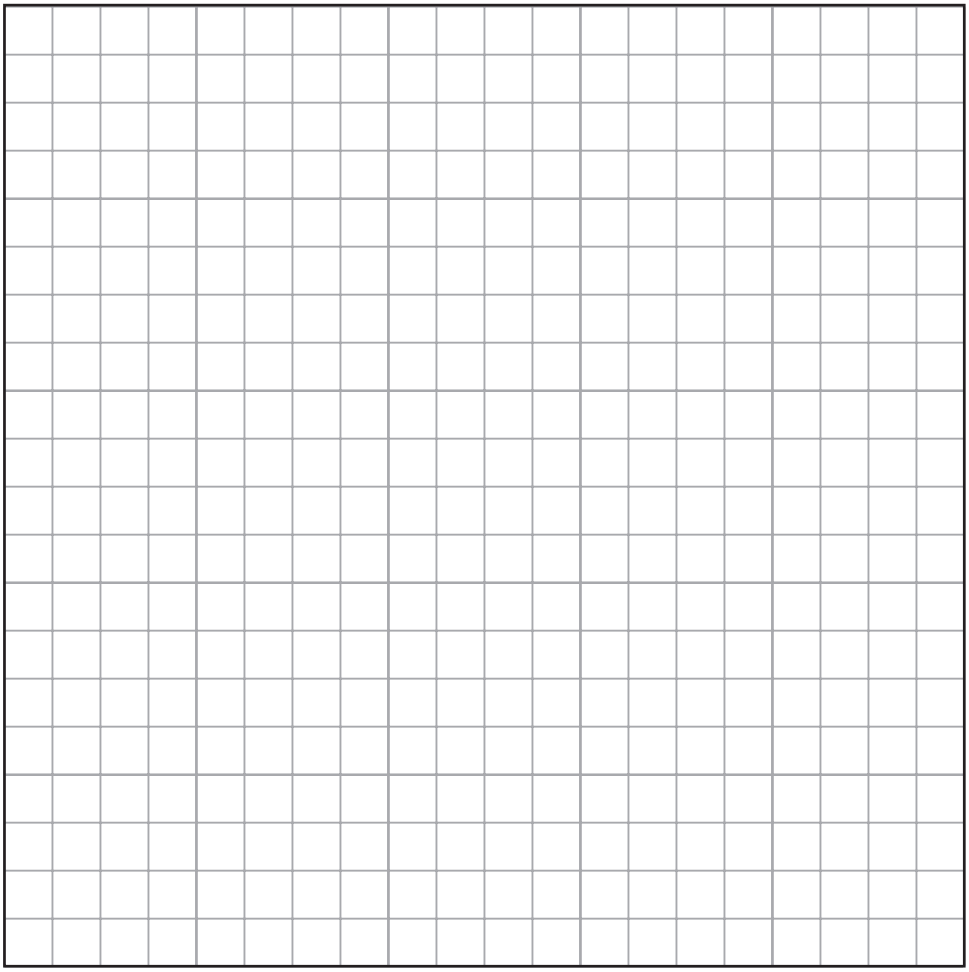
Find $\overline{x}$, the mean of the drop heights.

Find $\overline{y}$, the mean of the bounce heights.

Find the linear regression equation that best fits the data.

Show that $(\overline{x},\overline{y})$ is a point on the line of regression. [The use of the grid on the next page is optional.]

Question 31 continued



32 A company calculates its profit by finding the difference between revenue and cost. The cost function of producing x hammers is $C(x) = 4x + 170$. If each hammer is sold for \$10, the revenue function for selling x hammers is $R(x) = 10x$.

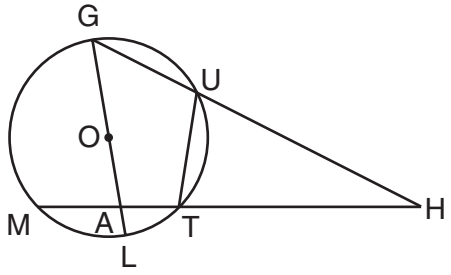
How many hammers must be sold to make a profit?

How many hammers must be sold to make a profit of \$100?

