MATHEMATICS B

Thursday, January 30, 2003 — 9:15 a.m. to 12:15 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 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 2.

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.

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

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

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

Normal Curve

Standard Deviation
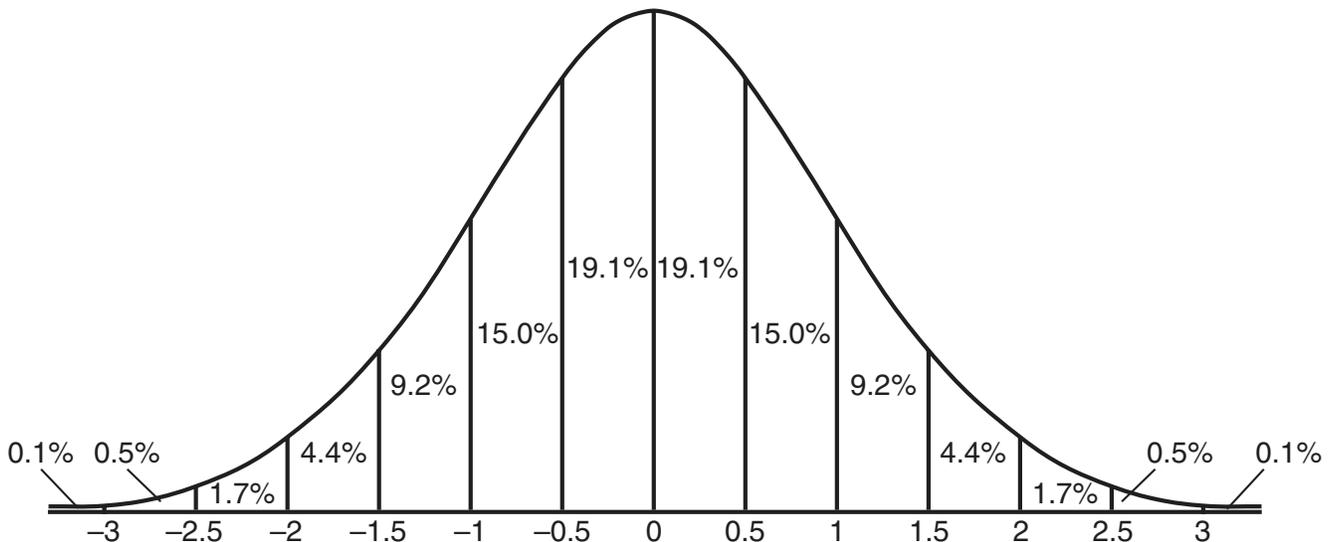
Part I

Answer all questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. Record your answers in the spaces provided on the separate answer sheet. [40]

1 A monitor displays the graph $y = 3 \sin 5x$. What will be the amplitude after a dilation of 2?

(1) 5   (3) 7
(2) 6   (4) 10

Use this space for computations.

2 The probability that Kyla will score above a 90 on a mathematics test is $\frac{4}{5}$. What is the probability that she will score above a 90 on three of the four tests this quarter?

(1) $_4C_3\left(\frac{4}{5}\right)^3\left(\frac{1}{5}\right)^1$ (3) $\frac{3}{4}\left(\frac{4}{5}\right)^3\left(\frac{1}{5}\right)^1$

(2) $_4C_3\left(\frac{4}{5}\right)^1\left(\frac{1}{5}\right)^3$ (4) $\frac{3}{4}\left(\frac{4}{5}\right)^1\left(\frac{1}{5}\right)^3$

3 Which equation represents the parabola shown in the accompanying graph?

(−3, 1)

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

4 What is the value of $\displaystyle\sum_{b=0}^{3}\left(2-(b)i\right)$?

(1) $2-5i$ (3) $8-5i$

(2) $2-6i$ (4) $8-6i$

5 What is the solution set of the equation $\sqrt{9x+10}=x$?

(1) $\{-1\}$ (3) $\{10\}$

(2) $\{9\}$ (4) $\{10,-1\}$

6 Which statements could be used to prove that $\triangle ABC$ and $\triangle A'B'C'$ are congruent?

(1) $\overline{AB} \cong \overline{A'B'}$, $\overline{BC} \cong \overline{B'C'}$, and $\angle A \cong \angle A'$

(2) $\overline{AB} \cong \overline{A'B'}$, $\angle A \cong \angle A'$, and $\angle C \cong \angle C'$

(3) $\angle A \cong \angle A'$, $\angle B \cong \angle B'$, and $\angle C \cong \angle C'$

(4) $\angle A \cong \angle A'$, $\overline{AC} \cong \overline{A'C'}$, and $\overline{BC} \cong \overline{B'C'}$

7 Ileana buys a large circular pizza that is divided into eight equal slices. She measures along the outer edge of the crust from one piece and finds it to be $5\frac{1}{2}$ inches. What is the diameter of the pizza to the *nearest inch*?

