The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

ALGEBRA 2/TRIGONOMETRY

Wednesday, August 12, 2015 — 12:30 to 3:30 p.m., only

Student Name:_____

School Name: _____

> The possession or use of any communications device is strictly prohibited when taking this examination. If you have or use any communications device, no matter how briefly, your examination will be invalidated and no score will be calculated for you.

Print your name and the name of your school on the lines above.

A separate answer sheet for Part I has been provided to you. Follow the instructions from the proctor for completing the student information on your answer sheet.

This examination has four parts, with a total of 39 questions. You must answer all questions in this examination. Record 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. All work should be written in pen, except for graphs and drawings, which should be done in pencil. 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 at the end of the examination. This sheet is perforated so you may remove it from this booklet.

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. You may remove this sheet from this booklet. Any work done on this sheet of scrap graph paper will *not* be scored.

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…
>
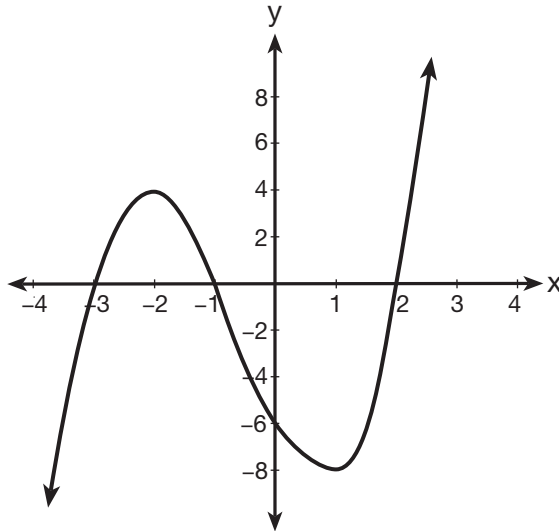> A graphing calculator and a straightedge (ruler) must be available for you to use while taking this examination.

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

Answer all 27 questions in this part. Each correct answer will receive 2 credits. For each statement or question, choose the word or expression that, of those given, best completes the statement or answers the question. Record your answers on your separate answer sheet. [54]

Use this space for computations.

1 What are the zeros of the polynomial function graphed below?

(1) $\{-3, -1, 2\}$ (3) $\{4, -8\}$

(2) $\{3, 1, -2\}$ (4) $\{-6\}$

2 A study compared the number of years of education a person received and that person's average yearly salary. It was determined that the relationship between these two quantities was linear and the correlation coefficient was 0.91. Which conclusion can be made based on the findings of this study?

(1) There was a weak relationship.

(2) There was a strong relationship.

(3) There was no relationship.

(4) There was an unpredictable relationship.

3 What is the value of $4x^{\frac{1}{2}} + x^0 + x^{-\frac{1}{4}}$ when $x = 16$?

(1) $7\frac{1}{2}$ (3) $16\frac{1}{2}$

(2) $9\frac{1}{2}$ (4) $17\frac{1}{2}$

4 The expression $\sqrt[4]{81x^2y^5}$ is equivalent to

(1) $3x^{\frac{1}{2}}y^{\frac{5}{4}}$ (3) $9xy^{\frac{5}{2}}$

(2) $3x^{\frac{1}{2}}y^{\frac{4}{5}}$ (4) $9xy^{\frac{2}{5}}$

5 The exact value of csc 120° is

(1) $\frac{2\sqrt{3}}{3}$ (3) $-\frac{2\sqrt{3}}{3}$

(2) 2 (4) -2

6 Which statement about the equation $3x^2 + 9x - 12 = 0$ is true?

(1) The product of the roots is -12.

(2) The product of the roots is -4.

(3) The sum of the roots is 3.

(4) The sum of the roots is -9.

7 A scholarship committee rewards the school's top math students. The amount of money each winner receives is inversely proportional to the number of scholarship recipients. If there are three winners, they each receive $400. If there are eight winners, how much money will each winner receive?

(1) $1067   (3) $240

(2) $400   (4) $150

8 What is the value of $\tan\left(\text{Arc}\cos\frac{15}{17}\right)$?

(1) $\frac{8}{15}$ (3) $\frac{15}{8}$

(2) $\frac{8}{17}$ (4) $\frac{17}{8}$

9 The table below displays the number of siblings of each of the 20 students in a class.

Number of Siblings	Frequency
0	2
1	5
2	7
3	4
4	2

What is the population standard deviation, to the *nearest hundredth*, for this group?

