

The University of the State of New York
REGENTS HIGH SCHOOL EXAMINATION

GEOMETRY

Thursday, June 23, 2011—9:15 a.m. to 12:15 p.m., only

Student Name: _____

School Name: _____

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

This examination has four parts, with a total of 38 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. All work should be written in pen, except 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, a straightedge (ruler), and a compass must be available for you to use while taking this examination.

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

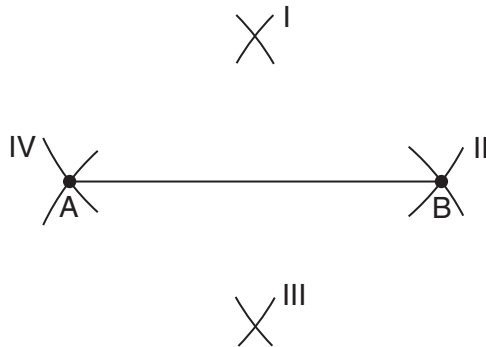
DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.

Part I

Answer all 28 questions in this part. Each correct answer will receive 2 credits. No partial credit will be allowed. For each question, write on the separate answer sheet the numeral preceding the word or expression that best completes the statement or answers the question. [56]

Use this space for computations.

1 Line segment AB is shown in the diagram below.



Which two sets of construction marks, labeled I, II, III, and IV, are part of the construction of the perpendicular bisector of line segment AB ?

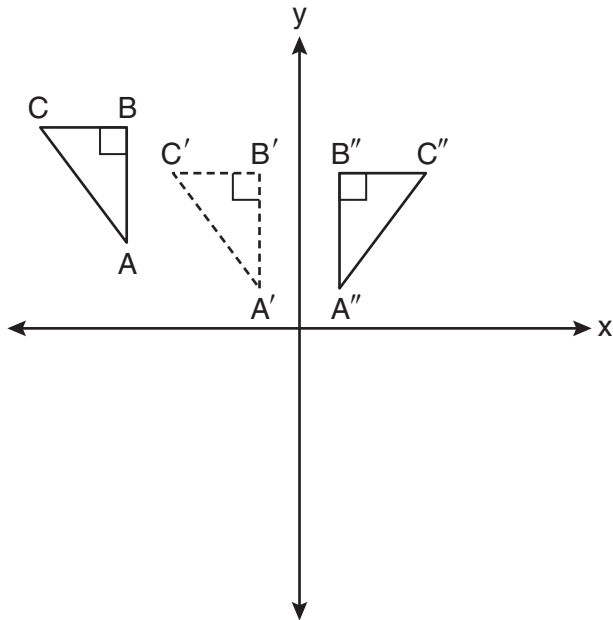
- (1) I and II
- (2) I and III
- (3) II and III
- (4) II and IV

2 If $\triangle JKL \cong \triangle MNO$, which statement is always true?

- (1) $\angle KLJ \cong \angle NMO$
- (2) $\angle KJL \cong \angle MON$
- (3) $\overline{JL} \cong \overline{MO}$
- (4) $\overline{JK} \cong \overline{ON}$

**Use this space for
computations.**

- 3 In the diagram below, $\triangle A'B'C'$ is a transformation of $\triangle ABC$, and $\triangle A''B''C''$ is a transformation of $\triangle A'B'C'$.

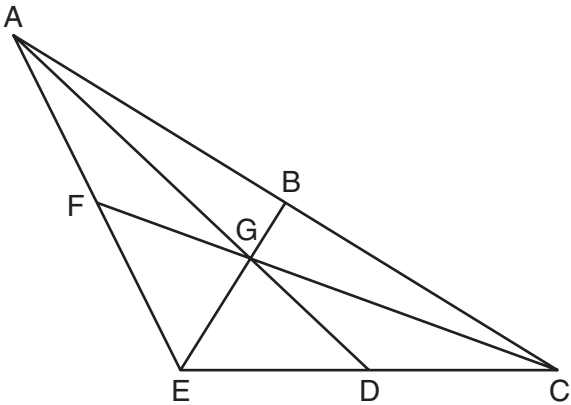


The composite transformation of $\triangle ABC$ to $\triangle A''B''C''$ is an example of a

- (1) reflection followed by a rotation
- (2) reflection followed by a translation
- (3) translation followed by a rotation
- (4) translation followed by a reflection

Use this space for computations.

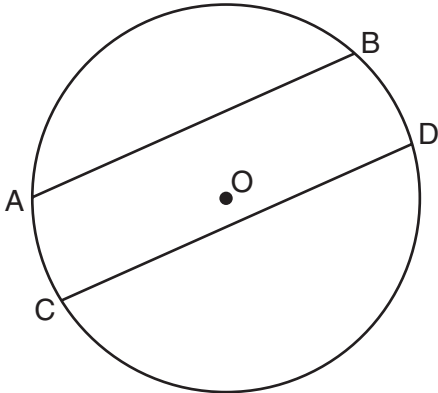
4 In the diagram below of $\triangle ACE$, medians \overline{AD} , \overline{EB} , and \overline{CF} intersect at G . The length of \overline{FG} is 12 cm.



What is the length, in centimeters, of \overline{GC} ?

- (1) 24
- (2) 12
- (3) 6
- (4) 4

5 In the diagram below of circle O , chord \overline{AB} is parallel to chord \overline{CD} .

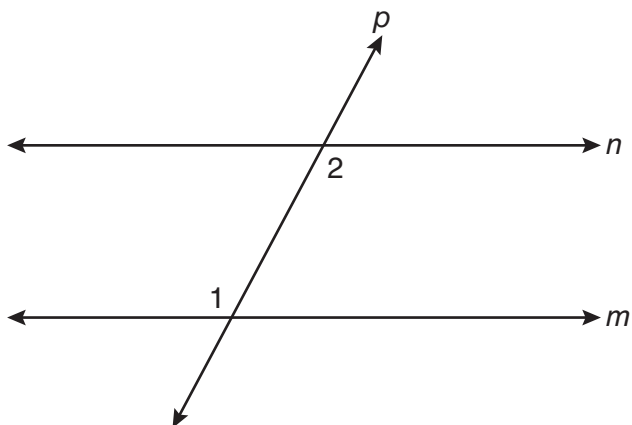


Which statement must be true?

