The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS B

Thursday, August 16, 2001 — 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. 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

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

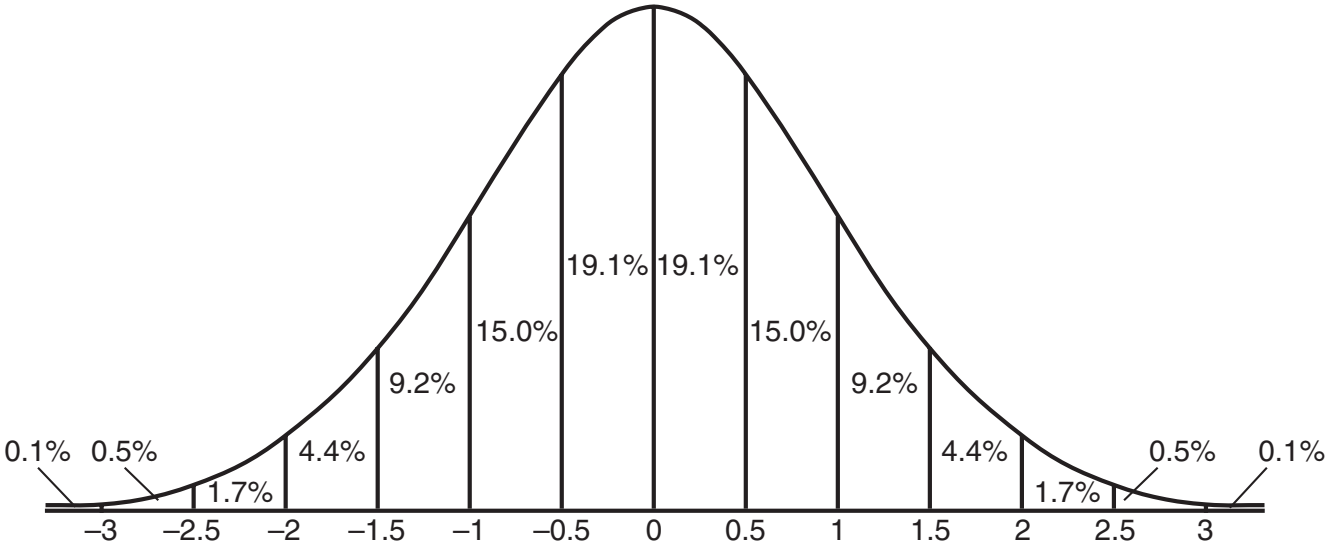
Functions of the Half Angle

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

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

Normal Curve

Standard Deviation



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]

Use this space for computations.

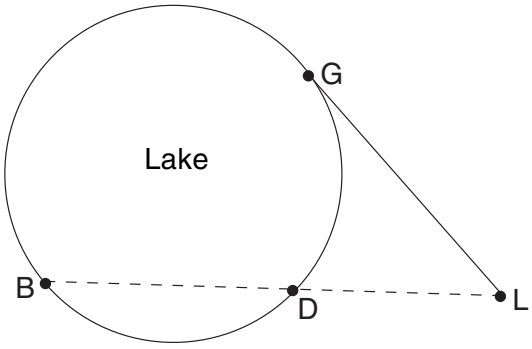
1 Which relation is *not* a function?

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

2 The solution set of $|3x + 2| < 1$ contains

(1) only negative real numbers
(2) only positive real numbers
(3) both positive and negative real numbers
(4) no real numbers

3 In the accompanying diagram, cabins B and G are located on the shore of a circular lake, and cabin L is located near the lake. Point D is a dock on the lake shore and is collinear with cabins B and L. The road between cabins G and L is 8 miles long and is tangent to the lake. The path between cabin L and dock D is 4 miles long.



(Not drawn to scale)

What is the length, in miles, of $\overline{BD}$?

(1) 24
(2) 12
(3) 8
(4) 4

4 The solution set of the equation $\sqrt{x + 6} = x$ is

(1) {–2,3}
(2) {–2}
(3) {3}
(4) { }

5 Which transformation is a direct isometry?

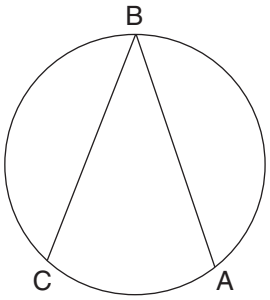
(1) D_2
(2) D_{-2}
(3) $r_{y\text{-axis}}$
(4) $T_{2,5}$

Use this space for computations.