(1) 1.11 (3) 1.14

(2) 1.12 (4) 1.15

10 An arithmetic sequence has a first term of 10 and a sixth term of 40. What is the 20th term of this sequence?

(1) 105 (3) 124

(2) 110 (4) 130

11 Yusef deposits $50 into a savings account that pays 3.25% interest compounded quarterly. The amount, A, in his account can be determined by the formula $A = P\left(1 + \frac{r}{n}\right)^{nt}$, where P is the initial amount invested, r is the interest rate, n is the number of times per year the money is compounded, and t is the number of years for which the money is invested. What will his investment be worth in 12 years if he makes no other deposits or withdrawals?

(1) $55.10

(3) $232.11

(2) $73.73

(4) $619.74

12 How many distinct ways can the eleven letters in the word "TALLAHASSEE" be arranged?

(1) 831,600

(3) 3,326,400

(2) 1,663,200

(4) 5,702,400

13 A customer will select three different toppings for a supreme pizza. If there are nine different toppings to choose from, how many different supreme pizzas can be made?

(1) 12

(3) 84

(2) 27

(4) 504

14 Which values of x in the interval $0° \leq x < 360°$ satisfy the equation $2 \sin^2 x + \sin x - 1 = 0$?

(1) {30°, 270°}

(3) {90°, 210°, 330°}

(2) {30°, 150°, 270°}

(4) {90°, 210°, 270°, 330°}

15 Expressed as a function of a positive acute angle, sin 230° is

(1) $-\sin 40°$ (3) $\sin 40°$

(2) $-\sin 50°$ (4) $\sin 50°$

16 Which equation represents a circle with its center at $(2,-3)$ and that passes through the point $(6,2)$?

(1) $(x - 2)^2 + (y + 3)^2 = \sqrt{41}$ (3) $(x - 2)^2 + (y + 3)^2 = 41$

(2) $(x + 2)^2 + (y - 3)^2 = \sqrt{41}$ (4) $(x + 2)^2 + (y - 3)^2 = 41$

17 What is the domain of the function $g(x) = 3^x - 1$?

(1) $(-\infty, 3]$ (3) $(-\infty, \infty)$

(2) $(-\infty, 3)$ (4) $(-1, \infty)$

18 The expression $\dfrac{3 - \sqrt{8}}{\sqrt{3}}$ is equivalent to

(1) $\dfrac{\sqrt{3} - 2\sqrt{6}}{3}$ (3) $\dfrac{3 - \sqrt{24}}{3}$

(2) $-\sqrt{3} + \dfrac{2}{3}\sqrt{6}$ (4) $\sqrt{3} - \dfrac{2}{3}\sqrt{6}$

19 What is the period of the graph of the equation $y = \dfrac{1}{3} \sin 2x$?

(1) $\dfrac{1}{3}$ (3) π

(2) 2 (4) 6π

20 The first four terms of the sequence defined by $a_1 = \frac{1}{2}$ and $a_{n+1} = 1 - a_n$ are

(1) $\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2}$

(3) $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}$

(2) $\frac{1}{2}, 1, 1\frac{1}{2}, 2$

(4) $\frac{1}{2}, 1\frac{1}{2}, 2\frac{1}{2}, 3\frac{1}{2}$

21 The scores on a standardized exam have a mean of 82 and a standard deviation of 3.6. Assuming a normal distribution, a student's score of 91 would rank

(1) below the 75th percentile

(2) between the 75th and 85th percentile

(3) between the 85th and 95th percentile

(4) above the 95th percentile

22 If $\cos \theta = \frac{3}{4}$, then what is $\cos 2\theta$?

(1) $\frac{1}{8}$

(3) $-\frac{1}{8}$

(2) $\frac{9}{16}$

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

23 If $m = \{(-1,1), (1,1), (-2,4), (2,4), (-3,9), (3,9)\}$, which statement is true?

(1) m and its inverse are both functions.

(2) m is a function and its inverse is not a function.

(3) m is not a function and its inverse is a function.

