

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

GEOMETRY

Thursday, June 17, 2010—1:15 to 4:15 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.

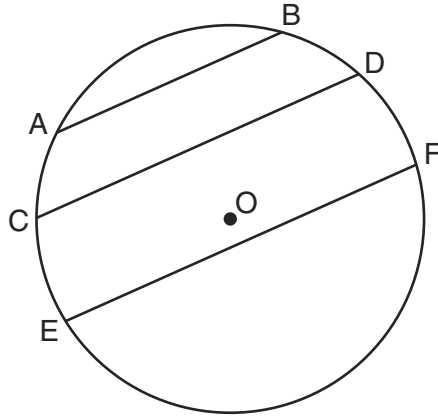
DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.

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 In the diagram below of circle O , chord $\overline{AB} \parallel$ chord \overline{CD} , and chord $\overline{CD} \parallel$ chord \overline{EF} .

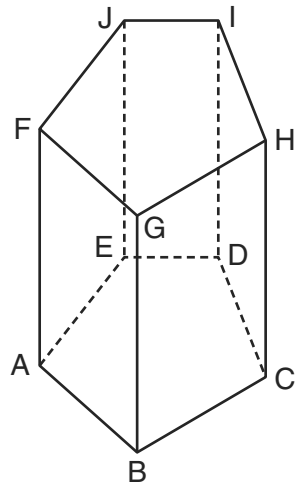


Which statement must be true?

- (1) $\widehat{CE} \cong \widehat{DF}$ (3) $\widehat{AC} \cong \widehat{CE}$
(2) $\widehat{AC} \cong \widehat{DF}$ (4) $\widehat{EF} \cong \widehat{CD}$
- 2 What is the negation of the statement “I am not going to eat ice cream”?
- (1) I like ice cream.
(2) I am going to eat ice cream.
(3) If I eat ice cream, then I like ice cream.
(4) If I don't like ice cream, then I don't eat ice cream.

3 The diagram below shows a right pentagonal prism.

Use this space for
computations.



Which statement is always true?

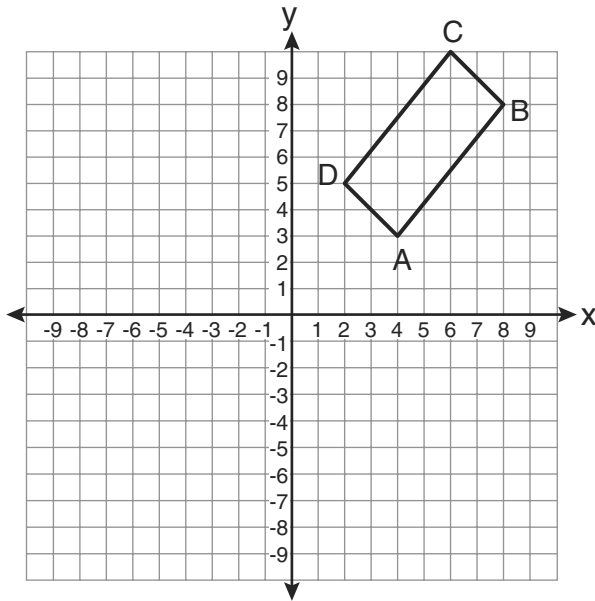
- (1) $\overline{BC} \parallel \overline{ED}$ (3) $\overline{FJ} \parallel \overline{IH}$
(2) $\overline{FG} \parallel \overline{CD}$ (4) $\overline{GB} \parallel \overline{HC}$

4 In isosceles triangle ABC , $AB = BC$. Which statement will always be true?

- (1) $m\angle B = m\angle A$ (3) $m\angle A = m\angle C$
(2) $m\angle A > m\angle B$ (4) $m\angle C < m\angle B$

Use this space for
computations.

- 5 The rectangle $ABCD$ shown in the diagram below will be reflected across the x -axis.



What will *not* be preserved?

- (1) slope of \overline{AB}
 - (2) parallelism of \overline{AB} and \overline{CD}
 - (3) length of \overline{AB}
 - (4) measure of $\angle A$
- 6 A right circular cylinder has an altitude of 11 feet and a radius of 5 feet. What is the lateral area, in square feet, of the cylinder, to the nearest tenth?
- (1) 172.7
 - (2) 172.8
 - (3) 345.4
 - (4) 345.6

**Use this space for
computations.**

- 7** A transversal intersects two lines. Which condition would always make the two lines parallel?
- (1) Vertical angles are congruent.
 - (2) Alternate interior angles are congruent.
 - (3) Corresponding angles are supplementary.
 - (4) Same-side interior angles are complementary.
- 8** If the diagonals of a quadrilateral do *not* bisect each other, then the quadrilateral could be a
- | | |
|---------------|---------------|
| (1) rectangle | (3) square |
| (2) rhombus | (4) trapezoid |
- 9** What is the converse of the statement “If Bob does his homework, then George gets candy”?
- (1) If George gets candy, then Bob does his homework.
 - (2) Bob does his homework if and only if George gets candy.
 - (3) If George does not get candy, then Bob does not do his homework.
 - (4) If Bob does not do his homework, then George does not get candy.