6 The roots of the equation $x^2 - 3x - 2 = 0$ are

(1) real, rational, and equal
(2) real, rational, and unequal
(3) real, irrational, and unequal
(4) imaginary

7 The new corporate logo created by the design engineers at Magic Motors is shown in the accompanying diagram.



If chords $\overline{BA}$ and $\overline{BC}$ are congruent and $m\overset{\frown}{BC} = 140$, what is $m\angle B$?

(1) 40
(2) 80
(3) 140
(4) 280

8 At Mogul's Ski Resort, the beginner's slope is inclined at an angle of 12.3°, while the advanced slope is inclined at an angle of 26.4°. If Rudy skis 1,000 meters down the advanced slope while Valerie skis the same distance on the beginner's slope, how much longer was the horizontal distance that Valerie covered?

(1) 81.3 m
(2) 231.6 m
(3) 895.7 m
(4) 977.0 m

9 A regular hexagon is inscribed in a circle. What is the ratio of the length of a side of the hexagon to the minor arc that it intercepts?

(1) $\frac{\pi}{6}$ (3) $\frac{3}{\pi}$

(2) $\frac{3}{6}$ (4) $\frac{6}{\pi}$

Use this space for computations.

10 If $\log 5 = a$, then $\log 250$ can be expressed as

(1) $50a$ (3) $10 + 2a$

(2) $2a + 1$ (4) $25a$

11 On a trip, a student drove 40 miles per hour for 2 hours and then drove 30 miles per hour for 3 hours. What is the student's average rate of speed, in miles per hour, for the whole trip?

(1) 34 (3) 36

(2) 35 (4) 37

12 A ball is thrown straight up at an initial velocity of 54 feet per second. The height of the ball t seconds after it is thrown is given by the formula $h(t) = 54t - 12t^2$. How many seconds after the ball is thrown will it return to the ground?

(1) 9.2 (3) 4.5

(2) 6 (4) 4

13 What is the period of the function $y = 5 \sin 3x$?

(1) 5 (3) 3

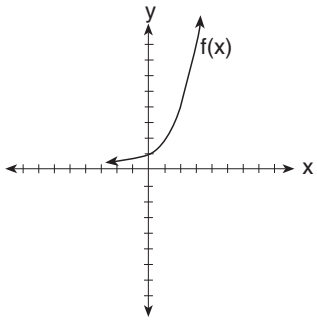
(2) $\frac{2\pi}{5}$ (4) $\frac{2\pi}{3}$

14 A cellular telephone company has two plans. Plan *A* charges \$11 a month and \$0.21 per minute. Plan *B* charges \$20 a month and \$0.10 per minute. After how much time, to the *nearest minute*, will the cost of plan *A* be equal to the cost of plan *B*?

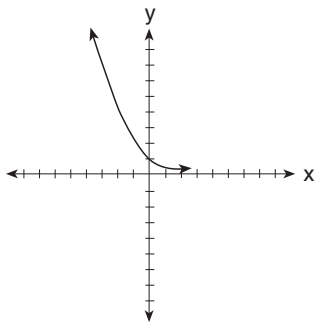
(1) 1 hr 22 min
(2) 1 hr 36 min
(3) 81 hr 8 min
(4) 81 hr 48 min

Use this space for computations.

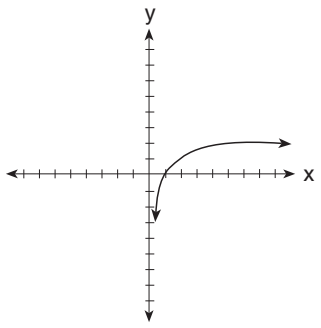
15 The graph of f(x) is shown in the accompanying diagram.



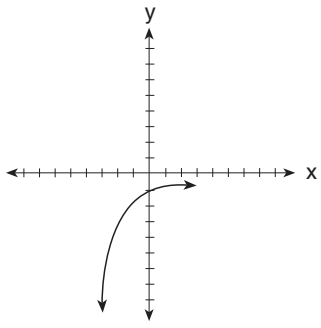
Which graph represents $f(x)_{r_{x\text{-axis}} \circ r_{y\text{-axis}}}$?