(4) Neither m nor its inverse is a function.

24 The expression $\sqrt{-180x^{16}}$ is equivalent to

(1) $-6x^4\sqrt{5}$ (3) $6x^4i\sqrt{5}$

(2) $-6x^8\sqrt{5}$ (4) $6x^8i\sqrt{5}$

25 The ninth term of the expansion of $(3x + 2y)^{15}$ is

(1) $_{15}C_9(3x)^6(2y)^9$ (3) $_{15}C_8(3x)^7(2y)^8$

(2) $_{15}C_9(3x)^9(2y)^6$ (4) $_{15}C_8(3x)^8(2y)^7$

26 Six people met at a dinner party, and each person shook hands once with everyone there. Which expression represents the total number of handshakes?

(1) $6!$ (3) $\dfrac{6!}{2!}$

(2) $6! \cdot 2!$ (4) $\dfrac{6!}{4! \cdot 2!}$

27 Which value of k will make $x^2 - \dfrac{1}{4}x + k$ a perfect square trinomial?

(1) $\dfrac{1}{64}$ (3) $\dfrac{1}{8}$

(2) $\dfrac{1}{16}$ (4) $\dfrac{1}{4}$

Answer all 8 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. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [16]

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28 Determine, to the *nearest minute*, the number of degrees in an angle whose measure is 2.5 radians.

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29 Solve for x: $\dfrac{1}{16} = 2^{3x-1}$

30 If $f(x) = x^2 - x$ and $g(x) = x + 1$, determine $f(g(x))$ in simplest form.

31 The probability of winning a game is $\frac{2}{3}$. Determine the probability, expressed as a fraction, of winning *exactly* four games if seven games are played.

32 In a circle, an arc length of 6.6 is intercepted by a central angle of $\frac{2}{3}$ radians. Determine the length of the radius.

33 Show that $\dfrac{\sec^2 x - 1}{\sec^2 x}$ is equivalent to $\sin^2 x$.

34 Solve algebraically for the exact values of x: $\frac{5x}{2} = \frac{1}{x} + \frac{x}{4}$

35 Simplify $\displaystyle\sum_{a=1}^{4} (x - a^2)$.

Part III

Answer all 3 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. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [12]

36 In a triangle, two sides that measure 8 centimeters and 11 centimeters form an angle that measures 82°. To the *nearest tenth of a degree*, determine the measure of the *smallest* angle in the triangle.

37 Solve the equation $2x^3 - x^2 - 8x + 4 = 0$ algebraically for all values of x.

38 Solve algebraically for x: $|3x - 5| - x < 17$

Part IV

Answer the question in this part. A correct answer will receive 6 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. A correct numerical answer with no work shown will receive only 1 credit. The answer should be written in pen. [6]

39 Solve algebraically, to the *nearest hundredth*, for all values of x:

$$\log_2 (x^2 - 7x + 12) - \log_2 (2x - 10) = 3$$

Reference Sheet

Area of a Triangle

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

Functions of the Sum of Two Angles

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

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

$\tan (A + B) = \dfrac{\tan A + \tan B}{1 - \tan A \tan B}$

Functions of the Difference of Two Angles

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

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

$\tan (A - B) = \dfrac{\tan A - \tan B}{1 + \tan A \tan B}$

Law of Sines

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

Sum of a Finite Arithmetic Series

$S_n = \dfrac{n(a_1 + a_n)}{2}$

Binomial Theorem

$(a + b)^n = {}_nC_0 a^n b^0 + {}_nC_1 a^{n-1} b^1 + {}_nC_2 a^{n-2} b^2 + \ldots + {}_nC_n a^0 b^n$