**Use this space for
computations.**

10 In $\triangle PQR$, $PQ = 8$, $QR = 12$, and $RP = 13$. Which statement about the angles of $\triangle PQR$ must be true?

- (1) $m\angle Q > m\angle P > m\angle R$ (3) $m\angle R > m\angle P > m\angle Q$
(2) $m\angle Q > m\angle R > m\angle P$ (4) $m\angle P > m\angle R > m\angle Q$

11 Given:

$$y = \frac{1}{4}x - 3$$

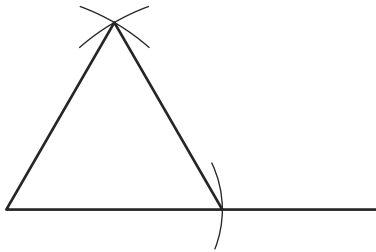
$$y = x^2 + 8x + 12$$

In which quadrant will the graphs of the given equations intersect?

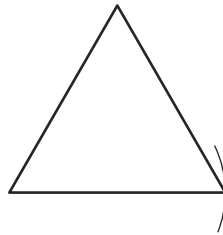
- (1) I (3) III
(2) II (4) IV

Use this space for
computations.

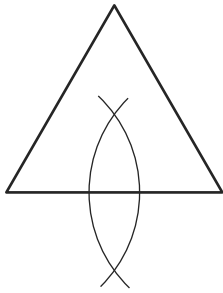
12 Which diagram shows the construction of an equilateral triangle?



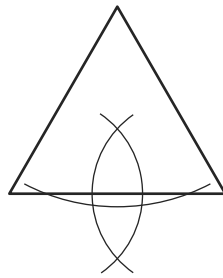
(1)



(3)



(2)



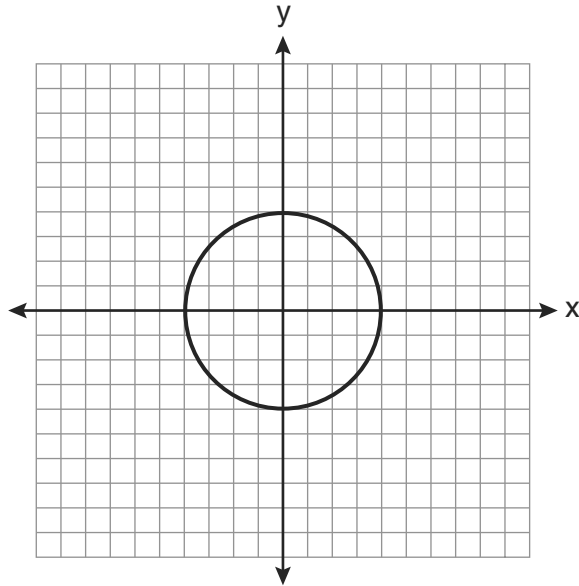
(4)

13 Line segment AB is tangent to circle O at A . Which type of triangle is always formed when points A , B , and O are connected?

- | | |
|------------|---------------|
| (1) right | (3) scalene |
| (2) obtuse | (4) isosceles |

Use this space for
computations.

14 What is an equation for the circle shown in the graph below?



(1) $x^2 + y^2 = 2$

(2) $x^2 + y^2 = 4$

(3) $x^2 + y^2 = 8$

(4) $x^2 + y^2 = 16$

15 Which transformation can map the letter **S** onto itself?

(1) glide reflection

(2) translation

(3) line reflection

(4) rotation

16 In isosceles trapezoid $ABCD$, $\overline{AB} \cong \overline{CD}$. If $BC = 20$, $AD = 36$, and $AB = 17$, what is the length of the altitude of the trapezoid?

(1) 10

(2) 12

(3) 15

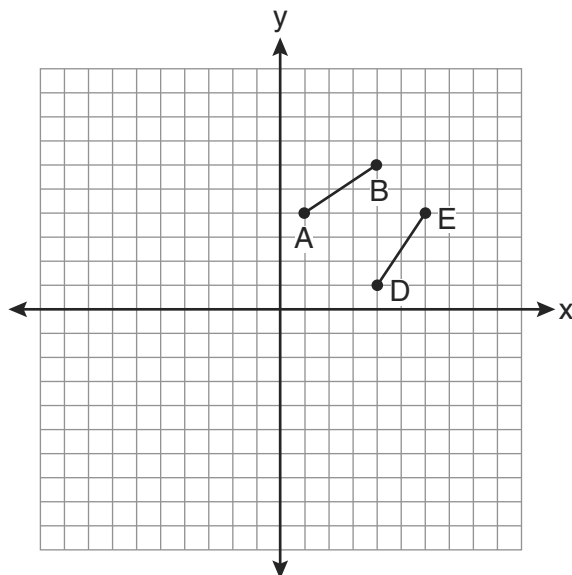
(4) 16

Use this space for
computations.