Part IV

Answer all questions in this part. Each correct answer will receive 6 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. [12]

33 Given circle O with diameter $\overline{GOAL}$; secants $\overline{HUG}$ and $\overline{HTAM}$ intersect at point H; $m\overset{\frown}{GM}:m\overset{\frown}{ML}:m\overset{\frown}{LT} = 7:3:2$; and chord $\overline{GU} \cong$ chord $\overline{UT}$. Find the ratio of $m\angle UGL$ to $m\angle H$.



34 When Joe bowls, he can get a strike (knock down all the pins) 60% of the time. How many times more likely is it for Joe to bowl *at least* three strikes out of four tries as it is for him to bowl zero strikes out of four tries? Round your answer to the *nearest whole number*.

Formulas

Area of Triangle

$K = \frac{1}{2}ab \sin C$

Functions of the Sum of Two Angles

$\sin (A + B) = \sin A \cos B + \cos A \sin B$
$\cos (A + B) = \cos A \cos B - \sin A \sin B$

Functions of the Difference of Two Angles

$\sin (A - B) = \sin A \cos B - \cos A \sin B$
$\cos (A - B) = \cos A \cos B + \sin A \sin B$

Law of Sines

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

Law of Cosines

$a^2 = b^2 + c^2 - 2bc \cos A$

Functions of the Double Angle

$\sin 2A = 2 \sin A \cos A$
$\cos 2A = \cos^2 A - \sin^2 A$
$\cos 2A = 2 \cos^2 A - 1$
$\cos 2A = 1 - 2 \sin^2 A$