(1) 14   (3) 7

(2) 8   (4) 4

8 The national mean for verbal scores on an exam was 428 and the standard deviation was 113. Approximately what percent of those taking this test had verbal scores between 315 and 541?

(1) 68.2%   (3) 38.2%

(2) 52.8%   (4) 26.4%

9 In $\triangle ABC$, if $AC = 12$, $BC = 11$, and m$\angle A = 30$, angle C could be

(1) an obtuse angle, only
(2) an acute angle, only
(3) a right angle, only
(4) either an obtuse angle or an acute angle

10 For a rectangular garden with a fixed area, the length of the garden varies inversely with the width. Which equation represents this situation for an area of 36 square units?

(1) $x + y = 36$ (2) $y = \dfrac{36}{x}$

(3) $x - y = 36$ (4) $y = 36x$

11 In which quadrant would the image of point $(5,-3)$ fall after a dilation using a factor of -3?

(1) I   (3) III
(2) II   (4) IV

12 The fraction $\dfrac{\frac{x}{y} + x}{\frac{1}{y} + 1}$ is equivalent to

(1) $\dfrac{2xy}{1 + y}$ (3) x

(2) $\dfrac{x^2 y}{1 + y}$ (4) $2x$

13 If the roots of $ax^2 + bx + c = 0$ are real, rational, and equal, what is true about the graph of the function $y = ax^2 + bx + c$?

(1) It intersects the x-axis in two distinct points.
(2) It lies entirely below the x-axis.
(3) It lies entirely above the x-axis.
(4) It is tangent to the x-axis.

14 If f(x) = $\dfrac{1}{\sqrt{2x-4}}$, the domain of f(x) is

    (1) $x = 2$ (3) $x \geq 2$

    (2) $x < 2$ (4) $x > 2$

15 What is the sum of $\dfrac{3}{x-3}$ and $\dfrac{x}{3-x}$?

    (1) 1   (3) $\dfrac{x+3}{x-3}$

    (2) –1   (4) 0

16 The expression $\log 10^{(x+2)} - \log 10^x$ is equivalent to

    (1) –2   (3) 100

    (2) 2   (4) $\dfrac{1}{100}$

17 If $(\sec x - 2)(2 \sec x - 1) = 0$, then x terminates in

    (1) Quadrant I, only

    (2) Quadrants I and II, only

    (3) Quadrants I and IV, only

    (4) Quadrants I, II, III, and IV

18 Which graph represents the solution set of $x^2 - x - 12 < 0$?

    (1)

    (2)

    (3)

    (4)

19 If $\sin\theta = \dfrac{\sqrt{5}}{3}$, then $\cos 2\theta$ equals

(1) $\dfrac{1}{3}$ (3) $\dfrac{1}{9}$

(2) $-\dfrac{1}{3}$ (4) $-\dfrac{1}{9}$

20 If $\sin 6A = \cos 9A$, then $m\angle A$ is equal to

(1) 6   (3) 54

(2) 36   (4) $1\dfrac{1}{2}$

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 Two social studies classes took the same current events examination that was scored on the basis of 100 points. Mr. Wong's class had a median score of 78 and a range of 4 points, while Ms. Rizzo's class had a median score of 78 and a range of 22 points. Explain how these classes could have the same median score while having very different ranges.

22 The height of an object, h(t), is determined by the formula h(t) = $-16t^2 + 256t$, where t is time, in seconds. Will the object reach a maximum or a minimum? Explain or show your reasoning.

23 A wrecking ball suspended from a chain is a type of pendulum. The relationship between the rate of speed of the ball, R, the mass of the ball, m, the length of the chain, L, and the force, F, is $R = 2\pi\sqrt{\frac{mL}{F}}$. Determine the force, F, to the *nearest hundredth*, when $L = 12$, $m = 50$, and $R = 0.6$.