- (1) $\widehat{AC} \cong \widehat{BD}$
- (2) $\widehat{AB} \cong \widehat{CD}$
- (3) $\overline{AB} \cong \overline{CD}$
- (4) $\widehat{ABD} \cong \widehat{CDB}$

Use this space for
computations.

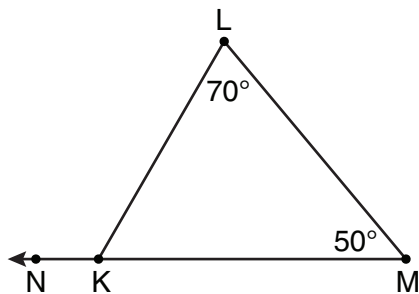
6 In the diagram below, line p intersects line m and line n .



If $m\angle 1 = 7x$ and $m\angle 2 = 5x + 30$, lines m and n are parallel when x equals

- (1) 12.5 (3) 87.5
(2) 15 (4) 105

7 In the diagram of $\triangle KLM$ below, $m\angle L = 70$, $m\angle M = 50$, and \overline{MK} is extended through N .



What is the measure of $\angle LKN$?

- (1) 60° (3) 180°
(2) 120° (4) 300°

Use this space for computations.

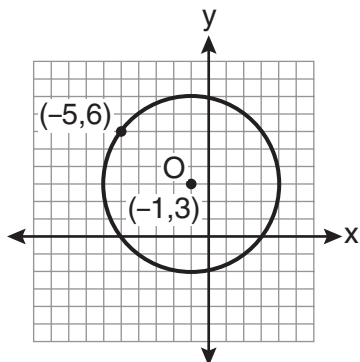
8 If two distinct planes, \mathcal{A} and \mathcal{B} , are perpendicular to line c , then which statement is true?

- (1) Planes \mathcal{A} and \mathcal{B} are parallel to each other.
- (2) Planes \mathcal{A} and \mathcal{B} are perpendicular to each other.
- (3) The intersection of planes \mathcal{A} and \mathcal{B} is a line parallel to line c .
- (4) The intersection of planes \mathcal{A} and \mathcal{B} is a line perpendicular to line c .

9 What is the length of the line segment whose endpoints are $A(-1,9)$ and $B(7,4)$?

- (1) $\sqrt{61}$
- (2) $\sqrt{89}$
- (3) $\sqrt{205}$
- (4) $\sqrt{233}$

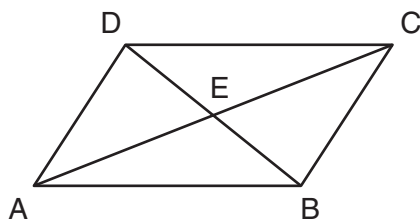
10 What is an equation of circle O shown in the graph below?



- (1) $(x + 1)^2 + (y - 3)^2 = 25$
- (2) $(x - 1)^2 + (y + 3)^2 = 25$
- (3) $(x - 5)^2 + (y + 6)^2 = 25$
- (4) $(x + 5)^2 + (y - 6)^2 = 25$

Use this space for
computations.

- 11 In the diagram below, parallelogram $ABCD$ has diagonals \overline{AC} and \overline{BD} that intersect at point E .



Which expression is *not* always true?

- (1) $\angle DAE \cong \angle BCE$ (3) $\overline{AC} \cong \overline{DB}$
(2) $\angle DEC \cong \angle BEA$ (4) $\overline{DE} \cong \overline{EB}$
- 12 The volume, in cubic centimeters, of a sphere whose diameter is 6 centimeters is
- (1) 12π (3) 48π
(2) 36π (4) 288π
- 13 The equation of line k is $y = \frac{1}{3}x - 2$. The equation of line m is $-2x + 6y = 18$. Lines k and m are
- (1) parallel
(2) perpendicular
(3) the same line
(4) neither parallel nor perpendicular

**Use this space for
computations.**

14 What are the center and the radius of the circle whose equation is $(x - 5)^2 + (y + 3)^2 = 16$?

- (1) $(-5,3)$ and 16 (3) $(-5,3)$ and 4
(2) $(5,-3)$ and 16 (4) $(5,-3)$ and 4

15 Triangle ABC has vertices $A(0,0)$, $B(3,2)$, and $C(0,4)$. This triangle may be classified as

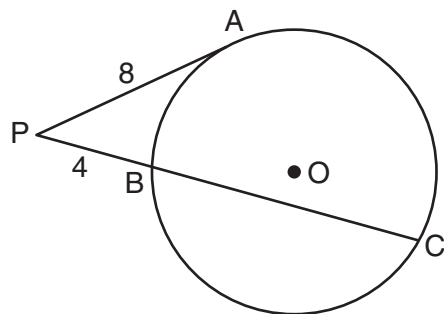
- (1) equilateral (3) right
(2) isosceles (4) scalene

16 In rhombus $ABCD$, the diagonals \overline{AC} and \overline{BD} intersect at E . If $AE = 5$ and $BE = 12$, what is the length of \overline{AB} ?

- (1) 7 (3) 13
(2) 10 (4) 17

Use this space for computations.

- 17 In the diagram below of circle O , \overline{PA} is tangent to circle O at A , and \overline{PBC} is a secant with points B and C on the circle.



If $PA = 8$ and $PB = 4$, what is the length of \overline{BC} ?

- (1) 20
(2) 16
(3) 15
(4) 12

- 18 Lines m and n intersect at point A . Line k is perpendicular to both lines m and n at point A . Which statement *must* be true?