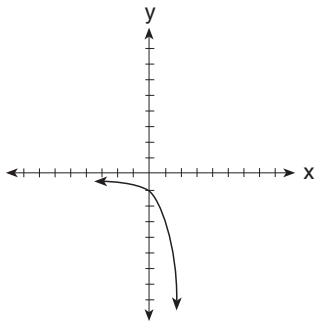
(1)



(3)



(2)



(4)

Use this space for computations.

16 A wedge-shaped piece is cut from a circular pizza. The radius of the pizza is 6 inches. The rounded edge of the crust of the piece measures 4.2 inches. To the *nearest tenth,* the angle of the pointed end of the piece of pizza, in radians, is

(1) 0.7
(2) 1.4
(3) 7.0
(4) 25.2

17 If the length of a rectangular garden is represented by $\frac{x^2 + 2x}{x^2 + 2x - 15}$ and its width is represented by $\frac{2x - 6}{2x + 4}$, which expression represents the area of the garden?

(1) x
(2) $x + 5$
(3) $\frac{x^2 + 2x}{2(x + 5)}$
(4) $\frac{x}{x + 5}$

18 Determine the value of x and y if $2^y = 8^x$ and $3^y = 3^{x+4}$.

(1) $x = 6, y = 2$
(2) $x = -2, y = -6$
(3) $x = 2, y = 6$
(4) $x = y$

19 If Jamar can run $\frac{3}{5}$ of a mile in 2 minutes 30 seconds, what is his rate in miles per minute?

(1) $\frac{4}{5}$
(2) $\frac{6}{25}$
(3) $3\frac{1}{10}$
(4) $4\frac{1}{6}$

20 A box contains one 2-inch rod, one 3-inch rod, one 4-inch rod, and one 5-inch rod. What is the maximum number of different triangles that can be made using these rods as sides?

(1) 1
(2) 2
(3) 3
(4) 4

Part II

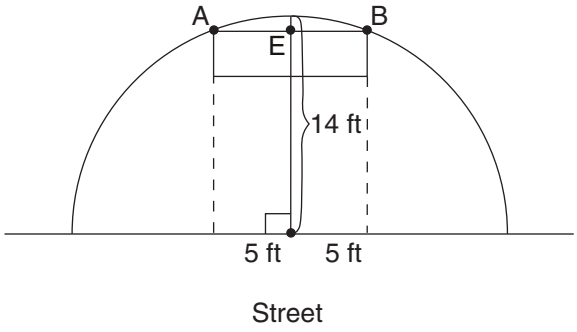
Answer all questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. [12]

21 If the sine of an angle is $\frac{3}{5}$ and the angle is *not* in Quadrant I, what is the value of the cosine of the angle?

22 Show that the product of $a + bi$ and its conjugate is a real number.

23 The price per person to rent a limousine for a prom varies inversely as the number of passengers. If five people rent the limousine, the cost is \$70 each. How many people are renting the limousine when the cost *per couple* is \$87.50?

24 The accompanying diagram shows a semicircular arch over a street that has a radius of 14 feet. A banner is attached to the arch at points A and B, such that $AE = EB = 5$ feet. How many feet above the ground are these points of attachment for the banner?



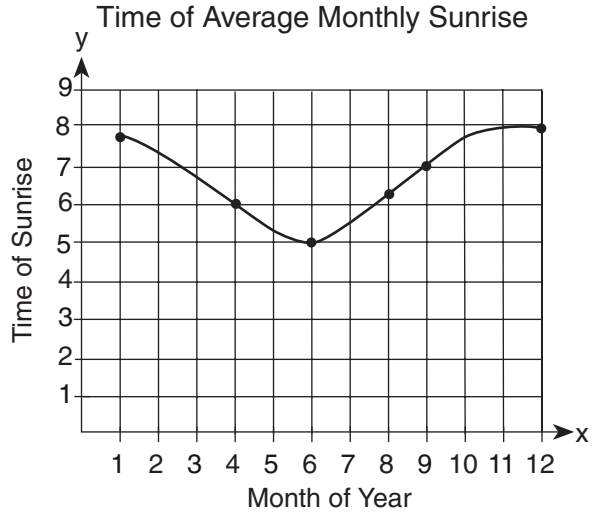
25 Working by herself, Mary requires 16 minutes more than Antoine to solve a mathematics problem. Working together, Mary and Antoine can solve the problem in 6 minutes. If this situation is represented by the equation $\frac{6}{t} + \frac{6}{t + 16} = 1$, where t represents the number of minutes Antoine works alone to solve the problem, how many minutes will it take Antoine to solve the problem if he works by himself?