$(a + b)^n = \displaystyle\sum_{r=0}^{n} {}_nC_r a^{n-r} b^r$

Law of Cosines

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

Functions of the Double Angle

$\sin 2A = 2 \sin A \cos A$

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

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

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

$\tan 2A = \dfrac{2 \tan A}{1 - \tan^2 A}$

Functions of the Half Angle

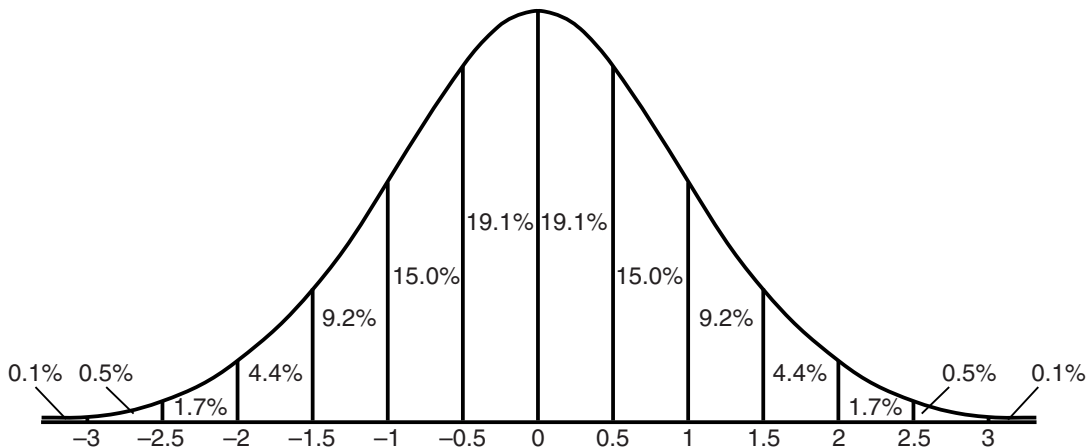$\sin \dfrac{1}{2} A = \pm \sqrt{\dfrac{1 - \cos A}{2}}$