17 In plane \mathcal{P} , lines m and n intersect at point A . If line k is perpendicular to line m and line n at point A , then line k is

- (1) contained in plane \mathcal{P} (3) perpendicular to plane \mathcal{P}
(2) parallel to plane \mathcal{P} (4) skew to plane \mathcal{P}

18 The diagram below shows \overline{AB} and \overline{DE} .

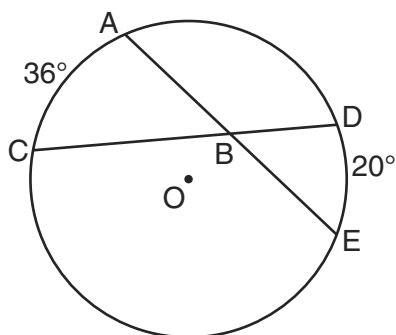


Which transformation will move \overline{AB} onto \overline{DE} such that point D is the image of point A and point E is the image of point B ?

- (1) $T_{3,-3}$ (3) R_{90°
(2) $D_{\frac{1}{2}}$ (4) $r_{y=x}$

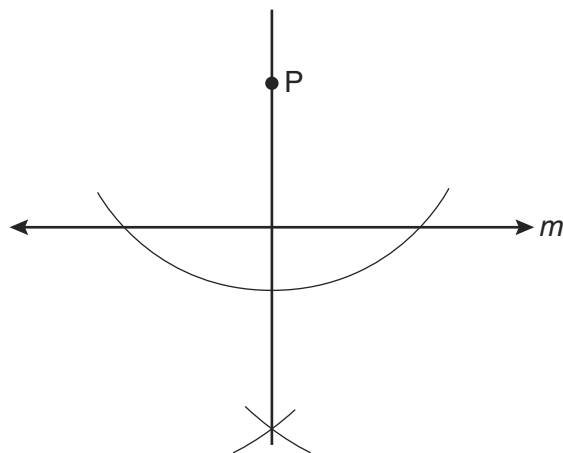
Use this space for computations.

- 19 In the diagram below of circle O , chords \overline{AE} and \overline{DC} intersect at point B , such that $m\widehat{AC} = 36$ and $m\widehat{DE} = 20$.



What is $m\angle ABC$?

- (1) 56
(2) 36
(3) 28
(4) 8
- 20 The diagram below shows the construction of a line through point P perpendicular to line m .



Which statement is demonstrated by this construction?

- (1) If a line is parallel to a line that is perpendicular to a third line, then the line is also perpendicular to the third line.
(2) The set of points equidistant from the endpoints of a line segment is the perpendicular bisector of the segment.
(3) Two lines are perpendicular if they are equidistant from a given point.
(4) Two lines are perpendicular if they intersect to form a vertical line.

**Use this space for
computations.**

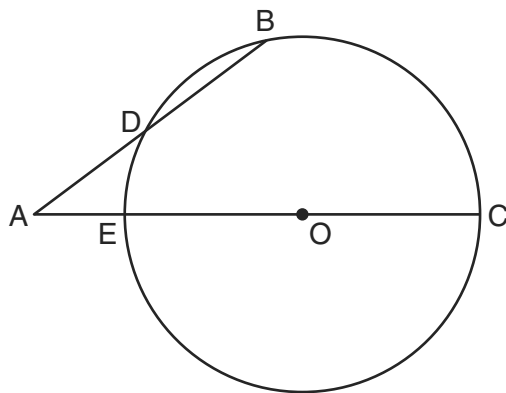
21 What is the length, to the *nearest tenth*, of the line segment joining the points $(-4,2)$ and $(146,52)$?

- (1) 141.4 (3) 151.9
(2) 150.5 (4) 158.1

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

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

23 In the diagram below of circle O , secant \overline{AB} intersects circle O at D , secant \overline{AOC} intersects circle O at E , $AE = 4$, $AB = 12$, and $DB = 6$.



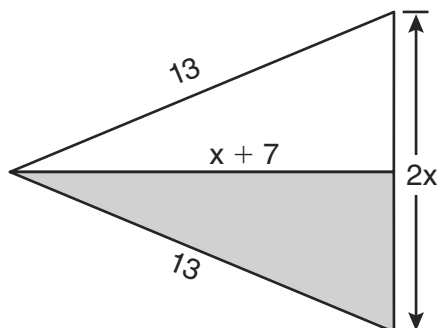
(Not drawn to scale)

What is the length of \overline{OC} ?

- (1) 4.5 (3) 9
(2) 7 (4) 14

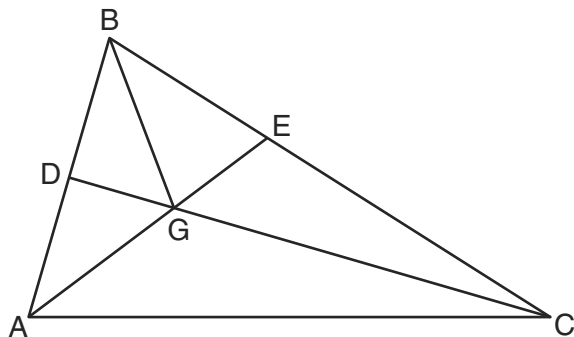
Use this space for
computations.

- 24 The diagram below shows a pennant in the shape of an isosceles triangle. The equal sides each measure 13, the altitude is $x + 7$, and the base is $2x$.



What is the length of the base?