24 The relationship between the relative size of an earthquake, S, and the measure of the earthquake on the Richter scale, R, is given by the equation $\log S = R$. If an earthquake measured 3.2 on the Richter scale, what was its relative size to the *nearest hundredth*?

25 In an electrical circuit, the voltage, E, in volts, the current, I, in amps, and the opposition to the flow of current, called impedance, Z, in ohms, are related by the equation $E = IZ$. A circuit has a current of $(3 + i)$ amps and an impedance of $(-2 + i)$ ohms. Determine the voltage in $a + bi$ form.

26 The inequality $|1.5C - 24| \leq 30$ represents the range of monthly average temperatures, C, in degrees Celsius, for Toledo, Ohio. Solve for C.

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 A shoe manufacturer collected data regarding men's shoe sizes and found that the distribution of sizes exactly fits the normal curve. If the mean shoe size is 11 and the standard deviation is 1.5, find:

a the probability that a man's shoe size is greater than or equal to 11

b the probability that a man's shoe size is greater than or equal to 12.5

c $\dfrac{P(\text{size} \geq 12.5)}{P(\text{size} \geq 8)}$

28 In a mathematics class of ten students, the teacher wanted to determine how a homework grade influenced a student's performance on the subsequent test. The homework grade and subsequent test grade for each student are given in the accompanying table.

Homework Grade (x)	Test Grade (y)
94	98
95	94
92	95
87	89
82	85
80	78
75	73
65	67
50	45
20	40

a Give the equation of the linear regression line for this set of data.

b A new student comes to the class and earns a homework grade of 78. Based on the equation in part *a*, what grade would the teacher predict the student would receive on the subsequent test, to the *nearest integer*?

29 A building's temperature, T, varies with time of day, t, during the course of 1 day, as follows:

$$T = 8 \cos t + 78$$

The air-conditioning operates when $T \geq 80°$F. Graph this function for $6 \leq t < 17$ and determine, to the *nearest tenth of an hour*, the amount of time in 1 day that the air-conditioning is on in the building.
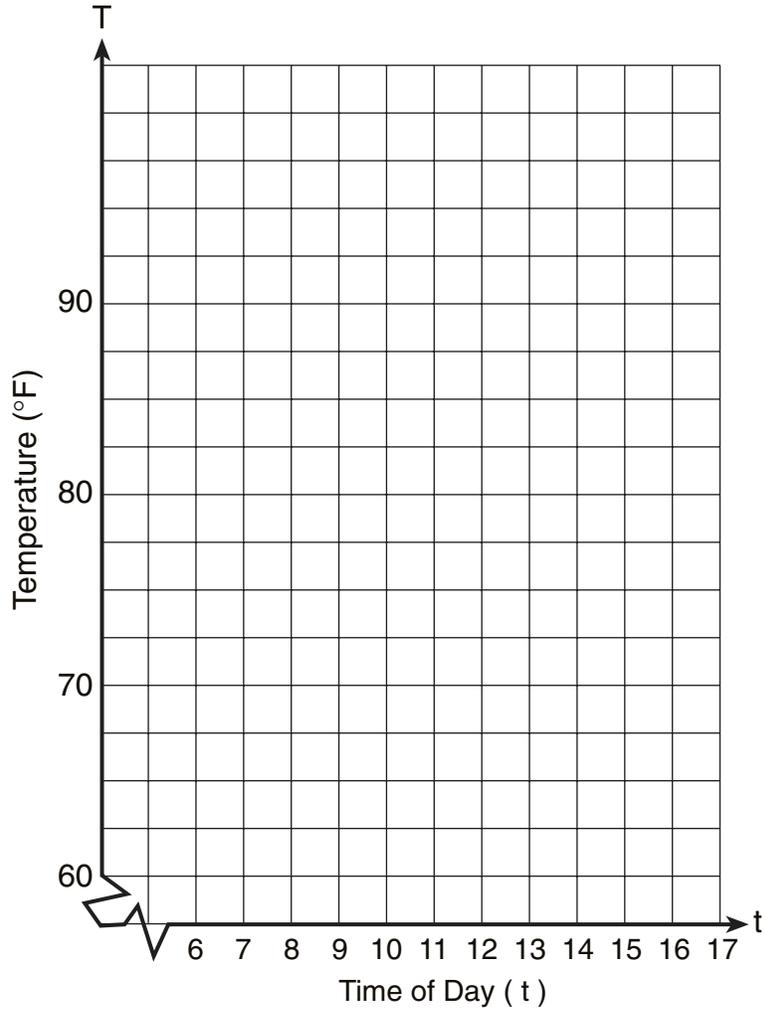
30 A picnic table in the shape of a regular octagon is shown in the accompanying diagram. If the length of $\overline{AE}$ is 6 feet, find the length of one side of the table to the *nearest tenth of a foot,* and find the area of the table's surface to the *nearest tenth of a square foot.*
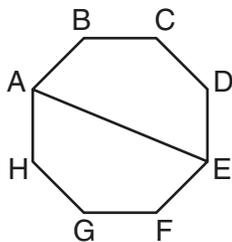
31 If $f(x) = x^{\frac{2}{3}}$ and $g(x) = 8x^{-\frac{1}{2}}$, find $(f \circ g)(x)$ and find $(f \circ g)(27)$.