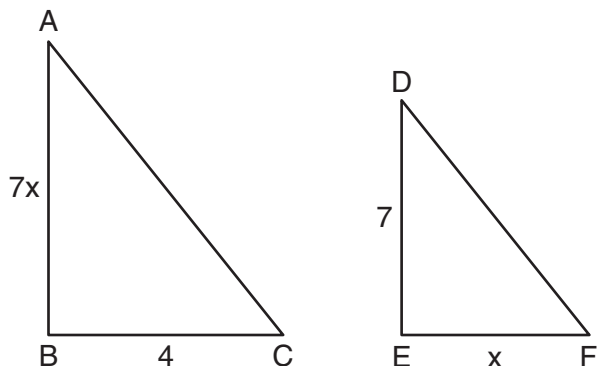
- (1) Lines m , n , and k are in the same plane.
(2) Lines m and n are in two different planes.
(3) Lines m and n are perpendicular to each other.
(4) Line k is perpendicular to the plane containing lines m and n .

- 19 In $\triangle DEF$, $m\angle D = 3x + 5$, $m\angle E = 4x - 15$, and $m\angle F = 2x + 10$. Which statement is true?

- (1) $DF = FE$
(2) $DE = FE$
(3) $m\angle E = m\angle F$
(4) $m\angle D = m\angle F$

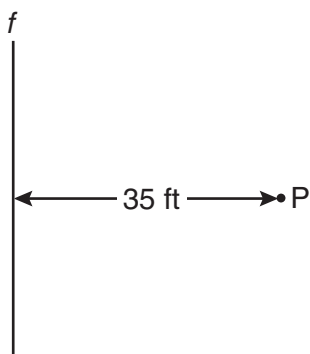
Use this space for computations.

- 20 As shown in the diagram below, $\triangle ABC \sim \triangle DEF$, $AB = 7x$, $BC = 4$, $DE = 7$, and $EF = x$.



What is the length of \overline{AB} ?

- (1) 28 (3) 14
(2) 2 (4) 4
- 21 A man wants to place a new bird bath in his yard so that it is 30 feet from a fence, f , and also 10 feet from a light pole, P . As shown in the diagram below, the light pole is 35 feet away from the fence.

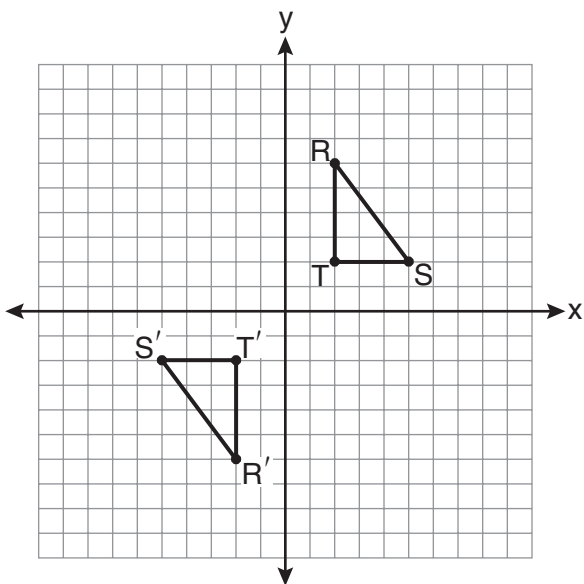


How many locations are possible for the bird bath?

- (1) 1 (3) 3
(2) 2 (4) 0

Use this space for
computations.

- 22 As shown on the graph below, $\triangle R'S'T'$ is the image of $\triangle RST$ under a single transformation.



Which transformation does this graph represent?

- (1) glide reflection (3) rotation
(2) line reflection (4) translation
- 23 Which line is parallel to the line whose equation is $4x + 3y = 7$ and also passes through the point $(-5, 2)$?
- (1) $4x + 3y = -26$ (3) $3x + 4y = -7$
(2) $4x + 3y = -14$ (4) $3x + 4y = 14$

**Use this space for
computations.**

24 If the vertex angles of two isosceles triangles are congruent, then the triangles must be

- (1) acute
- (2) congruent
- (3) right
- (4) similar

25 Which quadrilateral has diagonals that always bisect its angles and also bisect each other?

- (1) rhombus
- (2) rectangle
- (3) parallelogram
- (4) isosceles trapezoid

26 When $\triangle ABC$ is dilated by a scale factor of 2, its image is $\triangle A'B'C'$. Which statement is true?

- (1) $\overline{AC} \cong \overline{A'C'}$
- (2) $\angle A \cong \angle A'$
- (3) perimeter of $\triangle ABC =$ perimeter of $\triangle A'B'C'$
- (4) $2(\text{area of } \triangle ABC) = \text{area of } \triangle A'B'C'$

Use this space for
computations.

27 What is the slope of a line that is perpendicular to the line whose equation is $3x + 5y = 4$?

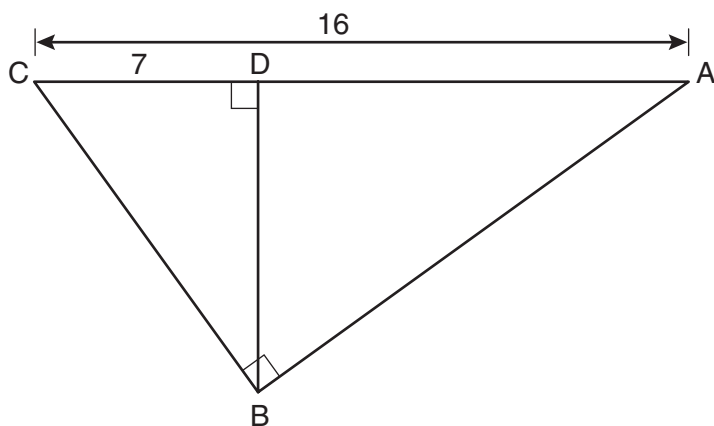
(1) $-\frac{3}{5}$

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

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

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

28 In the diagram below of right triangle ABC , altitude \overline{BD} is drawn to hypotenuse \overline{AC} , $AC = 16$, and $CD = 7$.



What is the length of \overline{BD} ?