- (1) 5 (3) 12
(2) 10 (4) 24
- 25 In the diagram below of $\triangle ABC$, \overline{CD} is the bisector of $\angle BCA$, \overline{AE} is the bisector of $\angle CAB$, and \overline{BG} is drawn.

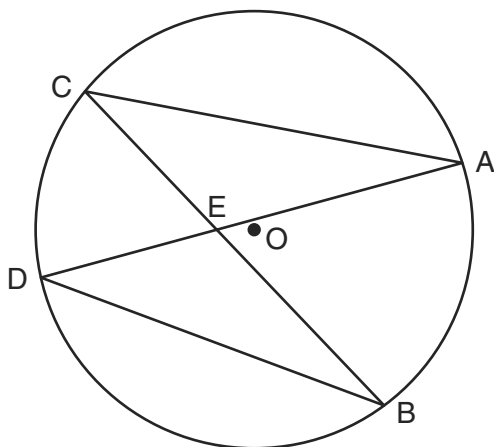


Which statement must be true?

- (1) $DG = EG$ (3) $\angle AEB \cong \angle AEC$
(2) $AG = BG$ (4) $\angle DBG \cong \angle EBG$

Use this space for
computations.

26 In the diagram below of circle O , chords \overline{AD} and \overline{BC} intersect at E .



Which relationship must be true?

- (1) $\triangle CAE \cong \triangle DBE$ (3) $\angle ACB \cong \angle CBD$
(2) $\triangle AEC \sim \triangle BED$ (4) $\widehat{CA} \cong \widehat{DB}$

27 Two lines are represented by the equations $-\frac{1}{2}y = 6x + 10$ and $y = mx$. For which value of m will the lines be parallel?

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

28 The coordinates of the vertices of parallelogram $ABCD$ are $A(-3,2)$, $B(-2,-1)$, $C(4,1)$, and $D(3,4)$. The slopes of which line segments could be calculated to show that $ABCD$ is a rectangle?

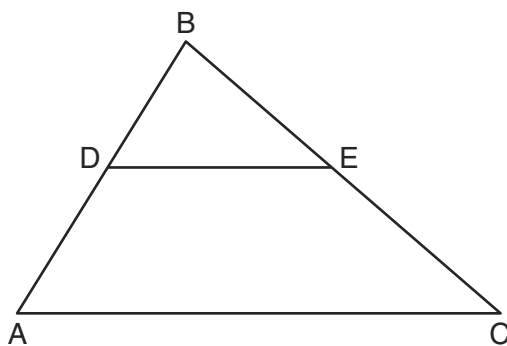
- (1) \overline{AB} and \overline{DC} (3) \overline{AD} and \overline{BC}
(2) \overline{AB} and \overline{BC} (4) \overline{AC} and \overline{BD}

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]

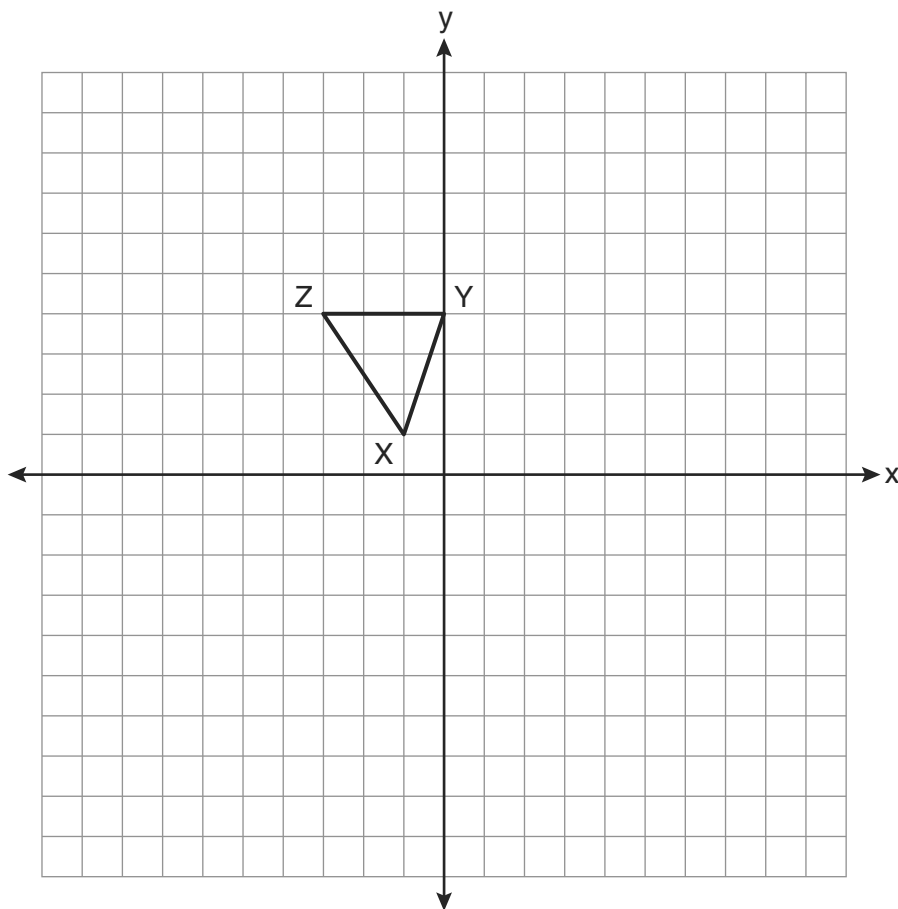
- 29 Tim is going to paint a wooden sphere that has a diameter of 12 inches. Find the surface area of the sphere, to the nearest square inch.