32 Given: $f(x) = x^2$ and $g(x) = 2^x$

  a The inverse of g is a function, but the inverse of f is not a function. Explain why this statement is true.

  b Find $g^{-1}\big(f(3)\big)$ to the *nearest tenth*.

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 Quadrilateral *KATE* has vertices *K*(1,5), *A*(4,7), *T*(7,3), and *E*(1,–1).

   a Prove that *KATE* is a trapezoid. [The use of the grid on the next page is optional.]

   b Prove that *KATE* is *not* an isosceles trapezoid.

33 continued
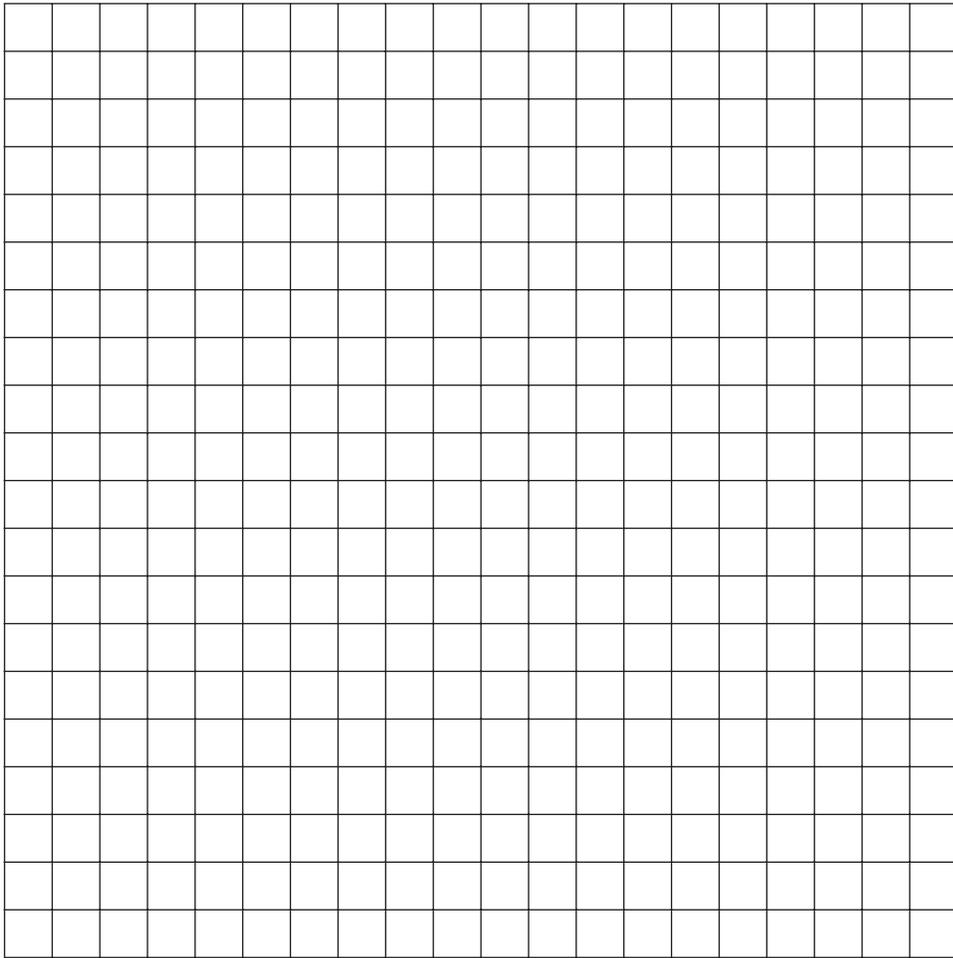
34 A ship captain at sea uses a sextant to sight an angle of elevation of 37° to the top of a lighthouse. After the ship travels 250 feet directly toward the lighthouse, another sighting is made, and