26 If $\sin x = \frac{4}{5}$, where $0° < x < 90°$, find the value of $\cos (x + 180°)$.

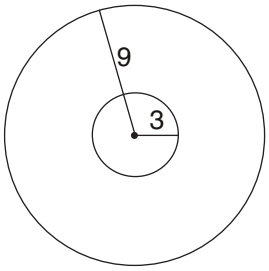
Part III

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 The times of average monthly sunrise, as shown in the accompanying diagram, over the course of a 12-month interval can be modeled by the equation $y = A \cos (Bx) + D$. Determine the values of A, B, and D, and explain how you arrived at your values.



28 As shown in the accompanying diagram, a circular target with a radius of 9 inches has a bull's-eye that has a radius of 3 inches. If five arrows randomly hit the target, what is the probability that *at least* four hit the bull's-eye?



29 Twenty high school students took an examination and received the following scores:

70, 60, 75, 68, 85, 86, 78, 72, 82, 88, 88, 73, 74, 79, 86, 82, 90, 92, 93, 73

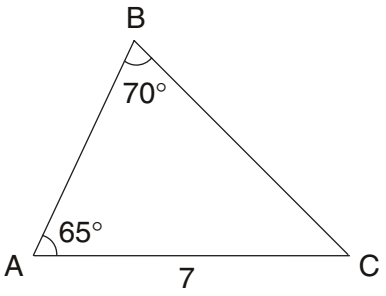
Determine what percent of the students scored within one standard deviation of the mean. Do the results of the examination approximate a normal distribution? Justify your answer.

30 A small, open-top packing box, similar to a shoebox without a lid, is three times as long as it is wide, and half as high as it is long. Each square inch of the bottom of the box costs \$0.008 to produce, while each square inch of any side costs \$0.003 to produce.

Write a function for the cost of the box described above.

Using this function, determine the dimensions of a box that would cost \$0.69 to produce.

31 In the accompanying diagram of $\triangle ABC$, $m\angle A = 65$, $m\angle B = 70$, and the side opposite vertex B is 7. Find the length of the side opposite vertex A, and find the area of $\triangle ABC$.



32 The amount A, in milligrams, of a 10-milligram dose of a drug remaining in the body after t hours is given by the formula $A = 10(0.8)^t$. Find, to the *nearest tenth of an hour*, how long it takes for half of the drug dose to be left in the body.

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 The availability of leaded gasoline in New York State is decreasing, as shown in the accompanying table.

Year	1984	1988	1992	1996	2000
Gallons Available (in thousands)	150	124	104	76	50

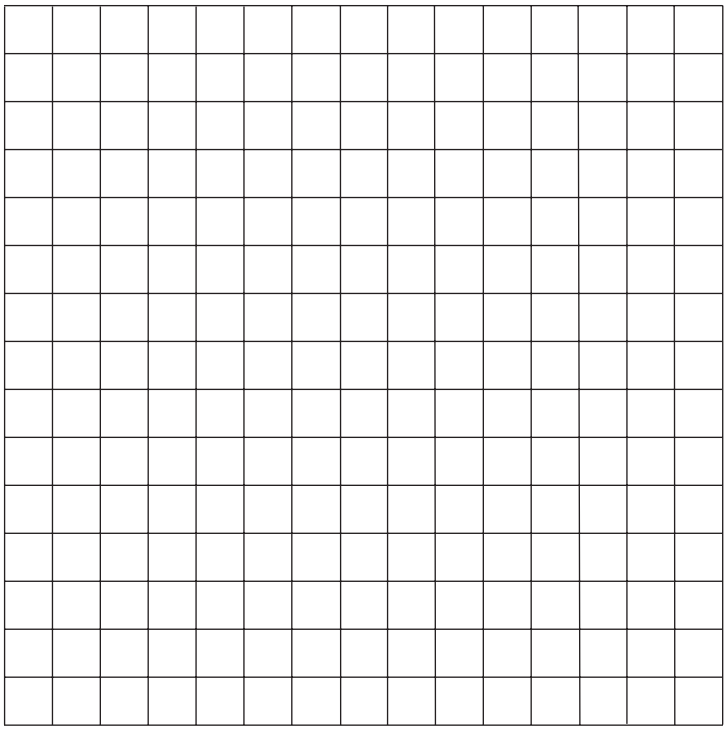
Determine a linear relationship for x (years) versus y (gallons available), based on the data given. The data should be entered using the year and gallons available (in thousands), such as (1984,150).