(1) $3\sqrt{7}$

(3) $7\sqrt{3}$

(2) $4\sqrt{7}$

(4) 12

Part II

Answer all 6 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. [12]

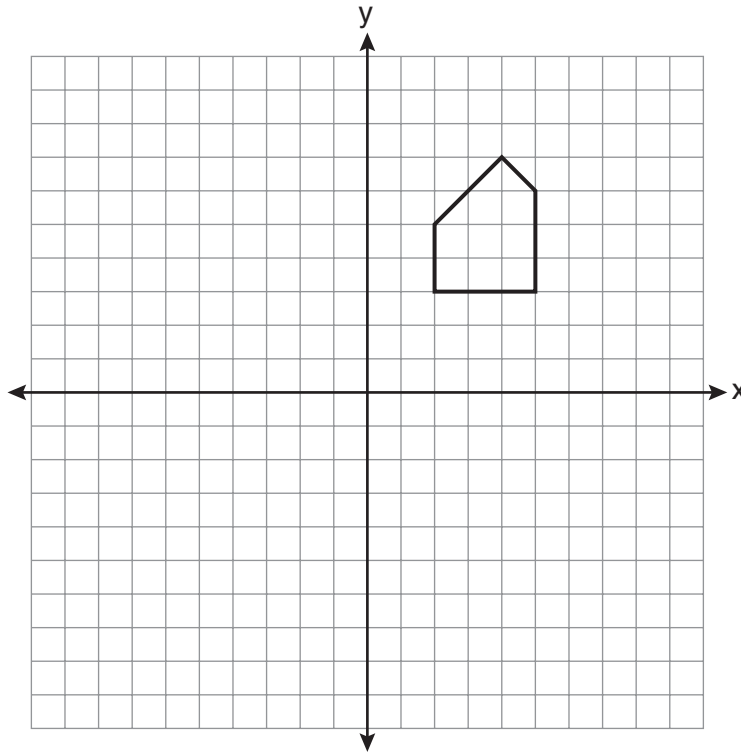
- 29 Given the true statement, “The medians of a triangle are concurrent,” write the negation of the statement and give the truth value for the negation.

30 Using a compass and straightedge, on the diagram below of \overleftrightarrow{RS} , construct an equilateral triangle with \overline{RS} as one side. [Leave all construction marks.]

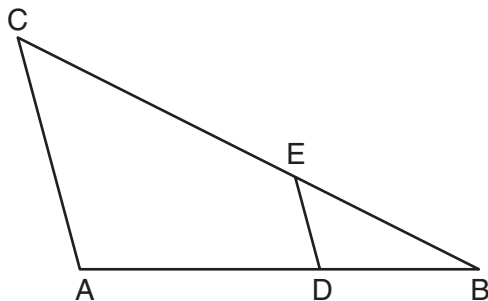


31 The Parkside Packing Company needs a rectangular shipping box. The box must have a length of 11 inches and a width of 8 inches. Find, to the *nearest tenth of an inch*, the minimum height of the box such that the volume is *at least* 800 cubic inches.

- 32** A pentagon is drawn on the set of axes below. If the pentagon is reflected over the y -axis, determine if this transformation is an isometry. Justify your answer. [The use of the set of axes below is optional.]



- 33** In the diagram below of $\triangle ABC$, D is a point on \overline{AB} , E is a point on \overline{BC} , $\overline{AC} \parallel \overline{DE}$, $CE = 25$ inches, $AD = 18$ inches, and $DB = 12$ inches. Find, to the *nearest tenth of an inch*, the length of \overline{EB} .