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

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

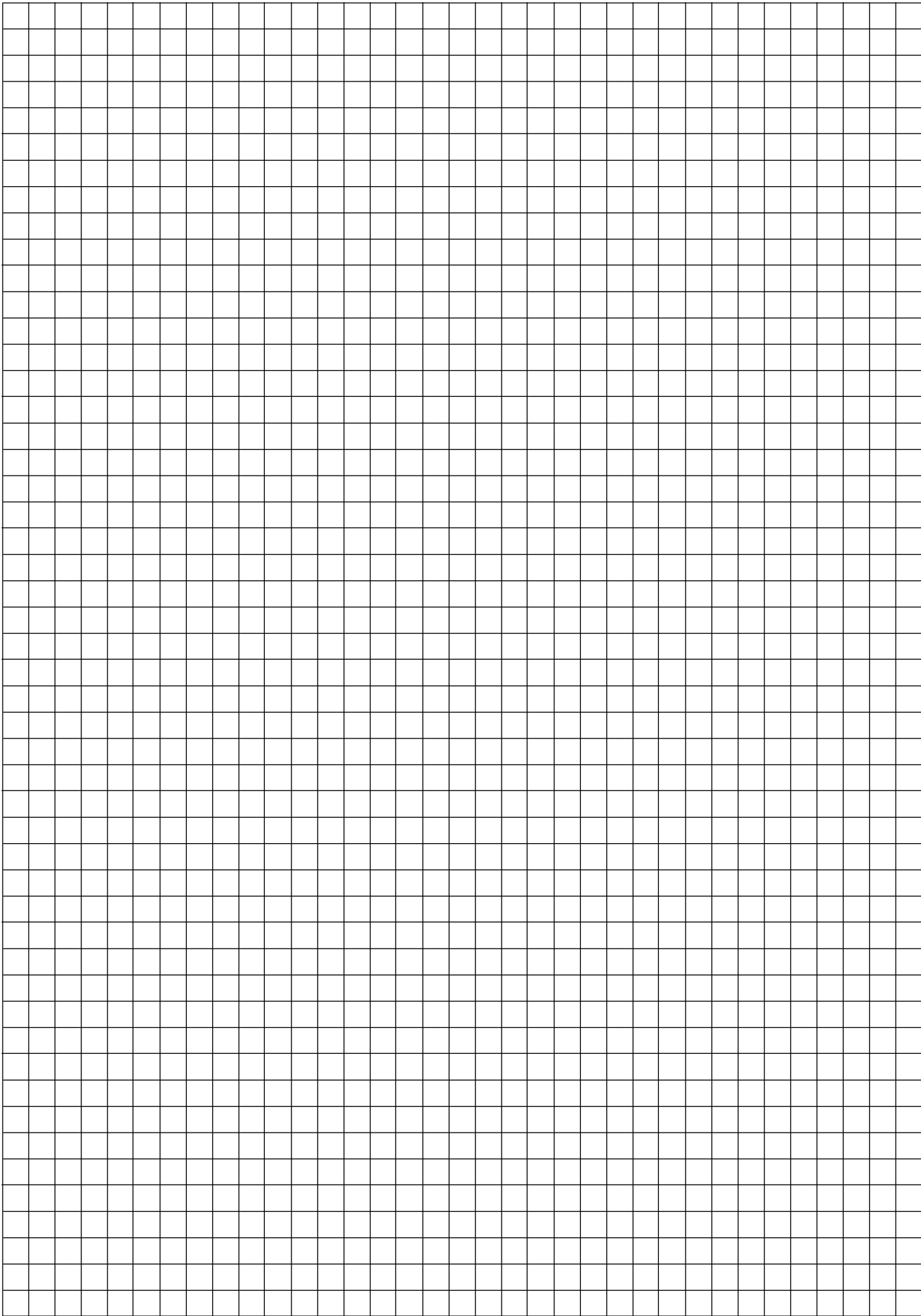**Sum of a Finite Geometric Series**

$S_n = \dfrac{a_1(1 - r^n)}{1 - r}$
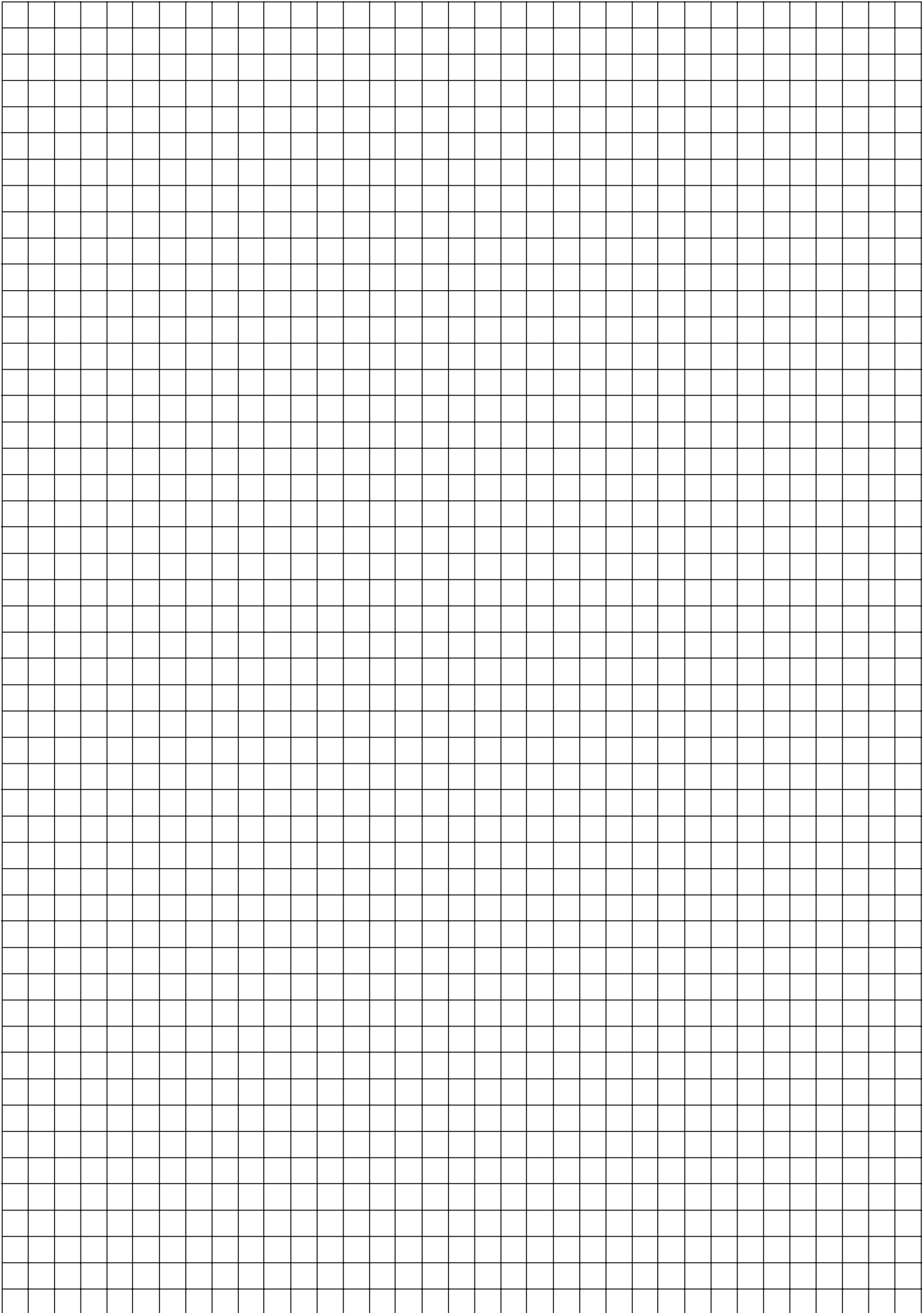
**Normal Curve
Standard Deviation**

