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The **University** of the State of New York
THE STATE EDUCATION DEPARTMENT
Albany, New York 12234

INFORMATION BOOKLET FOR SCORING THE REGENTS EXAMINATIONS IN INTEGRATED ALGEBRA & GEOMETRY

GENERAL INFORMATION

The general procedures to be followed in administering the Regents Examinations in Integrated Algebra and Geometry are provided in the publication *Directions for Administering Regents Examinations August 2009 Administration* (DET 541), and *Regents Examinations, Regents Competency Tests, and Second Language Proficiency Examinations: School Administrator's Manual, 2008 Edition*. Copies of the *Directions* are shipped to schools prior to each Regents Examination period and may also be accessed on the Department's web site at: http://www.emsc.nysed.gov/osa/hsgen.html. The *School Administrator's Manual* may be accessed on the Department's web site at:
http://www.emsc.nysed.gov/osa/sam/secondary/home.html.

Questions about **general administration procedures** for Regents Examinations should be directed to the Office of State Assessment at 518-474-8220 or 518-474-5902. For information about the **rating** of the Regents Examination in Integrated Algebra or Geometry, contact the Office of State Assessment at 518-474-5900.

School administrators should print or photocopy this information booklet and distribute copies to all school personnel who will be scoring these examinations.

SCORING THE EXAMINATIONS

The Regents Examinations in Integrated Algebra and Geometry are to be scored by committees of mathematics teachers. No one teacher is to score more than approximately one third of the open-ended questions on a student's paper. The committee must be comprised of at least three teachers. Each of these teachers is responsible for scoring a selected number of the open-ended questions. The more teachers serving on a committee, the fewer open-ended questions each teacher scores. This process yields consistent and reliable scores and allows scoring to proceed quickly.

Each examination is accompanied by a scoring key that includes the answers to the Part I multiple-choice questions and rubrics for scoring each of the open-ended questions. Teachers must become thoroughly familiar with the rubrics for the open-ended questions they are scoring before beginning to score student responses to examination questions.

The detachable answer sheet contains a table with spaces for recording the Part I score; the score for each question in Parts II, III, and IV; the total-test raw score; and the scaled score.

Scoring of Multiple-Choice Questions

Multiple-choice questions may be either hand scored or machine scored. When hand scoring, indicate by means of a check mark each incorrect or omitted answer to multiple-choice questions on the designated answer sheet. Do not place a check mark beside a correct answer. Use only red ink or red pencil. In the appropriate space on the student's answer sheet, record the number of credits earned for the Part I, multiple-choice questions the student answered correctly. Each correct answer receives two credits.

If used, machine-scorable answer sheets must be provided and scored by the school. Answer sheets supplied by the school must provide the same number of response options as are given in the examination questions, and the choices must be labeled 1, 2, 3, 4 — not A, B, C, D. Instructions for using the answer sheets must be developed locally and provided to the proctors administering the examinations.

Before answer sheets can be machine scored, several samples must be both machine and manually scored to ensure the accuracy of the machine-scoring process. All discrepancies must be rectified before student answer sheets are machine scored. When machine scoring is completed, a sample of the scored answer sheets must be scored manually to verify the accuracy of the machine-scoring process.

DETERMINING THE STUDENT'S FINAL EXAMINATION SCORE

A chart for converting the student's total-test raw score to a scaled score is provided for each administration on the Department's web site at: http://www.emsc.nysed.gov/osa. Because the scaled scores corresponding to raw scores change from one examination administration to another, it is *crucial* that, for each administration, scorers use *only* the conversion chart provided for that administration to determine the student's final score. Take extreme care in recording the student's scores on each part of the examination, adding these scores to determine the total-test raw score, and using the conversion chart to obtain the correct scaled score.

For the Regents Examinations in Integrated Algebra and Geometry, all student answer papers that receive a scaled score of 60 through 64 must be scored a second time. The principal may elect to have the scoring committee also score a second time those student answer papers that received a scaled score of 50 through 54, or all student answer papers. For the second scoring, a different committee of teachers may score the student's paper or the original committee may score the paper. However, ***no*** teacher may score the same open-ended questions that he or she scored in the first rating of the paper. It is the responsibility of the school principal to ensure that the student's final examination score is based on a fair, accurate, and reliable scoring of the student's answer paper.

When the teacher scoring committee completes the scoring process, test scores must be considered final and must be entered onto students' permanent records.