If this relationship continues, determine the number of gallons of leaded gasoline available in New York State in the year 2005.

If this relationship continues, during what year will leaded gasoline first become unavailable in New York State?

34 Given: $A(1,6)$, $B(7,9)$, $C(13,6)$, and $D(3,1)$

Prove: $ABCD$ is a trapezoid. [*The use of the accompanying grid is optional.*]



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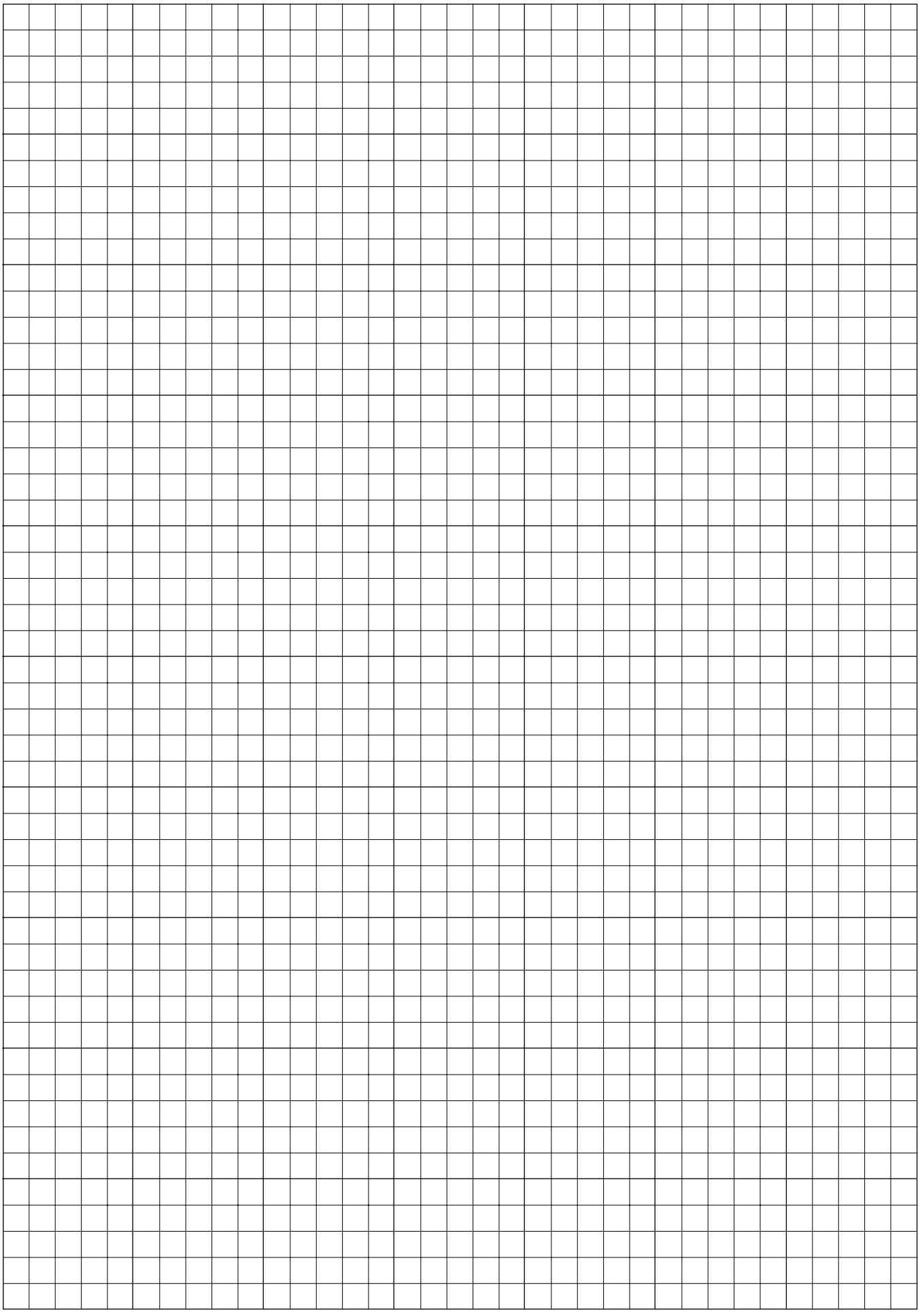
Scrap Graph Paper — This sheet will *not* be scored.