FOR TEACHERS ONLY

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ALGEBRA 2/TRIGONOMETRY

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SCORING KEY AND RATING GUIDE

Mechanics of Rating

The following procedures are to be followed for scoring student answer papers for the Regents Examination in Algebra 2/Trigonometry. More detailed information about scoring is provided in the publication *Information Booklet for Scoring the Regents Examinations in Mathematics*.

Do *not* attempt to correct the student's work by making insertions or changes of any kind. In scoring the open-ended questions, use check marks 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. No one teacher is to score more than approximately one-third of the open-ended questions on a student's paper. Teachers may not score their own students' answer papers. On the student's separate answer sheet, for each question, record the number of credits earned and the teacher's assigned rater/scorer letter.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Raters should record the student's scores for all questions and the total raw score on the student's separate answer sheet. Then the student's total raw score should be converted to a scale score by using the conversion chart that will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ on Wednesday, August 12, 2015. Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student's final score. The student's scale score should be entered in the box provided on the student's separate answer sheet. The scale score is the student's final examination score.

If the student's responses for the multiple-choice questions are being hand scored prior to being scanned, the scorer must be careful not to make any marks on the answer sheet except to record the scores in the designated score boxes. Marks elsewhere on the answer sheet will interfere with the accuracy of the scanning.

Part I

Allow a total of 54 credits, 2 credits for each of the following.

(1) 1	(10) 3	(19) . . . . . 3 . . . . .
(2) 2	(11) 2	(20) . . . . . 1 . . . . .
(3) 4	(12) 1	(21) . . . . . 4 . . . . .
(4) 1	(13) 3	(22) . . . . . 1 . . . . .
(5) 1	(14) 2	(23) . . . . . 2 . . . . .
(6) 2	(15) 2	(24) . . . . . 4 . . . . .
(7) 4	(16) 3	(25) . . . . . 3 . . . . .
(8) 1	(17) 3	(26) . . . . . 4 . . . . .
(9) 2	(18) 4	(27) . . . . . 1 . . . . .

Updated information regarding the rating of this examination may be posted on the New York State Education Department's web site during the rating period. Check this web site at: http://www.p12.nysed.gov/assessment/ and select the link "Scoring Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents Examination period.

General Rules for Applying Mathematics Rubrics

I. General Principles for Rating

The rubrics for the constructed-response questions on the Regents Examination in Algebra 2/Trigonometry are designed to provide a systematic, consistent method for awarding credit. The rubrics are not to be considered all-inclusive; it is impossible to anticipate all the different methods that students might use to solve a given problem. Each response must be rated carefully using the teacher's professional judgment and knowledge of mathematics; all calculations must be checked. The specific rubrics for each question must be applied consistently to all responses. In cases that are not specifically addressed in the rubrics, raters must follow the general rating guidelines in the publication *Information Booklet for Scoring the Regents Examinations in Mathematics*, use their own professional judgment, confer with other mathematics teachers, and/or contact the State Education Department for guidance. During each Regents Examination administration period, rating questions may be referred directly to the Education Department. The contact numbers are sent to all schools before each administration period.

II. Full-Credit Responses

A full-credit response provides a complete and correct answer to all parts of the question. Sufficient work is shown to enable the rater to determine how the student arrived at the correct answer.