- 30 In the diagram below of $\triangle ABC$, \overline{DE} is a midsegment of $\triangle ABC$, $DE = 7$, $AB = 10$, and $BC = 13$. Find the perimeter of $\triangle ABC$.

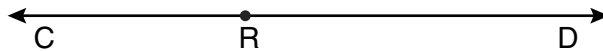
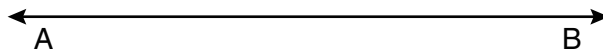


31 In right $\triangle DEF$, $m\angle D = 90$ and $m\angle F$ is 12 degrees less than twice $m\angle E$. Find $m\angle E$.

32 Triangle XYZ , shown in the diagram below, is reflected over the line $x = 2$. State the coordinates of $\triangle X'Y'Z'$, the image of $\triangle XYZ$.



- 33 Two lines, \overleftrightarrow{AB} and \overleftrightarrow{CD} , are parallel and 10 inches apart. Sketch the locus of all points that are equidistant from \overleftrightarrow{AB} and \overleftrightarrow{CD} and 7 inches from point R . Label with an **X** each point that satisfies both conditions.



34 The base of a pyramid is a rectangle with a width of 6 cm and a length of 8 cm. Find, in centimeters, the height of the pyramid if the volume is 288 cm^3 .

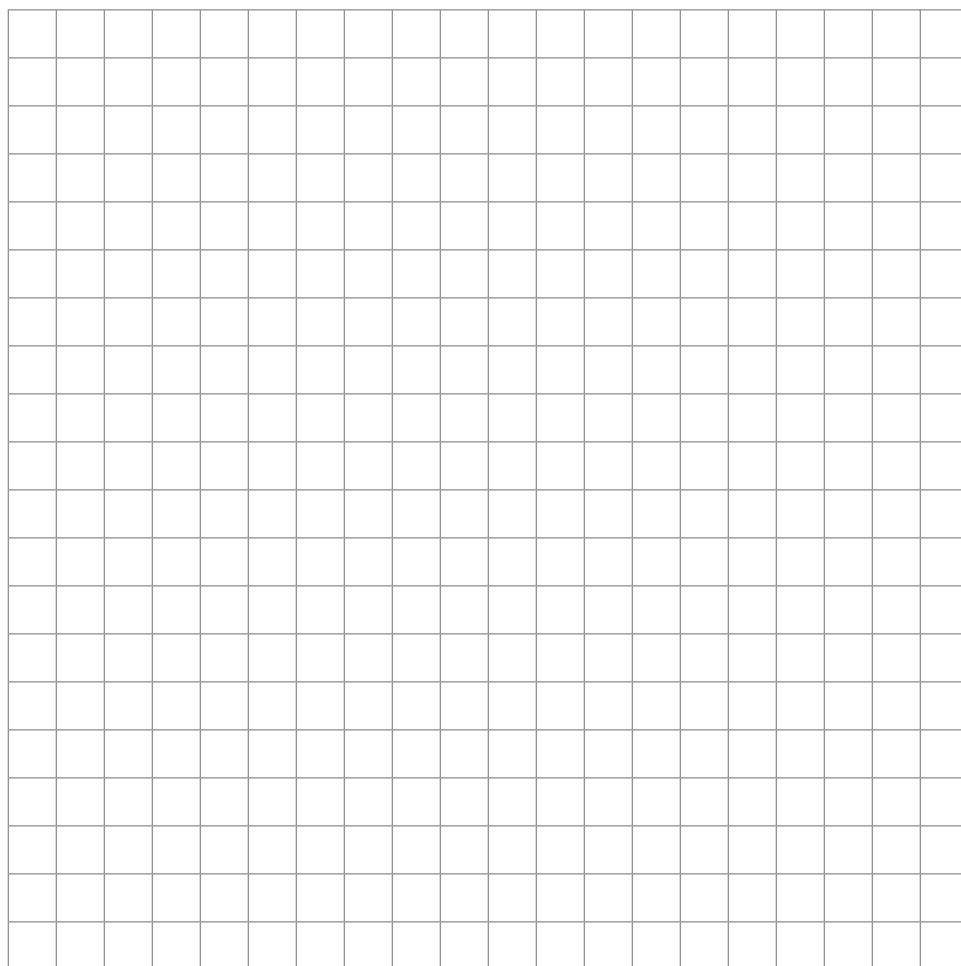
Part III

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 Given: Quadrilateral $ABCD$ with $\overline{AB} \cong \overline{CD}$, $\overline{AD} \cong \overline{BC}$, and diagonal \overline{BD} is drawn
Prove: $\angle BDC \cong \angle ABD$

36 Find an equation of the line passing through the point $(6,5)$ and perpendicular to the line whose equation is $2y + 3x = 6$.