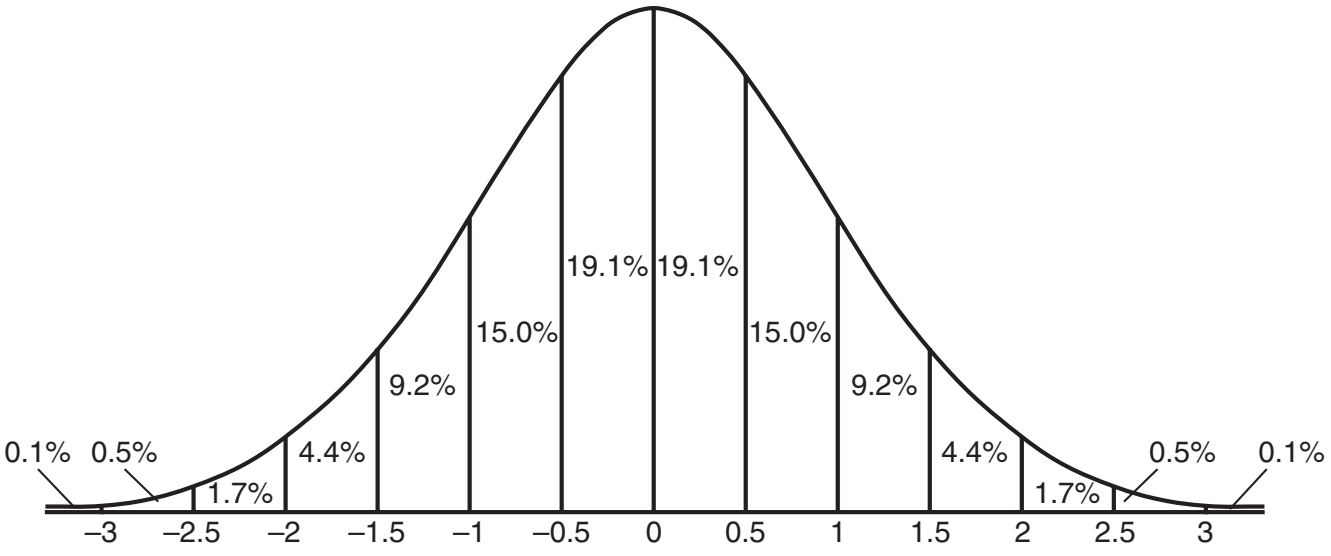
Functions of the Half Angle

$$\sin \tfrac{1}{2}A = \pm\sqrt{\frac{1-\cos A}{2}}$$

$$\cos \tfrac{1}{2}A = \pm\sqrt{\frac{1+\cos A}{2}}$$

Normal Curve

Standard Deviation



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

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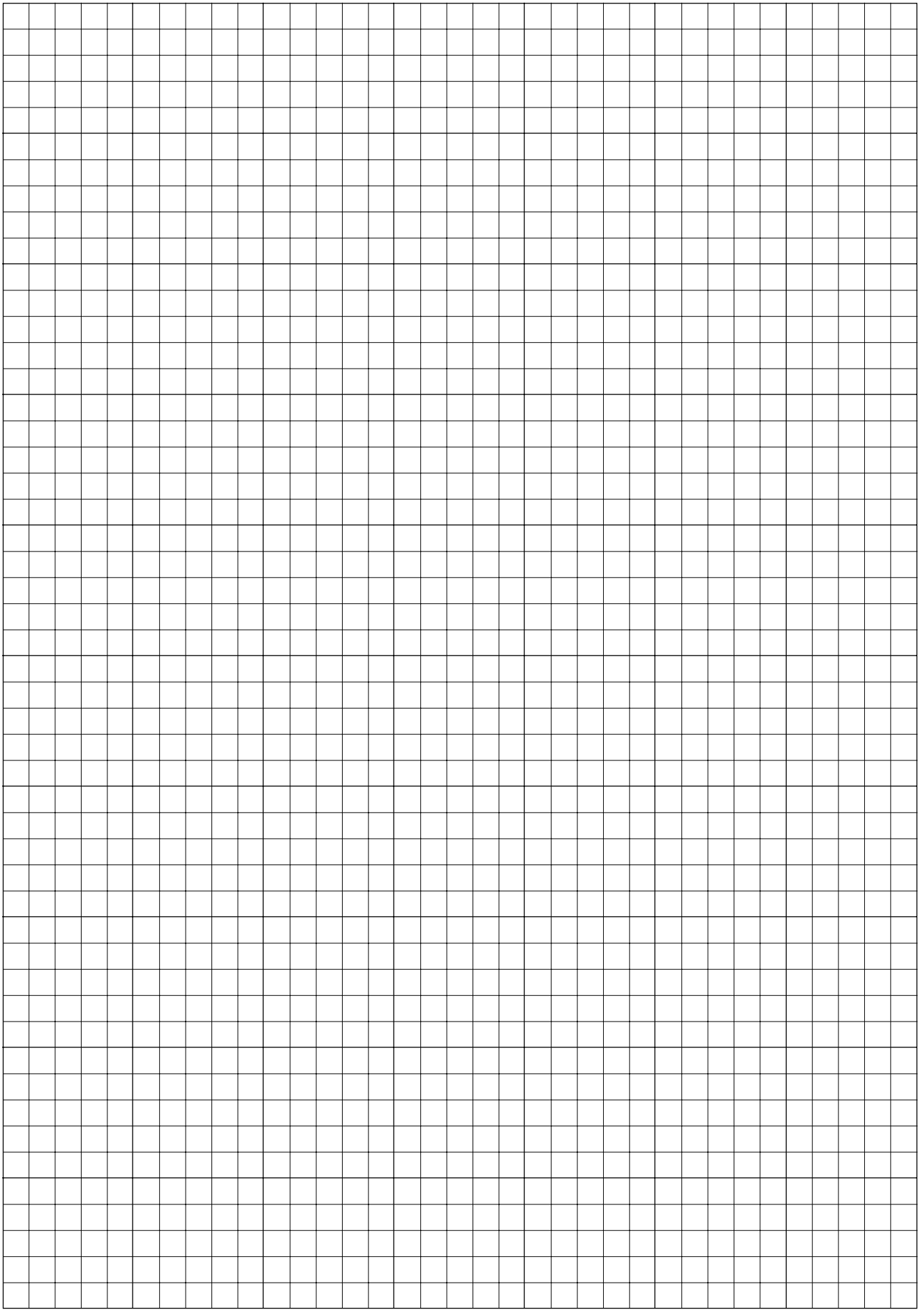

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The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS B

Wednesday, August 13, 2003 — 8:30 to 11:30 a.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 20 questions in this part.

1	6	11	16 .....
2	7	12	17 .....
3	8	13	18 .....
4	9	14	19 .....
5	10	15	20 .....

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.