When the rubric for the full-credit response includes one or more examples of an acceptable method for solving the question (usually introduced by the phrase "such as"), it does not mean that there are no additional acceptable methods of arriving at the correct answer. Unless otherwise specified, mathematically correct alternative solutions should be awarded credit. The only exceptions are those questions that specify the type of solution that must be used; e.g., an algebraic solution or a graphic solution. A correct solution using a method other than the one specified is awarded half the credit of a correct solution using the specified method.

III. Appropriate Work

Full-Credit Responses: The directions in the examination booklet for all the constructed-response questions state: "Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc." The student has the responsibility of providing the correct answer ***and*** showing how that answer was obtained. The student must "construct" the response; the teacher should not have to search through a group of seemingly random calculations scribbled on the student paper to ascertain what method the student may have used.

Responses With Errors: Rubrics that state "Appropriate work is shown, but…" are intended to be used with solutions that show an essentially complete response to the question but contain certain types of errors, whether computational, rounding, graphing, or conceptual. If the response is incomplete; i.e., an equation is written but not solved or an equation is solved but not all of the parts of the question are answered, appropriate work has ***not*** been shown. Other rubrics address incomplete responses.

IV. Multiple Errors

Computational Errors, Graphing Errors, and Rounding Errors: Each of these types of errors results in a 1-credit deduction. Any combination of two of these types of errors results in a 2-credit deduction. No more than 2 credits should be deducted for such mechanical errors in any response. The teacher must carefully review the student's work to determine what errors were made and what type of errors they were.

Conceptual Errors: A conceptual error involves a more serious lack of knowledge or procedure. Examples of conceptual errors include using the incorrect formula for the area of a figure, choosing the incorrect trigonometric function, or multiplying the exponents instead of adding them when multiplying terms with exponents. If a response shows repeated occurrences of the same conceptual error, the student should not be penalized twice. If the same conceptual error is repeated in responses to other questions, credit should be deducted in each response.

For 4- and 6-credit questions, if a response shows one conceptual error and one computational, graphing, or rounding error, the teacher must award credit that takes into account both errors. Refer to the rubric for specific scoring guidelines.

Part II

For each question, use the specific criteria to award a maximum of 2 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(28)   **[2]** 143°14′ or 8594′, and correct 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, such as stating the answer is 143.24.

or

[1] 143°14′ or 8594′, 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)   **[2]** −1, and correct 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, 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)   **[2]** $x^2 + x$ or $x(x + 1)$, and correct work is shown.

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

or

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

or

     [1] $(x + 1)^2 - (x + 1)$ is written, but no further correct work is shown.

or

     [1] $x^2 + x$, 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)   **[2]** $\frac{560}{2187}$, and correct work is shown.

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

or

     [1] Appropriate work is shown, but the answer is expressed as a decimal.

or

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

or

     [1] $_7C_4\left(\frac{2}{3}\right)^4\left(\frac{1}{3}\right)^3$ is written, but no further correct work is shown.

or

     [1] $\frac{560}{2187}$, 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)   **[2]** 9.9, and correct 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] 9.9, 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.

(33)   **[2]** Correct work is shown.

       [1] Appropriate work is shown, but one simplification or substitution error is made.

or

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

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

(34)   **[2]** $\pm\dfrac{2}{3}$ or $\pm0.\overline{6}$, and correct algebraic work is shown.

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

or

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

or

       [1] $\pm\dfrac{2}{3}$ or $\pm0.\overline{6}$, but a method other than algebraic is used.

or

       [1] $\pm\dfrac{2}{3}$ or $\pm0.\overline{6}$, 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.

(35) **[2]** $4x - 30$, and correct work is shown.

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

or

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

or

[1] $(x - 1^2) + (x - 2^2) + (x - 3^2) + (x - 4^2)$ is written, but no further correct work is shown.

or

[1] $4x - 30$, 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 4 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(36)   **[4]** 38.7, and correct 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] Appropriate work is shown, but one conceptual error is made.

or

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

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

or

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

or

[1] 38.7, 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.

(37)   **[4]** ±2 and $\frac{1}{2}$, and correct algebraic work is shown.

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

<div align="center">or</div>

    [3] Appropriate work is shown, but only two solutions are stated.