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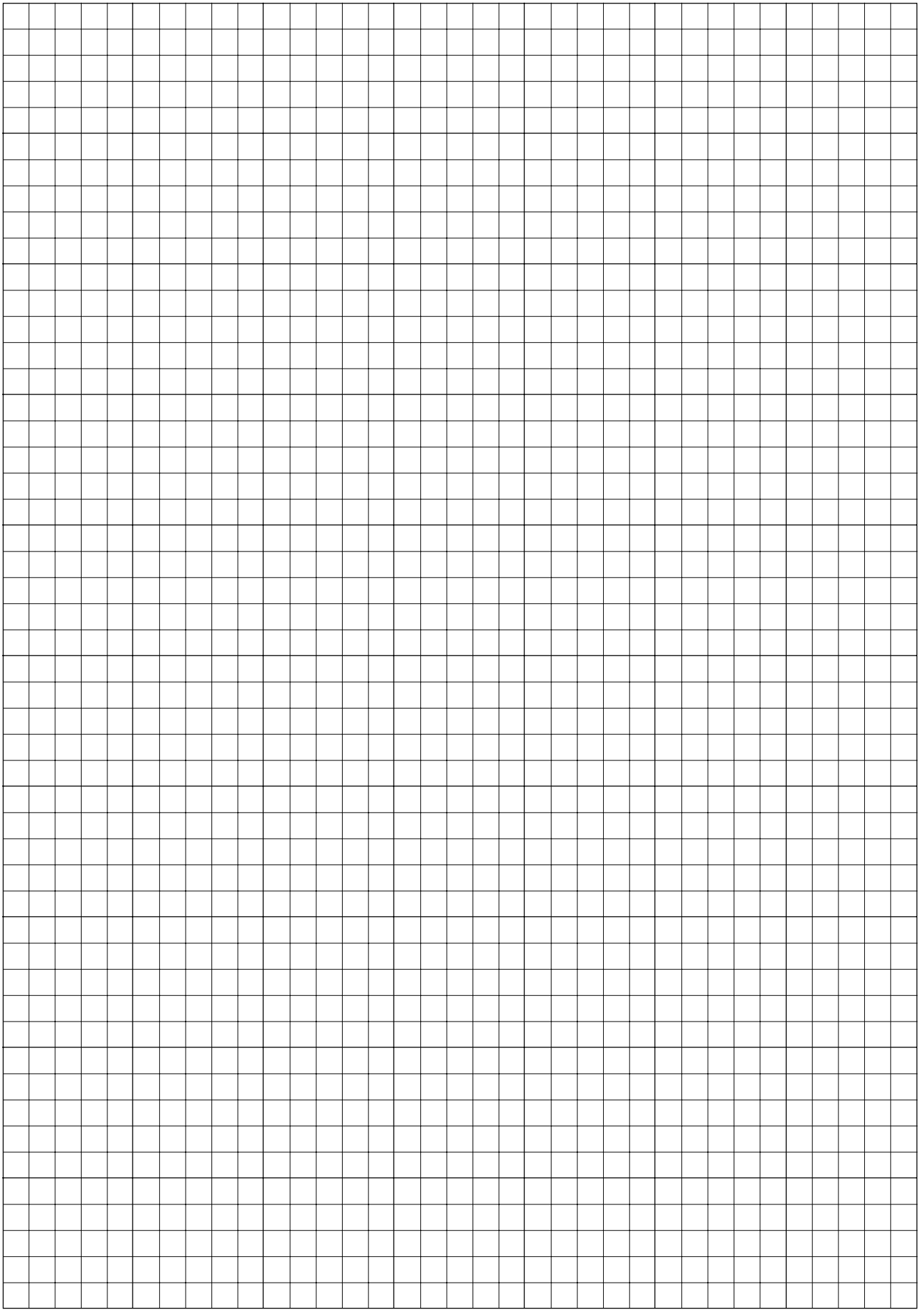

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The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

MATHEMATICS B

Thursday, August 16, 2001 — 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

Tear Here

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

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

Part II

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

(21) **[2]** $-\frac{4}{5}$ or –0.8, and appropriate work is shown.

[1] $\frac{4}{5}$ or 0.8, and appropriate work is shown, but the quadrant was not taken into consideration.

or

[1] $-\frac{4}{5}$ or –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.