Signature

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MATHEMATICS B			
Question	Maximum Credit	Credits Earned	Rater's/Scorer's Initials
Part I 1–20	40		
Part II 21	2		
22	2		
23	2		
24	2		
25	2		
26	2		
Part III 27	4		
28	4		
29	4		
30	4		
31	4		
32	4		
Part IV 33	6		
34	6		
Maximum Total	88		

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 B

Wednesday, August 13, 2003 — 8:30 to 11:30 a.m., only

SCORING KEY

Mechanics of Rating

The following procedures are to be followed for scoring student answer papers for the Mathematics B 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) 1	(6) 4	(11) 2	(16) 2
(2) 2	(7) 4	(12) 4	(17) 3
(3) 1	(8) 3	(13) 2	(18) 1
(4) 1	(9) 2	(14) 4	(19) 1
(5) 3	(10) 3	(15) 1	(20) 4

Part II

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

(21) **[2]** 20.1, and appropriate work is shown.

[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 time when the ball reaches its maximum height is found correctly, but no further correct work is shown.

or

[1] 20.1, 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.

(22) **[2]** $1\frac{1}{4}$ or an equivalent answer, and appropriate work is shown.

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

or

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

or

[1] $1\frac{1}{4}$ 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.

(23) **[2]** $\frac{x + 4}{4}$, and appropriate work is shown.

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

or

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

or

[1] $\frac{x + 4}{4}$, 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.

(24) **[2]** 56, and appropriate work is shown, such as $\frac{1}{2} \bullet 14 \bullet 16 \bullet \sin 30$.

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

or

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

or

[1] 56, 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]** 16.6, and appropriate work is shown.

[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] A correct substitution of 4.75 for t is made, but no further correct work is shown.

or

[1] 16.6, 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.

(26) **[2]** No, and a correct justification is given.

[1] No, but an incomplete or partially incorrect explanation is given.

[0] No, 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.

Part III

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

(27) **[4]** $\overline{AB}$ and $\overline{A''B''}$ are graphed and labeled correctly, $A''(0,-5)$ and $B''(-2,0)$, and a correct transformation is identified, such as $R_{180°}$, $R_{-180°}$, or $r_{(0,0)}$.

[3] One error is made in graphing $\overline{AB}$, but $\overline{A''B''}$ is graphed and labeled appropriately, and an appropriate transformation is identified.

[2] $\overline{AB}$ is graphed and labeled correctly but one mistake is made in finding $\overline{A''B''}$, but an appropriate transformation is identified.

or

[2] Both $\overline{AB}$ and $\overline{A''B''}$ are graphed and labeled correctly, but the transformation is missing or is incorrect.

[1] $\overline{AB}$ is graphed and labeled correctly, but one mistake is made in finding $\overline{A''B''}$, and the transformation is missing or is incorrect.

or

[1] One error is made in graphing $\overline{AB}$, but $\overline{A''B''}$ is graphed and labeled appropriately, but the transformation is missing or is incorrect.

or

[1] $R_{180°}$, $R_{-180°}$, or $r_{(0,0)}$, but no graph is drawn.

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

(28) **[4]** $2 \pm i$, and appropriate work is shown.

[3] Appropriate work is shown, but one computational error is made, but the result is expressed as a complex number in simplest $a + bi$ form.

or

[3] Appropriate work is shown, but the roots are not expressed in simplest $a + bi$ form.

or

[3] Appropriate work is shown, but only one complex root, in simplest $a + bi$ form, is found.

[2] Appropriate work is shown, but one computational error is made, resulting in a solution that is not a complex number.

or

[2] Appropriate work is shown, but two or more computational errors are made, but the result is expressed as a complex number in simplest $a + bi$ form.

or

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

or

[2] An incorrect quadratic formula is used, but the result is expressed as a complex number in simplest $a + bi$ form.

[1] Incorrect substitution is made into the quadratic formula, such as $a = 1$, $b = 5$, and $c = -4$, but the resulting equation is solved appropriately.

or

[1] $2 \pm i$, 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) **[4]** 174, and appropriate work is shown, such as the use of the Law of Cosines.

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

[2] Appropriate work is shown, but two or more computational or rounding errors are made.

or

[2] One conceptual error is made when applying the Law of Cosines, but an appropriate answer is found.