the new angle of elevation is 50°. The ship's charts show that there are dangerous rocks 100 feet from the base of the lighthouse. Find, to the *nearest foot,* how close to the rocks the ship is at the time of the second sighting.
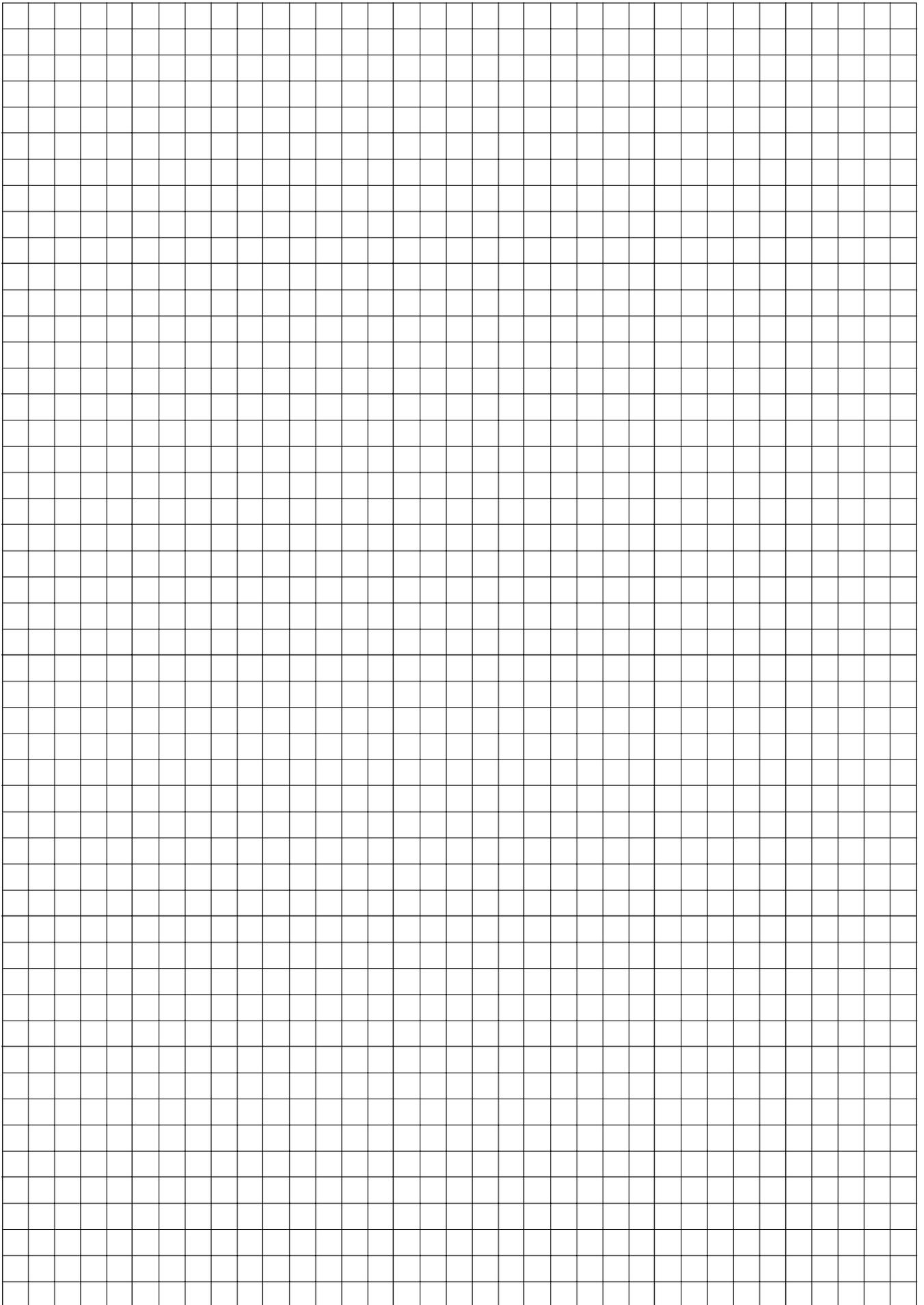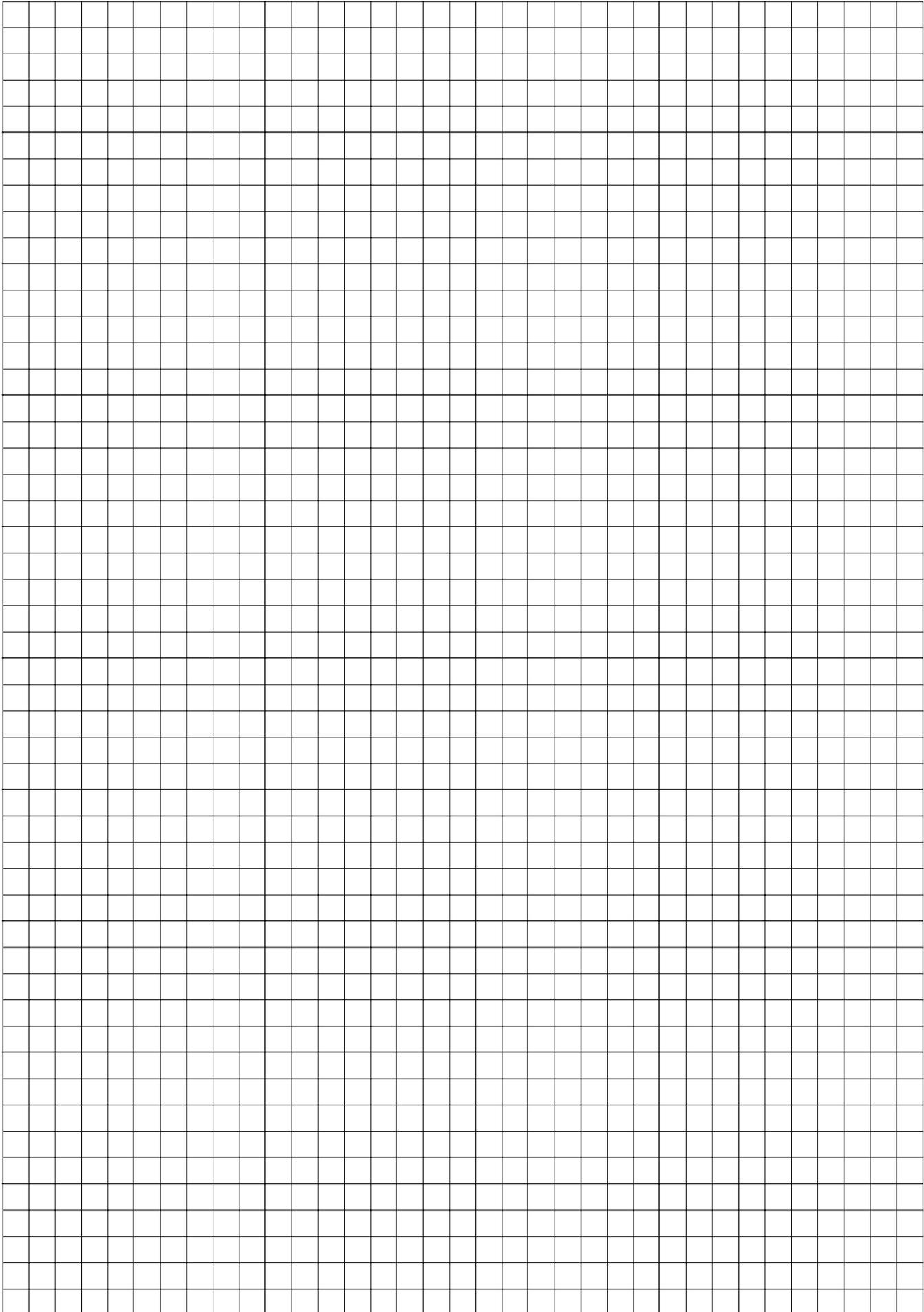
The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS B