(22) **[2]** Appropriate work is shown, such as $(a + bi)(a - bi) = a^2 + b^2$.

[1] The conjugate is incorrect, but multiplication and substitution for i^2 are appropriate.

or

[1] The conjugate is correct, but one or more errors in multiplication and/or substitution for i^2 are made.

[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]** 8, and appropriate work is shown, such as $5(70) = 43.75x$.

[1] 4, and \$87.50 is used instead of \$43.75 per person.

or

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

or

[1] 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.

(24) **[2]** $\sqrt{171}$ or 13 or 13.1 or 13.08 or an equivalent answer, and appropriate work is shown, such as the use of the equation of a circle ($x^2 + y^2 = r^2$) or the Pythagorean theorem.

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

or

[1] Incorrect analysis is shown, such as $x = 5$ and $y = 14$, but the work is concluded appropriately.

or

[1] A correct answer is found, 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]** 8 or an equivalent answer, and appropriate work is shown.

[1] The denominators are cleared correctly, such as $6(t + 16) + 6t = t(t + 16)$, but the factoring is incorrect, or one error is made using the quadratic formula.

or

[1] The denominators are not cleared correctly, but an equation of equal difficulty is solved.

or

[1] 8 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.

(26) **[2]** $-\frac{3}{5}$, and appropriate work is shown, such as

$\cos(x + 180) = \cos x \cos 180° - \sin x \sin 180° = \frac{3}{5}(-1) - \frac{4}{5}(0)$.

or

[2] $-\frac{3}{5}$, and appropriate work is shown, such as $\cos(x + 180) = -\cos x$.

or

[2] $-\frac{3}{5}$, and angle x is found, and correct substitution leads to $\cos(x + 180)$.

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

or

[1] $\cos x = \frac{4}{5}$ is found, but substitution errors are made.

or

[1] $-\frac{3}{5}$, 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 four credits.

(27) **[4]** $A = 1.5$, $B = 0.5$, and $D = 6.5$ or an equivalent answer, and appropriate work is shown or an appropriate explanation is given for each number found.

[3] Correct answers are found, but appropriate work is shown or an appropriate explanation is given for only two of the numbers found.

[2] Only two correct answers are found, but appropriate work is shown or an appropriate explanation is given for the two answers.

[1] Only one correct answer is found, but appropriate work is shown or an appropriate explanation is given for that answer.

or

[1] $A = 1.5$, $B = 0.5$, and $D = 6.5$ 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.

(28) **[4]** $\frac{41}{59,049}$, and appropriate work is shown, such as ${}_5C_5(\frac{1}{9})^5 + {}_5C_4(\frac{1}{9})^4(\frac{8}{9})^1$.

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

or

[3] The combination includes an incorrect setup for determining the probability of hitting the bull's-eye five times but a correct setup for determining the probability of hitting the bull's-eye four times, but an appropriate probability is found.

[2] The probability of "exactly 4" is found.

or

[2] The probability of "at most 3" is found.

[1] A probability of $\frac{1}{9}$ is found, based on the area of the two circles.

or

[1] $\frac{41}{59,049}$, 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]** 8.7 standard deviation, 70% within one standard deviation, and "Yes," and appropriate work is shown, and an appropriate justification is given.

or

[4] 8.7 standard deviation, 70% within one standard deviation, and "No," and appropriate work is shown, and an appropriate justification is given.

[3] One error is made in determining the standard deviation or the percent, but all the other work is appropriate.

[2] 8.7 and 70%, and appropriate work is shown, but no justification is given.

or

[2] The standard deviation is determined correctly, but more than one error is made when calculating the percent, but the justification is appropriate.

[1] The standard deviation is determined correctly, but no further work is shown.

or

[1] The standard deviation is determined incorrectly, but the percent is appropriate, based on the incorrect standard deviation.

[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]** $c(x) = 0.06x^2$ or an equivalent equation; width = $\sqrt{11.5}$ inches or an equivalent, length = $3\sqrt{11.5}$ inches or an equivalent, and height = $\frac{3}{2}\sqrt{11.5}$ inches or an equivalent, and appropriate work is shown.

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

or

[3] One or more dimensions are represented incorrectly, but all further work is appropriate.

or

[3] The correct function is found and solved for x, but no further work is shown.

[2] The dimensions are represented correctly, but the equation is incorrect, but all further work is appropriate.

or

[2] The dimensions are represented correctly, and the correct function is written, but further work is incomplete or is incorrect.