[1] Correct substitution is made into the Law of Cosines, but no further correct work is shown.

or

[1] 174, 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) **[4]** $y = 2 \sin \frac{1}{2}x + 3$ or $y = -2 \sin \frac{1}{2}x + 3$, and appropriate work is shown.

[3] The fact that c is equal to 3 is not recognized, resulting in an answer of $y = 2 \sin \frac{1}{2}x$ or $y = -2 \sin \frac{1}{2}x$.

or

[3] The values of a, b, and c are determined correctly, and appropriate work is shown, but the equation is not written.

or

[3] The value of a or c is determined incorrectly, but the value of b is determined correctly, and appropriate work is shown, and an appropriate equation is written.

[2] Only the value of b is determined correctly, but appropriate work is shown, and an appropriate equation is written.

or

[2] Only the values of a and c are determined correctly, but appropriate work is shown, and an appropriate equation is written.

[1] The value of a or c is determined incorrectly, and the value of b is not determined or is determined incorrectly, but appropriate work is shown, and an appropriate equation is written.

or

[1] $y = 2 \sin \frac{1}{2}x + 3$ or $y = -2 \sin \frac{1}{2}x + 3$, 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.

(31) **[4]** $\bar{x} = 80$, $\bar{y} = 20.8$, and $y = 0.25x + 0.8$, and appropriate work is shown to prove that $(\bar{x}, \bar{y})$ is a point on the line of regression.

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

[2] Appropriate work is shown, but two or more computational errors are made.

or

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

[1] $\bar{x} = 80$, $\bar{y} = 20.8$, and $y = 0.25x + 0.8$, 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.

(32) **[4]** 29 hammers to make a profit and 45 hammers to make a profit of \$100, and appropriate work is shown.

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

[2] Appropriate work is shown, but two or more computational or rounding errors are made.

or

[2] Either the number of hammers to make a profit or the number of hammers to make a profit of \$100 is determined correctly, and appropriate work is shown.

[1] One conceptual and one computational error are made.

or

[1] The correct equation and inequality or the correct equations are written, but no further correct work is shown.

or

[1] 29 hammers to make a profit and 45 hammers to make a profit of \$100, but no work is shown.

[0] 29 and 45, but no work is shown and the answers 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.

Part IV

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

(33) **[6]** $\frac{2}{1}$ or 2:1 or an equivalent ratio, and appropriate work is shown.

[5] Appropriate work is shown, but one computational error is made, but an appropriate ratio is found.

or

[5] Appropriate work is shown, but the answer is not written as a ratio.

or

[5] Appropriate work is shown, but the ratio is reversed or is simplified incorrectly.

[4] Appropriate work is shown, but two or more computational errors are made, but an appropriate ratio is found.

or

[4] Correct measures are found for all the arcs and the angles, and appropriate work is shown, but no ratio is found.

or

[4] Correct measures are found for all the arcs, but the measure of one angle is found incorrectly, but an appropriate ratio is found.

[3] One conceptual error is made, but appropriate work is shown, and an appropriate ratio is found.

or

[3] Correct measures are found for all the arcs, but the measures of both angles are found incorrectly, but an appropriate ratio is found.

[2] Correct measures are found for all the arcs, but no further correct work is shown.

[1] Only the value of x is found correctly, and appropriate work is shown.

or

[1] $\frac{2}{1}$ or 2:1 or an equivalent ratio, 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) **[6]** 19, and appropriate work is shown, such as
$P(\text{at least three}) = {}_4C_3(0.6)^3(0.4) + {}_4C_4(0.6)^4$ and $P(0) = (0.4)^4$.

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

or

[5] Correct probabilities are computed, but no answer or an incorrect answer is found.

[4] Appropriate work is shown, but two or more computational errors are made.

or

[4] Only the probability for at least three strikes is found correctly, but an appropriate ratio is determined.

[3] The probability for at least three strikes is found correctly, and no further correct work is shown.

or

[3] Only the probability for zero strikes is found correctly, but an appropriate ratio is determined.

[2] Only the probability for zero strikes is found correctly, and no further correct work is shown.

or

[2] Only the equation for the probability for at least three strikes is written, and it is not solved.

[1] Conceptual errors are made in finding the probabilities, but an appropriate ratio is determined, based on the incorrect probabilities.

or

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

Regents Examination in Mathematics B

August 2003

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

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 B examination.