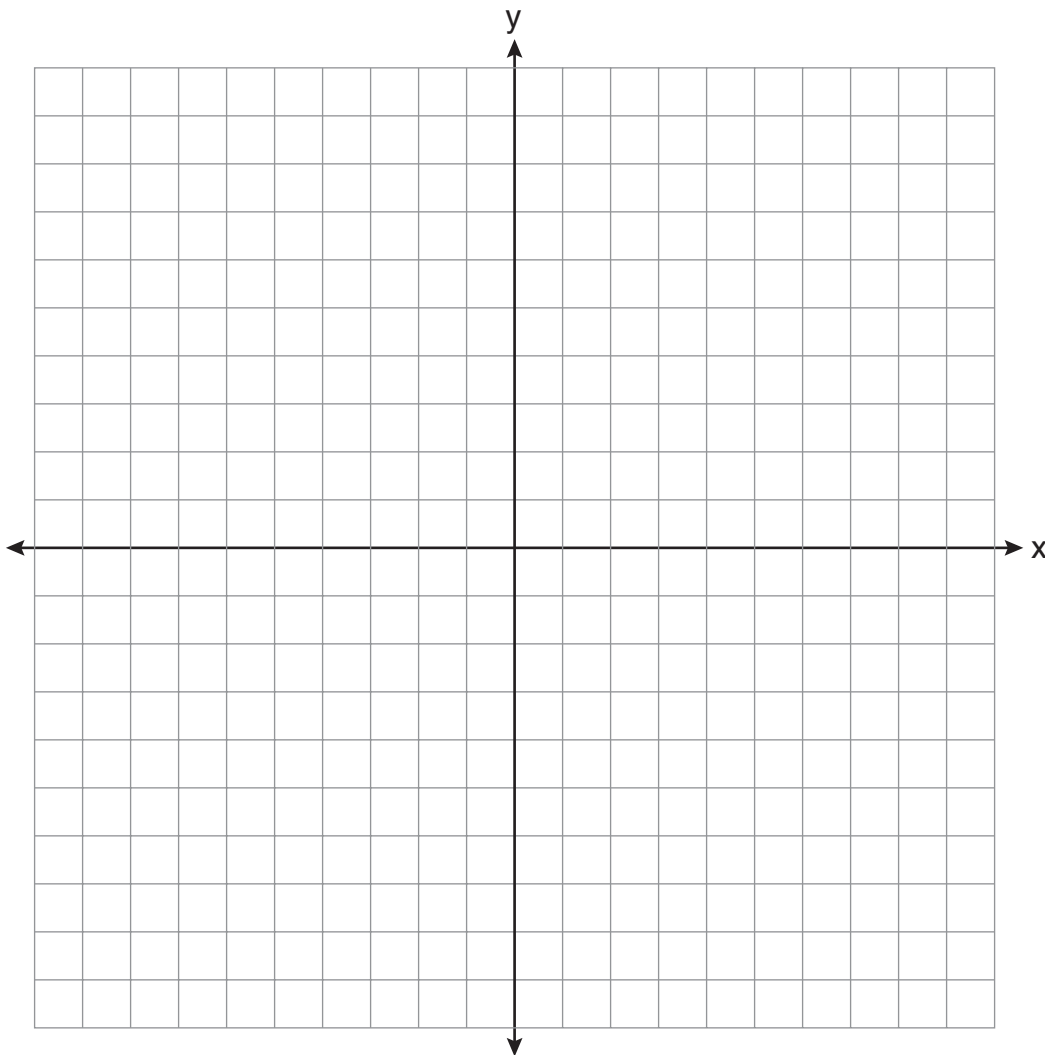


34 In circle O , diameter \overline{RS} has endpoints $R(3a, 2b - 1)$ and $S(a - 6, 4b + 5)$. Find the coordinates of point O , in terms of a and b . Express your answer in simplest form.

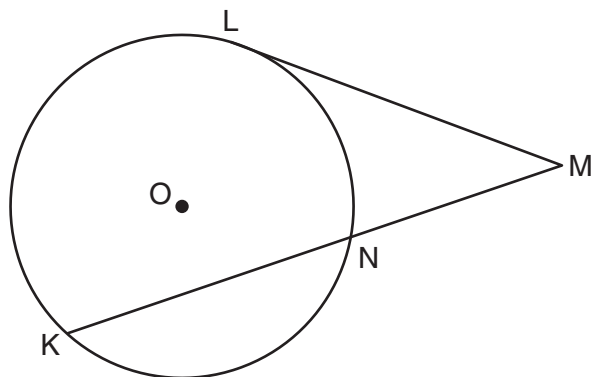
Part III

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]

- 35 On the set of coordinate axes below, graph the locus of points that are equidistant from the lines $y = 6$ and $y = 2$ and also graph the locus of points that are 3 units from the y -axis. State the coordinates of *all* points that satisfy *both* conditions.



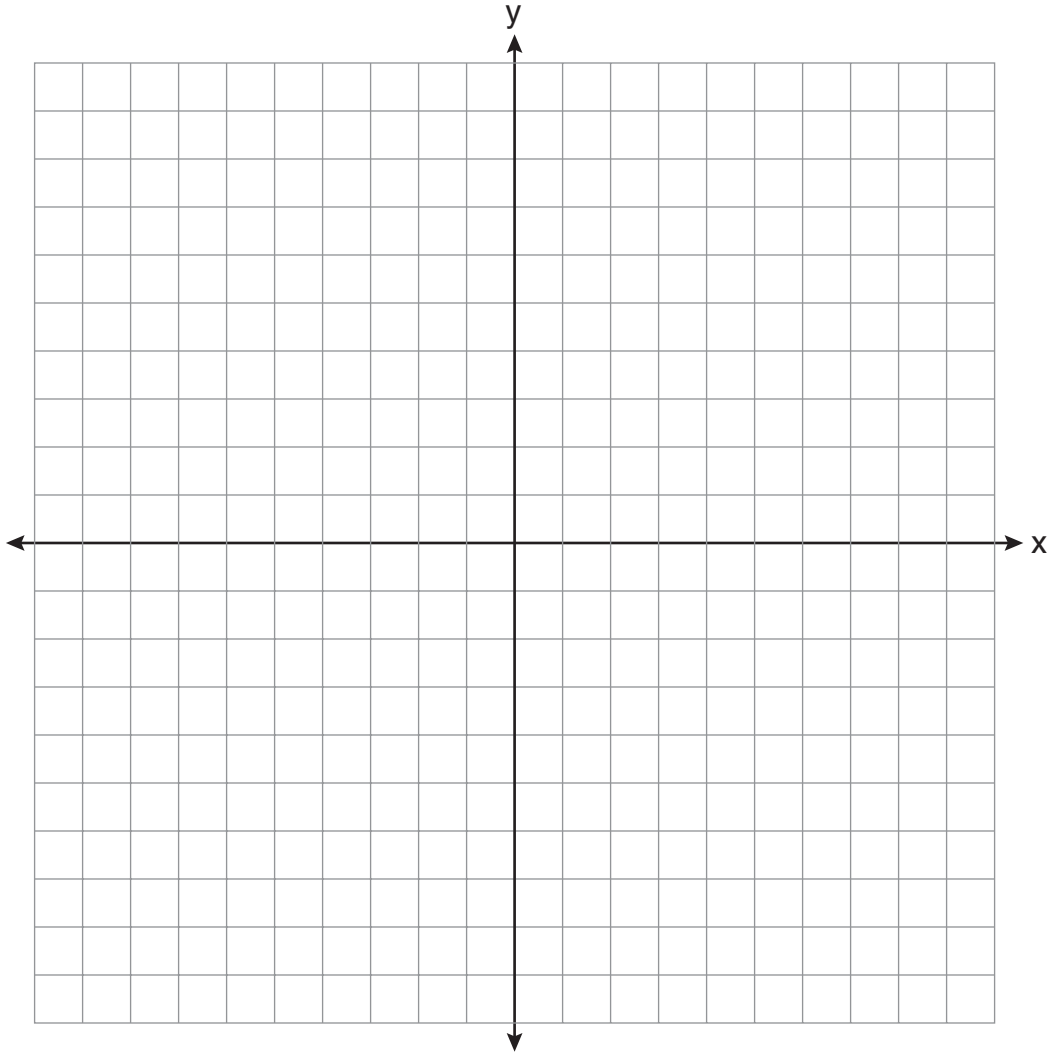
- 36 In the diagram below, tangent \overline{ML} and secant \overline{MNK} are drawn to circle O .
The ratio $m\widehat{LN}:m\widehat{NK}:m\widehat{KL}$ is 3:4:5. Find $m\angle LMK$.