Thursday, January 30, 2003 — 9:15 a.m. to 12:15 p.m., only

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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

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.**

FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS B

Thursday, January 30, 2003 — 9:15 a.m. to 12:15 p.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) 2	(6) 2	(11) 2	(16) 2
(2) 1	(7) 1	(12) 3	(17) 3
(3) 3	(8) 1	(13) 4	(18) 2
(4) 4	(9) 4	(14) 4	(19) 4
(5) 3	(10) 3	(15) 2	(20) 1 or 3

Part II

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

(21)   **[2]** An appropriate explanation is given, such as:

One very high or very low score in either class would have a great effect on the range for that class, but might not affect the median at all. The range is the difference between the two most extreme values, the lowest and the highest. The median, being the middle value, is not very sensitive to outliers or to extreme values.

or

[2] Specific examples are shown to illustrate the situation.

[1] An understanding of median and range is demonstrated, but the specific situation is not explained.

[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]** Maximum, and an appropriate reason is given, such as the value of a is negative (less than 0) or the graph opens downward.

[1] Minimum, but an appropriate reason is given, based on an incorrect equation, such as an error in finding the axis of symmetry.

[0] Maximum or minimum, but no reason or an inappropriate reason 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.

(23) **[2]** 65,797.36, and appropriate work is shown.

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

  or

  [1] An incorrect derivation of the equation is solved appropriately.

  or

  [1] 65,797.36, 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]** 1,584.89, and appropriate work is shown.

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

  or

  [1] 1,584.89, 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]** $-7 + i$, and appropriate work is shown, such as $(-2 + i)(3 + i)$.

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

  or

  [1] $-7 + i$, but no work is shown.

  [0] $(-2 + i)(3 + i)$ is shown but not multiplied, or the values are added instead of multiplied.

  or

  [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]** $-4 \leq C \leq 36$, and appropriate work is shown.

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

or

[1] Appropriate work is shown, but only one extreme value is found.

or

[1] $-4 \leq C \leq 36$, 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 four credits.

(27)   **[4]** $\frac{1}{2}$ or 50%, $\frac{15.9}{100}$ or 0.159, and $\frac{0.159}{0.977}$ or an equivalent answer, and appropriate work is shown.

   [3] Correct answers are found for either part *a* or part *b* and for part *c*.

   [2] Correct answers are found for part *a* and part *b*, but the answer for part *c* is missing or is incorrect.

   or

   [2] Only the correct answer for part *b* is found, and one computational or substitution error is made in determining the answer to part *c*.

   [1] Only the correct answer for either part *a* or part *b* is found.

   or

   [1] $\frac{1}{2}$ or 50%, $\frac{15.9}{100}$ or 0.159, and $\frac{0.159}{0.977}$ 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.

[OVER]

(28)   **[4]** *a* $y = 0.8344648562x + 14.64960064$ or an equivalent answer expressed to three
        significant digits

and

b 80, and appropriate work is shown.

[3] One computational error is made or one rounding error is made with one of the
numbers in the equation, such as truncating or not giving at least three
significant digits.

[2] Only the correct answer for either part *a* or part *b* is found.

or

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

[1] 78 is substituted into an incorrect linear equation, but it is evaluated
appropriately.

or

[1] $y = 0.8344648562x + 14.64960064$ and 80, 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]** 4.1 and the equation $T = 8 \cos t + 78$ is graphed correctly and appropriate work
is shown to determine the amount of time, such as using the table function of the
graphing calculator or estimating (3.9–4.3 hours) based on the graph.

[3] The equation $T = 8 \cos t + 78$ is graphed correctly and the correct intervals are
stated, but the number of hours is not found or is incorrect.

[2] The equation $T = 8 \cos t + 78$ is graphed correctly, but no further correct work
is shown.

or

[2] The equation $T = 8 \cos t + 78$ is graphed incorrectly, but an appropriate number
of hours is found, based on the incorrect graph.

[1] 4.1, 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.

(30) **[4]** The side equals 2.3 and the area equals 25.5, and appropriate work is shown.

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

[2] Appropriate work is shown, but one incorrect formula is used, such as using an incorrect trigonometric function, but appropriate answers are found.

or

[2] Appropriate work is shown to find the correct side, but no further correct work is shown.