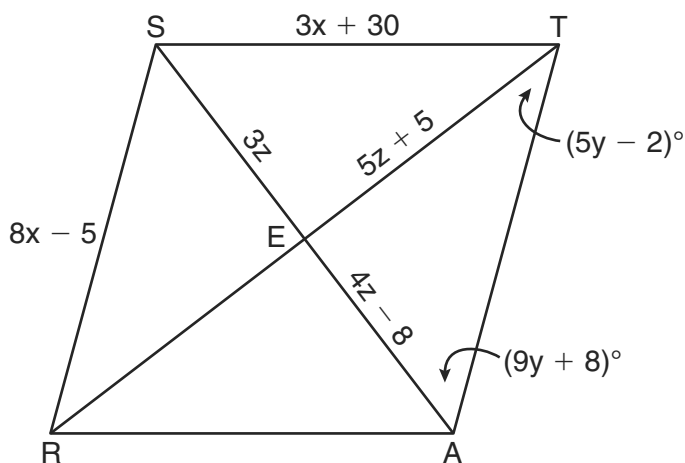
37 Write an equation of the circle whose diameter \overline{AB} has endpoints $A(-4,2)$ and $B(4,-4)$.
[The use of the grid below is optional.]



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, quadrilateral $STAR$ is a rhombus with diagonals \overline{SA} and \overline{TR} intersecting at E . $ST = 3x + 30$, $SR = 8x - 5$, $SE = 3z$, $TE = 5z + 5$, $AE = 4z - 8$, $m\angle RTA = 5y - 2$, and $m\angle TAS = 9y + 8$. Find SR , RT , and $m\angle TAS$.



Reference Sheet

Tear Here

| | | |
|--------|---------------------|--|
| 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 |

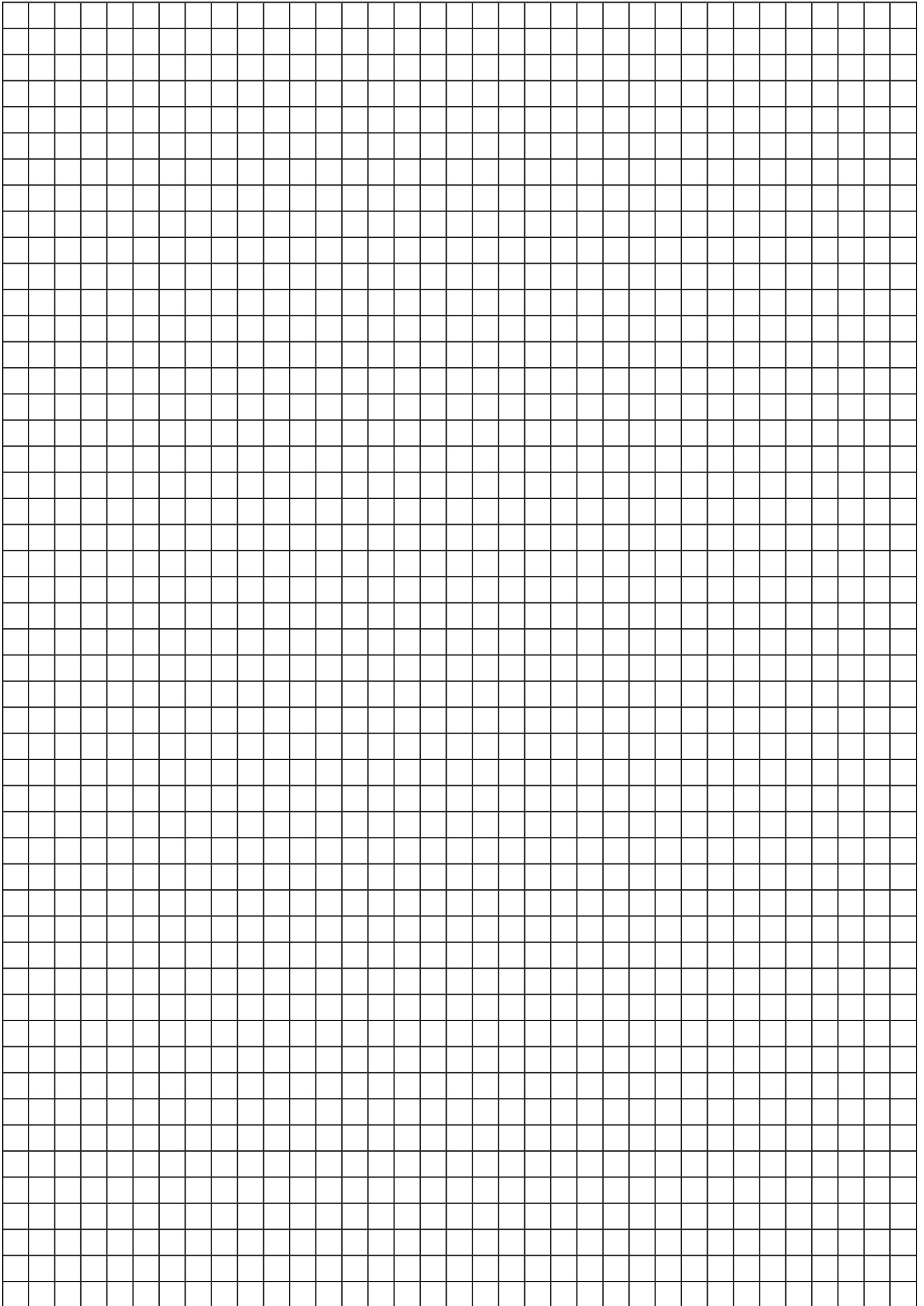
| | | |
|--------------|--------|-----------------|
| Surface Area | Sphere | $SA = 4\pi r^2$ |
|--------------|--------|-----------------|