Principals and other administrative staff in a school or district do not have the authority to set aside the scores arrived at by the teacher scoring committee and rescore student examination papers or to change any scores assigned through the procedures described in this manual and in the scoring materials provided by the Department. Any principal or administrator found to have done so, except in the circumstances described below, will be in violation of Department policy regarding the scoring of State examinations. Teachers and administrators who violate Department policy with respect to scoring State examinations may be subject to disciplinary action in accordance with Sections 3020 and 3020-a of Education Law or to action against their certification pursuant to Part 83 of the Regulations of the Commissioner of Education.

On rare occasions, an administrator may learn that an isolated error occurred in the calculation of a final score for a student or in recording students' scores in their permanent records. For example, the final score may have been based on an incorrect summing of the student's raw scores for parts of the test or from a misreading of the conversion chart. When such errors involve no more than five students' final scores on any Regents Examination and when such errors are detected within four months of the test date, the principal may arrange for the corrected score to be recorded in the student's permanent record. However, in all such instances, the principal must advise the Office of State Assessment in writing that the student's score has been corrected. The written notification to the Department must be signed by the principal or superintendent and must include the names of the students whose scores have been corrected, the name of the examination, the students' original and corrected scores, and a brief explanation of the nature of the scoring error that was corrected.

If an administrator has substantial reason to believe that the teacher scoring committee has failed to accurately score more than five student answer papers on any examination, the administrator must first obtain permission in writing from the Office of State Assessment before arranging for or permitting a rescoring of student papers. The written request to the Office of State Assessment must come from the superintendent of a public school district or the chief administrative officer of a nonpublic or charter school and must include the examination title, date of administration, and number of students whose papers would be subject to such rescoring. This request must also include a statement explaining why the administrator believes that the teacher scoring committee failed to score appropriately and, thus, why he or she believes rescoring the examination papers is necessary. As part of this submission, the school administrator must make clear his or her understanding that such extraordinary re-rating may be carried out only by a full committee of teachers constituted in accordance with the scoring guidelines presented on the previous pages and fully utilizing the scoring materials for this test provided by the Department.

The Department sometimes finds it necessary to notify schools of a revision to the scoring key and rating guide for an examination. Should this occur after the scoring committee has completed its work, the principal is authorized to have appropriate members of the scoring committee review students' responses only to the specific question(s) referenced in the notification and to adjust students' final examination scores when appropriate. Only in such circumstances is the school not required to notify or obtain approval from the Department to correct students' final examination scores.

Specific Information for Scoring the Regents Examinations in Integrated Algebra and Geometry

The information below refers to the scoring of open-ended questions on the Regents Examinations in Integrated Algebra and Geometry.

The open-ended questions (Parts II, III, and IV) on the Regents Examinations in Integrated Algebra and Geometry should be scored in accordance with these guidelines:

- If the student gives one legible response, even if it is crossed out, teachers should score the response.
- If there are two or more responses with all but one crossed out, teachers should score only the response not crossed out.
- If there are one or more partial responses and one complete response, teachers should score the complete response. No credit is deducted for incorrect startups.
- If there are two or more complete responses, teachers should score each one. Credit will be allocated in the following way:

  If one response is completely correct and the others are completely incorrect, teachers should award 50% credit and round down (3 credits for a 6-credit question, 2 credits for a 4-credit question, 1 credit for a 2-credit question, and 1 credit for a 3-credit question).

  If each response warrants more than 50%, the lesser of the responses is awarded credit. (For example, if a 4-credit question is done two ways, with one worth 4 credits and another worth 3 credits, the student should be awarded 3 credits for the question.)
- If the question requires the student to include units of measure, full credit cannot be awarded if the student omits the unit. Students may include the appropriate unit of measure even if it is not required.

  Examples:

  If the question asks for the number of feet in the length of a figure, no unit is required in the answer.

  If the question asks for the dimensions of a figure, the proper unit of measure is required in the answer in order to receive full credit.

  The rubric will specify how much credit is awarded if units are not used when required.
- If a student gives only a correct numerical answer to a problem but does not show how he or she arrived at the answer, the student will be awarded only 1 credit. All open-ended questions require the student to show work. If the question has only one part, this rule is straightforward, but this rule needs some clarification for multiple-part questions.

  A fully correct answer for a multiple-part question requires correct responses for all parts of the question. For example, if a 3-credit question has three parts, the correct response to one or two parts of the question that required work to be shown is *not* considered a fully correct response with no work shown and would receive 0 credit.