[1] The dimensions are represented correctly, but the function is written and solved incorrectly.

or

[1] $\sqrt{11.5}$, $3\sqrt{11.5}$, and $\frac{3}{2}\sqrt{11.5}$, 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]** $BC = 6.75$ and the area of $\triangle ABC = 16.7055$ or 16.71 or an equivalent answer, and appropriate work is shown, such as using the Law of Sines and the formula for the area of a triangle.

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

[2] Only the correct length of $\overline{BC}$ is found, and appropriate work is shown.

or

[2] The length of $\overline{BC}$ is found incorrectly, but an appropriate area of the triangle is found, based on the incorrect value of $\overline{BC}$.

[1] The Law of Sines is used, and appropriate substitution is made, but no further work is shown.

or

[1] $BC = 6.75$ and the area of $\triangle ABC = 16.7055$ or 16.71 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.

(32) **[4]** 3.1, and appropriate work is shown, such as $5 = 10(0.8)^t$.

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

or

[3] An incorrect value for A is used, but the equation is solved appropriately.

[2] An incorrect value for A is used, but the equation is solved appropriately, but one computational or rounding error is made.

[1] 3.1, 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.

Part IV

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

(33) **[6]** $y = -6.2x + 12{,}451.2$; 20.2 thousand; and 2008; and appropriate work is shown.

[5] The correct equation is shown, but only the number of gallons or the year is correct.

[4] The slope and y-intercept are incorrect, but the slope is negative and the number of gallons and the year are appropriate, based on the incorrect equation.

[3] The slope and y-intercept are incorrect, but the slope is negative, but only the number of gallons or the year is appropriate, based on the incorrect equation.

[2] The correct equation is shown, but the number of gallons and the year are not determined or are determined incorrectly.

or

[2] The incorrect equation $y = 6.2x + 12{,}451.2$ is shown, but appropriate work is shown for the number of gallons and the year.

[1] An incorrect equation is shown with a negative slope, and the number of gallons and the year are not determined.

or

[1] 20.2 thousand and 2008, 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]** The correct slopes of $AB = \frac{1}{2}$ and $CD = \frac{1}{2}$ are found, $\overline{AB} \parallel \overline{CD}$ is stated, and an explanation of why they are parallel is given. The correct slopes of $AD = -\frac{5}{2}$ and $BC = -\frac{1}{2}$ are found, $\overline{AD}$ is not parallel to $\overline{BC}$ is stated, and an explanation of why they are not parallel is given. An explanation that *ABCD* is a trapezoid is given.

[5] The correct slopes of $\overline{AB}$, $\overline{CD}$, $\overline{AD}$, and $\overline{BC}$ are found, and $\overline{AB} \parallel \overline{CD}$ and $\overline{AD}$ not $\parallel \overline{BC}$ are stated, but an explanation that *ABCD* is a trapezoid is not given.

or

[5] One computational error is made in finding the slopes, but all further work is appropriate, based on the calculated slopes.

[4] The correct slope of $\overline{AB}$ and $\overline{CD}$ are found, and $\overline{AB} \parallel \overline{CD}$ is stated, but incorrect slopes of $\overline{AD}$ and $\overline{BC}$ are found, but an explanation of why they are not parallel is given, but an explanation that *ABCD* is a trapezoid is not given.

or

[4] More than one computational error is made in finding the slopes, but $\overline{AB}$ and $\overline{CD}$ are found to have equal slopes and $\overline{AD}$ and $\overline{BC}$ to have different slopes, but an explanation that *ABCD* is a trapezoid is given.

[3] Incorrect slopes of $\overline{AB}$, $\overline{CD}$, $\overline{AD}$, and $\overline{BC}$ are found, such as by using an incorrect formula, $\overline{AB}$ and $\overline{CD}$ are found to have equal slopes and $\overline{AD}$ and $\overline{BC}$ to have different slopes, but an explanation that *ABCD* is a trapezoid is given.

[2] Only the correct slopes of $\overline{AB}$, $\overline{CD}$, $\overline{AD}$, and $\overline{BC}$ are found, and appropriate work is shown.

[1] Only two correct slopes are found, and appropriate work is shown.

or

[1] $AB = \frac{1}{2}$, $CD = \frac{1}{2}$, $AD = -\frac{5}{2}$, and $BC = -\frac{1}{2}$, 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.

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 B

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

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.