Tear Here

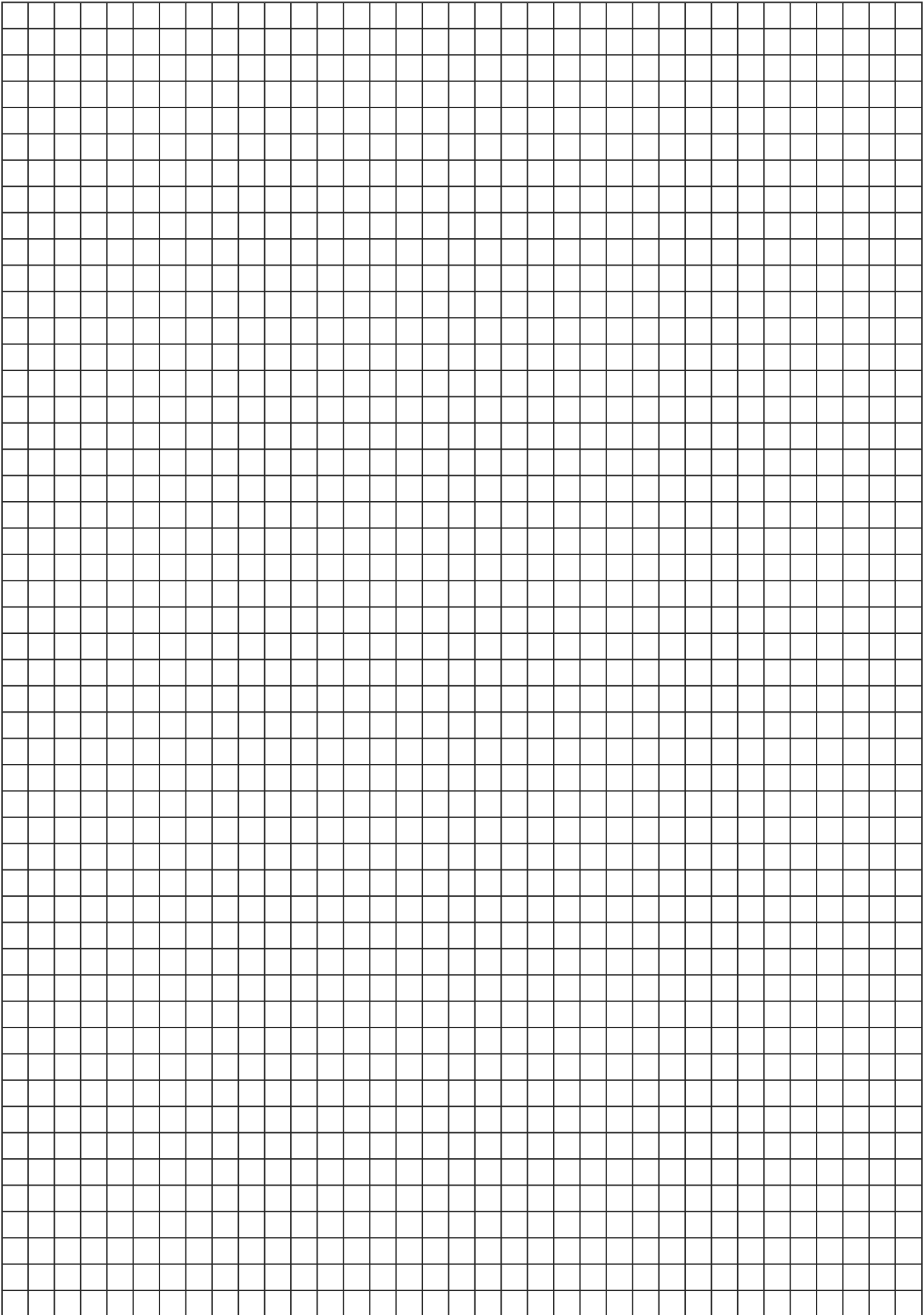
Scrap Graph Paper — This sheet will *not* be scored.

Tear Here

Tear Here



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



Tear Here

Tear Here

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

GEOMETRY

Thursday, June 17, 2010—1:15 to 4:15 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) |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |

Tear Here

Total Raw Score

Checked by

Scale Score
(from conversion chart)

Tear Here

FOR TEACHERS ONLY

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

GEOMETRY

Thursday, June 17, 2010 — 1:15 to 4:15 p.m., only

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 Integrated Algebra and Geometry*.