37 Solve the following system of equations graphically.

$$2x^2 - 4x = y + 1$$

$$x + y = 1$$

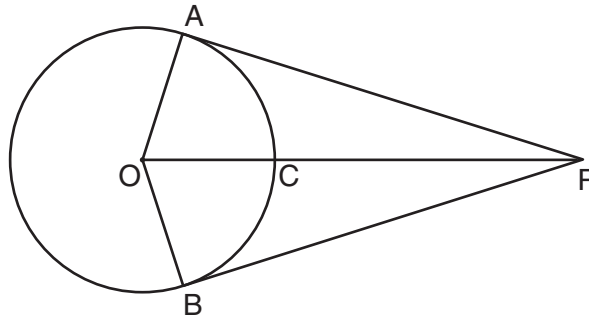


Part IV

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]

- 38 In the diagram below, \overline{PA} and \overline{PB} are tangent to circle O , \overline{OA} and \overline{OB} are radii, and \overline{OP} intersects the circle at C .

Prove: $\angle AOP \cong \angle BOP$



Reference Sheet

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Volume	Cylinder	$V = Bh$ where B is the area of the base
	Pyramid	$V = \frac{1}{3}Bh$ where B is the area of the base
	Right Circular Cone	$V = \frac{1}{3}Bh$ where B is the area of the base
	Sphere	$V = \frac{4}{3}\pi r^3$

Lateral Area (L)	Right Circular Cylinder	$L = 2\pi rh$
	Right Circular Cone	$L = \pi rl$ where l is the slant height

Surface Area	Sphere	$SA = 4\pi r^2$
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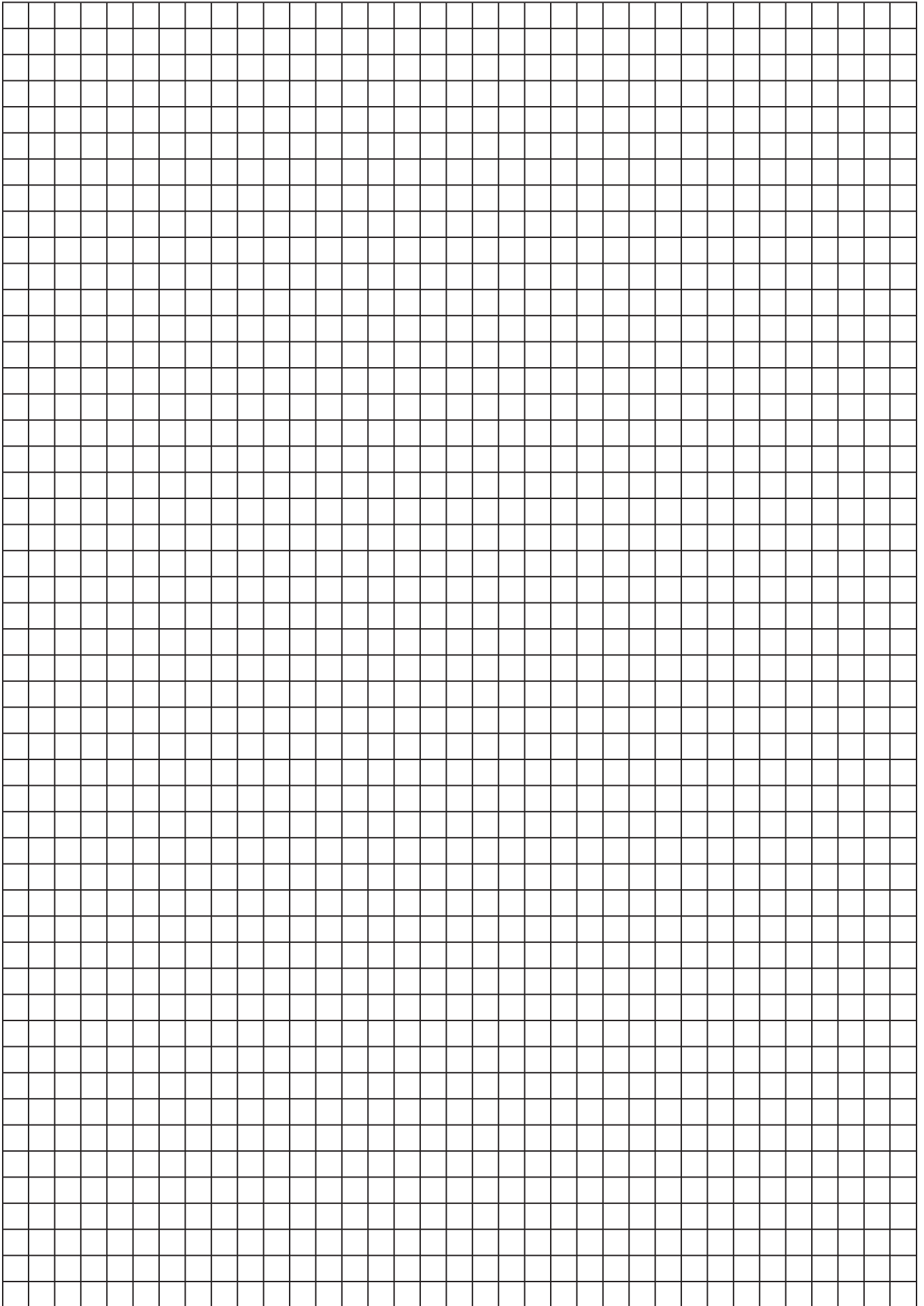
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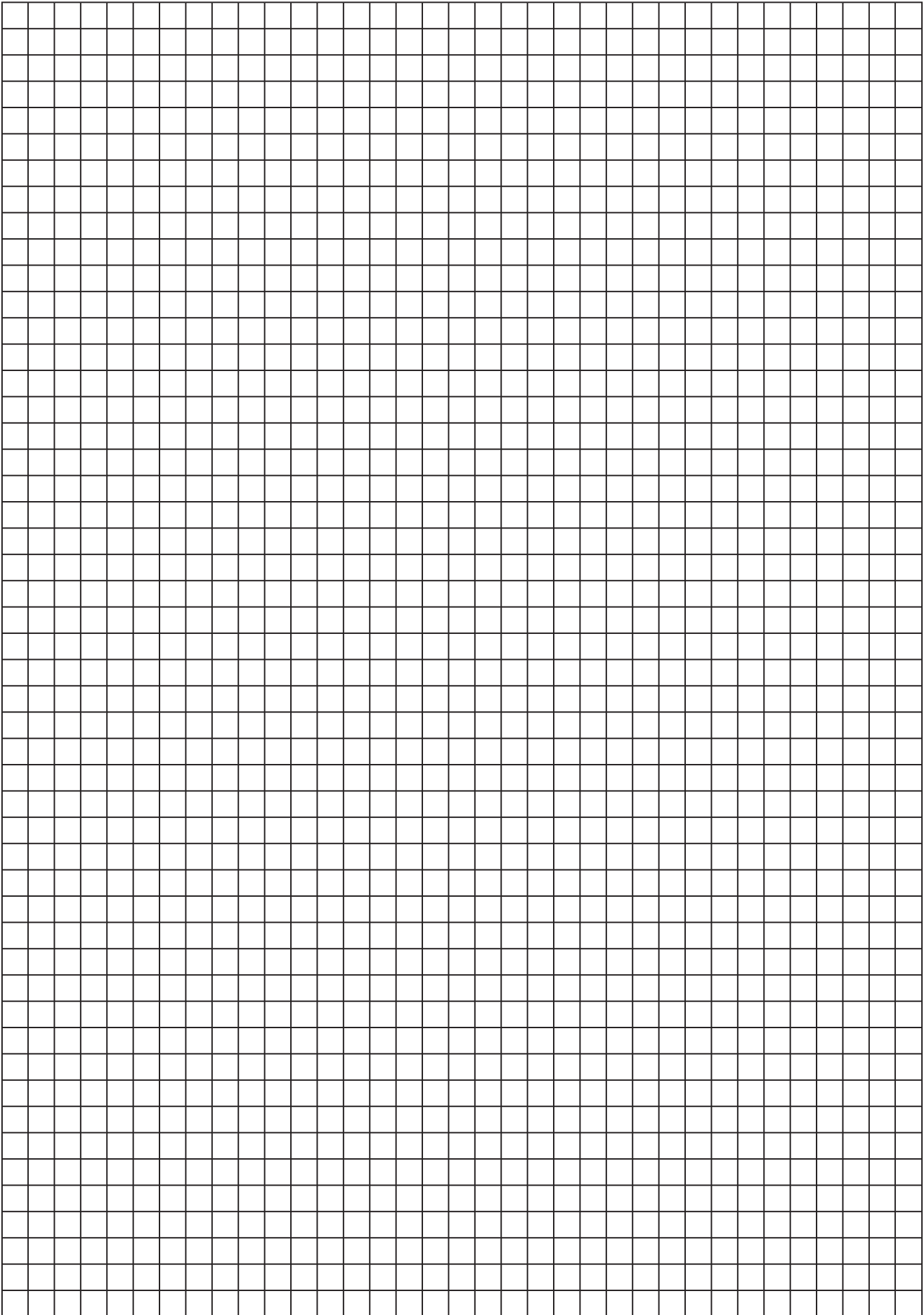
Scrap Graph Paper — This sheet will *not* be scored.