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

<div align="center">or</div>

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

<div align="center">or</div>

    [2] Appropriate work is shown to find $(x^2 - 4)(2x - 1) = 0$, but no further correct work is shown.

<div align="center">or</div>

    [2] ±2 and $\frac{1}{2}$, but a method other than algebraic is used.

    [1] Appropriate work is shown, but one conceptual error and one computational or factoring error are made.

<div align="center">or</div>

    [1] $x^2(2x - 1) - 4(2x - 1) = 0$ is written, but no further correct work is shown.

<div align="center">or</div>

    [1] ±2 and $\frac{1}{2}$, 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.

(38)   **[4]** $-3 < x < 11$ or an equivalent interval or graphic representation, and correct algebraic work is shown.

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

or

[3] Appropriate work is shown, but the answer is not expressed as a conjunction.

[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.

or

[2] Appropriate work is shown to find $x > -3$, but no further correct work is shown.

or

[2] $-3 < x < 11$, but a method other than algebraic is used.

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

or

[1] Appropriate work is shown to find $x < 11$, but no further correct work is shown.

or

[1] $-3 < x < 11$, 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 this question, use the specific criteria to award a maximum of 6 credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(39)   **[6]** 17.84 and 5.16, and correct algebraic work is shown.

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

<div align="center">***or***</div>

[5] Appropriate work is shown, but only one value of x is found.

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

<div align="center">***or***</div>

[4] A correct substitution is made into the quadratic formula, but no further correct work is shown.

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

<div align="center">***or***</div>

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

<div align="center">***or***</div>

[3] 17.84 and 5.16, but a method other than algebraic is used.

<div align="center">***or***</div>

[3] $x^2 - 23x + 92 = 0$ is written, but no further correct work is shown.

[2] Appropriate work is shown, but one conceptual error and one computational or rounding error are made.

<div align="center">***or***</div>

[2] $\dfrac{x^2 - 7x + 12}{2x - 10} = 2^3$ is written, but no further correct work is shown.

<div align="center">***or***</div>

[2] 17.84 and 5.16, but no work is shown.

[1] Appropriate work is shown, but one conceptual error and two or more computational or rounding errors are made.

<div align="center">***or***</div>

[1] $\log_2 \dfrac{x^2 - 7x + 12}{2x - 10} = 3$ is written, but no further correct work is shown.

<div align="center">***or***</div>

[1] 17.84 or 5.16, 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 Core Curriculum

Content Strands	Item Numbers
Number Sense and Operations	3, 18, 24, 35
Algebra	1, 4, 5, 6, 7, 8, 10, 11, 13, 15, 16, 17, 19, 20, 22, 23, 25, 27, 29, 30, 32, 33, 34, 36, 37, 38, 39
Measurement	28
Statistics and Probability	2, 9, 12, 14, 21, 26, 31

Regents Examination in Algebra 2/Trigonometry

August 2015

Chart for Converting Total Test Raw Scores to
Final Examination Scores (Scale Scores)

The *Chart for Determining the Final Examination Score for the August 2015 Regents Examination in Algebra 2/Trigonometry* will be posted on the Department's web site at: http://www.p12.nysed.gov/assessment/ on Wednesday, August 12, 2015. Conversion charts provided for previous administrations of the Regents Examination in Algebra 2/Trigonometry must NOT be used to determine students' final scores for this administration.

Online Submission of Teacher Evaluations of the Test to the Department

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:

1. Go to http://www.forms2.nysed.gov/emsc/osa/exameval/reexameval.cfm.

2. Select the test title.

3. Complete the required demographic fields.

4. Complete each evaluation question and provide comments in the space provided.

5. Click the SUBMIT button at the bottom of the page to submit the completed form.

The State Education Department / The University of the State of New York

Regents Examination in Algebra 2/Trigonometry – August 2015

Chart for Converting Total Test Raw Scores to Final Examination Scores (Scale Scores)

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

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 scale score that corresponds to that raw score. The scale score is the student's final examination score. Enter this score in the space labeled "Scale Score" on the student's answer sheet.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Because scale scores corresponding to raw scores in the conversion chart change from one administration to another, it is crucial that for each administration the conversion chart provided for that administration be used to determine the student's final score. The chart above is usable only for this administration of the Regents Examination in Algebra 2/Trigonometry.