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. 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 scale score by using the conversion chart that will be posted on the Department's web site <http://www.emsc.nysed.gov/osa/> on Thursday, June 17, 2010. 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.

GEOMETRY – *continued*

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

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 <http://www.emsc.nysed.gov/osa/> and select the link “Examination 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 Integrated Algebra and Geometry*, 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. 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] 452, 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] Appropriate work is shown to find 144π , but no further correct work is shown.

or

[1] 452, 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] 37, and appropriate work is shown.

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

or

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

or

[1] $AC = 14$, but no further correct work is shown.

or

[1] 37, 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.

GEOMETRY – *continued*

(31) [2] 34, and appropriate work is shown.

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

or

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

or

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

or

[1] 34, 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] $X'(5,1)$, $Y'(4,4)$, and $Z'(7,4)$, and appropriate work is shown.

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

or

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

or

[1] Appropriate work is shown, but the coordinates are not labeled or are labeled incorrectly.

or

[1] X' , Y' , and Z' are graphed correctly, but the coordinates are not stated or are stated incorrectly.

or

[1] $X'(5,1)$, $Y'(4,4)$, and $Z'(7,4)$, 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.

GEOMETRY – *continued*

(33) [2] Both loci are sketched correctly, and the two points of intersection are labeled with an **X**.

[1] Both loci are sketched correctly, but the points of intersection are not labeled or are labeled incorrectly.

or

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

or

[1] One locus is sketched correctly, but no further correct 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] 18, and appropriate work is shown.

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

or

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

or

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

or

[1] 18, 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] A complete and correct proof that includes a concluding statement is written.

[3] 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 no concluding statement is written.

or

[3] Either $\triangle ABD \cong \triangle CDB$ or $\overline{AB} \parallel \overline{DC}$ is proven, but no further correct work is shown.

[2] 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.

or

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

[1] An appropriate diagram is drawn and labeled, but no further correct work is shown.

[0] The “given” and/or the “prove” statements are written in the style of a formal proof, 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.

GEOMETRY – *continued*

(36) [4] $y - 5 = \frac{2}{3}(x - 6)$ or an equivalent equation, and appropriate work is shown.

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

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

or

[2] Appropriate work is shown, but one conceptual error is made, such as finding an equation of a line parallel to the given line.

or

[2] Appropriate work is shown to find $\frac{2}{3}$, the slope of the perpendicular line, but no further correct work is shown.

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

or

[1] Appropriate work is shown to find $-\frac{3}{2}$, the slope of the given line, but no further correct work is shown.

or

[1] $y - 5 = \frac{2}{3}(x - 6)$, 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.

GEOMETRY – *continued*

(37) [4] $x^2 + (y + 1)^2 = 25$, and appropriate work is shown.

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

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

or

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

or

[2] Appropriate work is shown to find the midpoint (0,-1) and the radius of 5, but no further correct work is shown.

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

or

[1] Appropriate work is shown to find either the radius or the center, but no further correct work is shown.

or

[1] $x^2 + (y + 1)^2 = 25$, 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 six credits. Unless otherwise specified, mathematically correct alternative solutions should be awarded appropriate credit.

(38) [6] $SR = 51$, $RT = 90$, and $m\angle TAS = 62$, and appropriate work is shown.

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

or

[5] Appropriate work is shown to find SR , RT , and 28, the $m\angle RTA$, but no further correct work is shown.

or

[5] Appropriate work is shown to find SR , $m\angle TAS$, and 45, the length of \overline{ET} , but no further correct work is shown.

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

or

[4] Appropriate work is shown to find two of the correct values, but no further correct work is shown.

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

or

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

or

[3] Appropriate work is shown to find $x = 7$, $y = 6$, and $z = 8$, but no further correct work is shown.

[2] Appropriate work is shown, but two conceptual errors are made.

or

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

or

[2] Appropriate work is shown to find x and y , x and z , or y and z , but no further correct work is shown.

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

or

GEOMETRY – *continued*

[1] Appropriate work is shown to find x or y or z , but no further correct work is shown.

or

[1] $SR = 51$, $RT = 90$, and $m\angle TAS = 62$, 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 Band | Item Numbers |
|----------------------------|--|
| Geometric Relationships | 3, 6, 17, 29, 34 |
| Constructions | 12, 20 |
| Locus | 25, 33 |
| Informal and Formal Proofs | 1, 2, 4, 7, 8, 9, 10, 13, 16, 19, 23, 24, 26, 30, 31, 35, 38 |
| Transformational Geometry | 5, 15, 18, 32 |
| Coordinate Geometry | 11, 14, 21, 22, 27, 28, 36, 37 |

Regents Examination in Geometry

June 2010

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

The Chart for Determining the Final Examination Score for the June 2010 Regents Examination in Geometry will be posted on the Department’s web site <http://www.emsc.nysed.gov/osa/> on Thursday, June 17, 2010. 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.emsc.nysed.gov/osa/exameval>.
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 2010

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

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.

All student answer papers that receive a scale score of 60 through 64 **must** be scored a second time to ensure the accuracy of the score. 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.

Because scale scores corresponding to raw scores in the conversion chart 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 chart above is usable only for this administration of the Regents Examination in Geometry.