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



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REGENTS HIGH SCHOOL EXAMINATION

GEOMETRY

Thursday, June 23, 2011—9:15 a.m. to 12:15 p.m., only

ANSWER SHEET

Student Sex: Male Female Grade

Teacher School

Your answers to Part I should be recorded on this answer sheet.

Part I

Answer all 28 questions in this part.

- | | | | |
|---------|----------|----------|----------|
| 1 | 8 | 15 | 22 |
| 2 | 9 | 16 | 23 |
| 3 | 10 | 17 | 24 |
| 4 | 11 | 18 | 25 |
| 5 | 12 | 19 | 26 |
| 6 | 13 | 20 | 27 |
| 7 | 14 | 21 | 28 |

Your answers for Parts II, III, and IV should be written in the test booklet.

The declaration below must 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

GEOMETRY

GEOMETRY			
Question	Maximum Credit	Credits Earned	Rater's/Scorer's Initials
Part I 1–28	56		
Part II 29	2		
30	2		
31	2		
32	2		
33	2		
34	2		
Part III 35	4		
36	4		
37	4		
Part IV 38	6		
Maximum Total	86		

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

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Total Raw Score

Checked by

Scale Score
(from conversion chart)

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FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

GEOMETRY

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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 Geometry. More detailed information about scoring is provided in the publication *Information Booklet for Scoring the Regents Examinations in Mathematics*.

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 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. 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."

Beginning in June 2011, schools are no longer 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 detachable 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/apda/> on Thursday, June 23, 2011. Because scale 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 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 detachable answer sheet. The scale score is the student's final examination score.

Part I

Allow a total of 56 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	(8) 1	(15) 2	(22) 3
(2) 3	(9) 2	(16) 3	(23) 2
(3) 4	(10) 1	(17) 4	(24) 4
(4) 1	(11) 3	(18) 4	(25) 1
(5) 1	(12) 2	(19) 1	(26) 2
(6) 2	(13) 1	(20) 3	(27) 4
(7) 2	(14) 4	(21) 2	(28) 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/apda/> 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 Geometry 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 State 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. A response with one conceptual error can receive no more than half credit.

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.

If a response shows two (or more) different major conceptual errors, it should be considered completely incorrect and receive no credit.

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; i.e., awarding half credit for the conceptual error and deducting 1 credit for each mechanical error (maximum of two deductions for mechanical errors).

Part II

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

(29) [2] A correctly worded negation of the statement is written, and false.