[1] The radius equals 3 and the central angle equals 45°, but no further correct work is shown.

or

[1] The side equals 2.3 and the area equals 25.5, 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.

(31) **[4]** $(f \circ g)(x) = 4x^{-\frac{1}{3}}$ or $\left(8x^{-\frac{1}{2}}\right)^{\frac{2}{3}}$ or an equivalent answer and $(f \circ g)(27) = \frac{4}{3}$ or an equivalent answer, and appropriate work is shown.

[3] Simplification is shown to at least $4x^{-\frac{1}{3}}$, but one computational error or an error in the Law of Exponents is made when finding $(f \circ g)(27)$.

[2] $(f \circ g)(x)$ is determined correctly, but $(f \circ g)(27)$ is not found or is found incorrectly.

or

[2] $\frac{4}{3}$ or an equivalent answer, and appropriate work is shown, but an expression for $(f \circ g)(x)$ is not found or is found incorrectly.

[1] $4x^{-\frac{1}{3}}$ and $\frac{4}{3}$ or equivalent answers, 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) *a* **[2]** Appropriate sketches of the functions are shown, and the horizontal line tests are used to explain why the statement is true.

or

[2] An explanation is given that the inverse of g is a function and the inverse of f is not a function, which includes a definition of the relationship between a function and its inverse or the vertical line test.

or

[2] Appropriate sketches of the inverses are shown that use the vertical line test to explain why the statement is true.

or

[2] The correct inverses are found algebraically, and appropriate explanations are given.

[1] An explanation is given that indicates only that g is a 1:1 function or that g passes the horizontal line test.

or

[1] An explanation is given that indicates only that f is not a 1:1 function or that f does not pass the horizontal line test.

b **[2]** 3.2, and appropriate work is shown.

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

or

[1] 3.2, 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.

Part IV

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

(33) *a* and *b*

[6] $\overline{KA} \parallel \overline{ET}$, $\overline{AT} \nparallel \overline{KE}$, and $\overline{KE} \neq \overline{AT}$, and appropriate work is shown.

[5] Appropriate work is shown, but one computational error leads to incorrect conclusions that are appropriate, based on that error.

[4] Appropriate work is shown to find $\overline{KA} \parallel \overline{ET}$ or $\overline{AT} \nparallel \overline{KE}$ and $\overline{KE} \neq \overline{AT}$, but no further correct work is shown.

[3] Appropriate work is shown to find $\overline{KE} \neq \overline{AT}$, and at least three of the four slopes are found correctly, but no statement regarding parallelism is made.

or

[3] Appropriate work is shown to find the four slopes, and correct statements of parallelism are made, but no further correct work is shown.

[2] Appropriate work is shown to find unequal sides, but no further correct work is shown.

or

[2] Appropriate work is shown to find the four slopes, but no conclusion is drawn.

or

[2] The four slopes are correct, but no work is shown, but appropriate opposite sides are stated to be parallel and nonparallel.

or

[2] The slope and distance formulas are used, but more than one computational error is made, but one accurate conclusion is drawn.

[1] Only two correct slopes or distances are found.

[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]** 330, and appropriate work is shown, such as solving $\dfrac{\sin 13}{250} = \dfrac{\sin 37}{y}$ and calculating $\cos 50 = \dfrac{x}{668.8288536}$ and subtracting 100.

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

or

[5] Appropriate work is shown, but 100 is not subtracted from the answer.

or

[5] An incorrect trigonometric function is used, but the rest of the work is appropriate.

[4] The Law of Sines is used incorrectly, such as using the wrong angle measure, but an appropriate distance from the rocks is found.

[3] The Law of Sines is used correctly, but no answer or an incorrect answer is found.

[2] The Law of Sines is used without finding the angles correctly, and no answer or an incorrect answer is found.

[1] Only a correct diagram is drawn.

or

[1] 330, 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	6, 33
Number and Numeration	12, 13
Operations	15, 25
Modeling/Multiple Representation	3, 7, 10, 22, 24, 29, 34
Measurement	1, 8, 9, 28, 30, 32
Uncertainty	2, 4, 14, 21, 27
Patterns/Functions	5, 11, 16, 17, 18, 19, 20, 23, 26, 31

Regents Examination in Mathematics B

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

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.