  The rubric of a multiple-part question will specify credit for various amounts of work shown.

- Students should receive 0 credit if the solution is completely incorrect, irrelevant, or incoherent or if a correct response was arrived at using an obviously incorrect procedure.

  This last statement is illustrated by a student who, when asked to find one leg of a right triangle if the hypotenuse is 5 and the other leg is 3, gives a correct response of 4 by showing that 4 is the average of 3 and 5.

  The method of solution must be obviously incorrect to warrant a score of 0.

  In some cases, the rubric will specifically state which responses should receive a score of 0.

- Students who use trial and error to solve a problem must show their method. Merely showing that the answer checks or is correct is not considered a complete response for full credit. Most rubrics will address this issue directly.

Examples of Scored Student Responses with Comments

Sample Question 1 – Integrated Algebra

Solve for g: $3 + 2g = 5g - 9$

Rubric

[2] 4, 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] 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.

Student Response

$$3 + 2g = 5g - 9$$
$$+9 \qquad\qquad +9$$
$$12 + 2g = 5g$$
$$-2g \qquad -2g$$
$$\frac{12}{3} = \frac{3g}{3}$$
$$4 = g$$

Comment

Score: 2

The student has a complete and correct response.

Student Response

$$3+2g=5g-\cancel{9}$$
$$+9 \qquad\qquad \cancel{+}9$$

$$12+2\cancel{g}=5g$$
$$-\cancel{2g} \quad -2g$$

$$\frac{12}{12}=\frac{3g}{12}$$

$$.25 = 1/4$$

Comment

Score: 1

The student has made a conceptual error.

Student Response

$$3g+2g=5g-9$$

$$3+2=5$$

$$5g-9=4g$$

$$g+g=g^2$$

$$g=0$$

Comment

Score: 0

The student's response is completely incorrect.

Sample Question 2 – Integrated Algebra

A prom ticket at Smith High School is $120. Tom is going to save money for the ticket by walking his neighbor's dog for $15 per week. If Tom already has saved $22, what is the minimum number of weeks Tom must walk the dog to earn enough to pay for the prom ticket?

Rubric

[3] 7, and appropriate work is shown, such as solving the inequality $15x + 22 \geq 120$, solving an equation, or trial and error with at least three trials and appropriate checks.

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

or

[2] The trial-and-error method is used to find a correct solution, but only two trials and appropriate checks are shown.

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

or

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

or

[1] An incorrect equation of equal difficulty is solved appropriately.

or

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

or

[1] The trial-and-error method is attempted and at least six systematic trials and appropriate checks are shown, but no solution is found.

or

[1] 7, but no work or only one trial with an appropriate check 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.

Student Response

$22 - start
37 - week 1
52 - 2
67 - 3
82 - 4
97 - 5
112 - 6
$127 - 7
$120 add

goal → $120

7 weeks minimum

Comment

Score: 3

The student has a complete and correct response.

Student Response

Let x = # of weeks

$$15x + 22 \geq 120$$
$$-22 \qquad -22$$

$$\frac{15x}{15} \geq \frac{88}{15}$$

$$x \geq 5.8\overline{6}$$

5 weeks would not be enough.

$$15(5) + 22 =$$
$$75 + 22 = \$97$$

He would have to walk the dog for 6 weeks

Comment

Score: 2

The student has made one computational error.

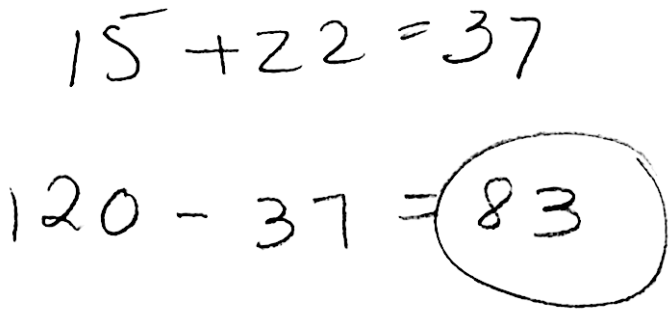
Student Response

Comment

Score: 1

The student has given an answer without showing any work.