[1] A correctly worded negation for the statement is written, but the truth value is missing or is incorrect.

or

[1] An incorrectly worded negation with a corresponding mathematically correct truth value is written.

[0] False, but no statement is written.

or

[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] A correct construction is drawn showing all appropriate arcs, and the equilateral triangle is drawn.

[1] An appropriate method of construction is shown, but one conceptual error is made, such as not using R and S as the endpoints of the segment.

or

[1] All construction arcs are drawn, but the triangle is not drawn.

[0] A drawing that is not an appropriate construction is shown.

or

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

(31) [2] 9.1, and appropriate work is shown.

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

or

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

or

[1] 9.1, 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.

(32) [2] States the reflection is an isometry, and a correct justification is written.

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

or

[1] States the reflection is an isometry, but an incomplete or incorrect justification is written.

[0] States the reflection is an isometry, but no justification is written.

or

[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] 16.7, and appropriate work is shown.

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

or

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

or

[1] A correct proportion is written, but no further correct work is shown.

or

[1] 16.7, 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.

(34) [2] $(2a - 3, 3b + 2)$, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made, but appropriate coordinates are written.

or

[1] Appropriate work is shown, but one conceptual error is made, but appropriate coordinates are written.

or

[1] Appropriate work is shown to find $2a - 3$ and $3b + 2$, but the solution is not written as an ordered pair.

or

[1] $(2a - 3, 3b + 2)$, 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.

Part III

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

- (35) [4] Both loci are drawn correctly and $(-3,4)$ and $(3,4)$ are stated.
- [3] Both loci are drawn correctly, but only one solution is correctly stated.
- or*
- [3] Both loci are drawn correctly, and the two solutions are indicated on the graph (such as using an **X**), but the coordinates are not stated.
- or*
- [3] Appropriate work is shown, but one graphing error is made, but appropriate points of intersection are stated.
- [2] Appropriate work is shown, but two or more graphing errors are made, but appropriate points of intersection are stated.
- or*
- [2] Appropriate work is shown, but one conceptual error is made, but appropriate points of intersection are stated.
- or*
- [2] Both loci are drawn correctly, but the solutions are not stated or are stated incorrectly.
- [1] One locus is drawn correctly, but no further correct work is shown.
- or*
- [1] $(-3,4)$ and $(3,4)$, but no work is shown.
- [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

(36) [4] 30, and appropriate work is shown.

[3] Appropriate work is shown, but one computational error is made, but an appropriate measure for $\angle LMK$ is found.

[2] Appropriate work is shown, but two computational errors are made, but an appropriate measure for $\angle LMK$ is found.

or

[2] Appropriate work is shown, but one conceptual error is made, but an appropriate measure for $\angle LMK$ is found.

or

[2] Appropriate work is shown to find $m\widehat{LN} = 90$ and $m\widehat{LK} = 150$, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational error are made, but an appropriate measure for $\angle LMK$ is found.

or

[1] $3x + 4x + 5x = 360$ is written, but no further correct work is shown.

or

[1] 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.

- (37) [4] Correct graphs are drawn, and $(2,-1)$ and $(-0.5,1.5)$ are stated.
- [3] Appropriate work is shown, but one graphing error is made, but appropriate coordinates are stated.
- or*
- [3] Both graphs are drawn correctly, but only one correct solution is stated.
- [2] Appropriate work is shown, but two or more graphing errors are made, but appropriate coordinates are stated.
- or*
- [2] Appropriate work is shown, but one conceptual error is made, but appropriate coordinates are stated.
- or*
- [2] Both graphs are drawn correctly, but no solutions are stated.
- or*
- [2] Work is shown to find $(2,-1)$ and $(-0.5,1.5)$, but a method other than graphic is used.
- [1] Appropriate work is shown, but one conceptual error and one graphing error are made, but appropriate coordinates are stated.
- or*
- [1] $(2,-1)$ and $(-0.5,1.5)$, but no work is shown.
- or*
- [1] The parabola is graphed correctly, but no further correct work is shown.
- [0] $(2,-1)$ and $(-0.5,1.5)$, but no work is shown.
- or*
- [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
-

Part IV

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

(38) [6] A complete and correct proof that includes a concluding statement is written.

[5] A proof is written that demonstrates a thorough understanding of the method of proof and contains no conceptual errors, but one statement or reason is missing or is incorrect.

or

[5] $\triangle AOP \cong \triangle BOP$ is proven, but no further correct work is shown.

[4] A proof is written that demonstrates a good understanding of the method of proof and contains no conceptual errors, but two statements or reasons are missing or are incorrect.

[3] A proof is written that demonstrates a good understanding of the method of proof, but one conceptual error is made.

[2] A proof is written that demonstrates a method of proof, but one conceptual error is made, and one statement or reason is missing or is incorrect.

or

[2] Some correct relevant statements about the proof are made, but three or four statements or reasons are missing or are incorrect.

[1] Only one correct relevant statement and reason are written.

[0] The “given” and/or the “prove” statements are written, but no further correct relevant statements are written.

or

[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 Band	Item Numbers
Geometric Relationships	8, 12, 18, 31
Constructions	1, 30
Locus	21, 35
Informal and Formal Proofs	2, 4, 5, 6, 7, 11, 16, 17, 19, 20, 24, 25, 28, 29, 33, 36, 38
Transformational Geometry	3, 22, 26, 32
Coordinate Geometry	9, 10, 13, 14, 15, 23, 27, 34, 37

Regents Examination in Geometry

June 2011

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

The Chart for Determining the Final Examination Score for the June 2011 Regents Examination in Geometry will be posted on the Department's web site at: <http://www.p12.nysed.gov/apda/> on Thursday, June 23, 2011. Conversion charts provided for previous administrations of the Geometry examination 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.

Regents Examination in Geometry June 2011

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

To determine the student's final examination score, find the student's total test raw score in the column labeled "Raw Score" and then locate the 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 "Final Score" on the student's answer sheet.

Beginning in June 2011, schools are no longer 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 Geometry.