Student Response



Comment

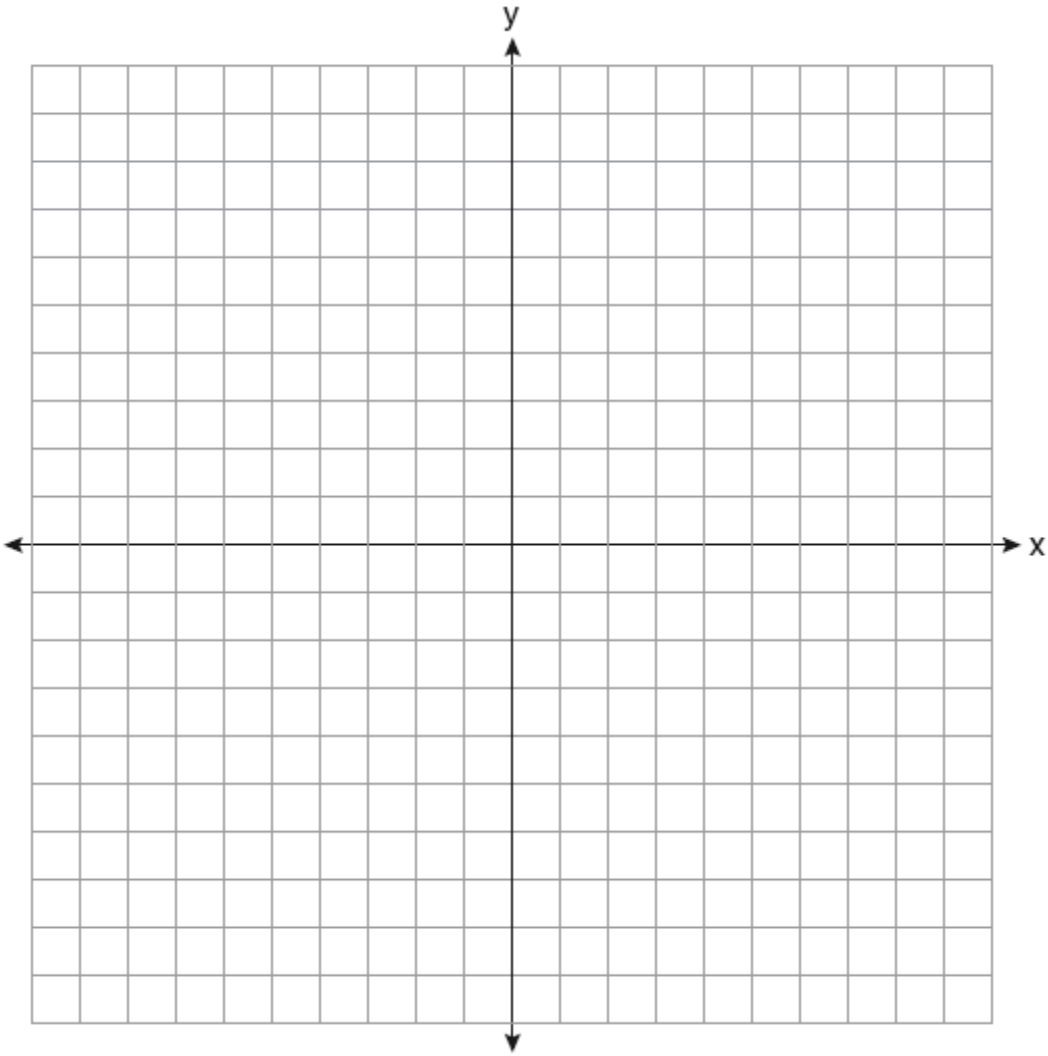
Score: 0

The student's response is completely incorrect.

Sample Question 3 – Integrated Algebra

Solve the following systems of equations graphically, on the set of axes below, and state the coordinates of the point(s) in the solution set.

$$y = x^2 - 6x + 5$$
$$2x + y = 5$$



Rubric

[4] Correct graphs are drawn, and (0,5) and (4,–3) are stated.

[3] Both equations are graphed, but one graphing error is made, but appropriate solutions are stated.

or

[3] Both graphs are drawn correctly, but only one solution is stated.

[2] Both graphs are drawn correctly, but no solutions are stated.

or

[2] Both equations are graphed, but two or more graphing errors are made, but appropriate solutions are stated.

or

[2] Appropriate work is shown to find (0,5) and (4,–3), but a method other than graphing is used.

or

[2] Both equations are graphed, but one conceptual error is made.

[1] Both equations are graphed, but one conceptual error and one graphing error are made.

or

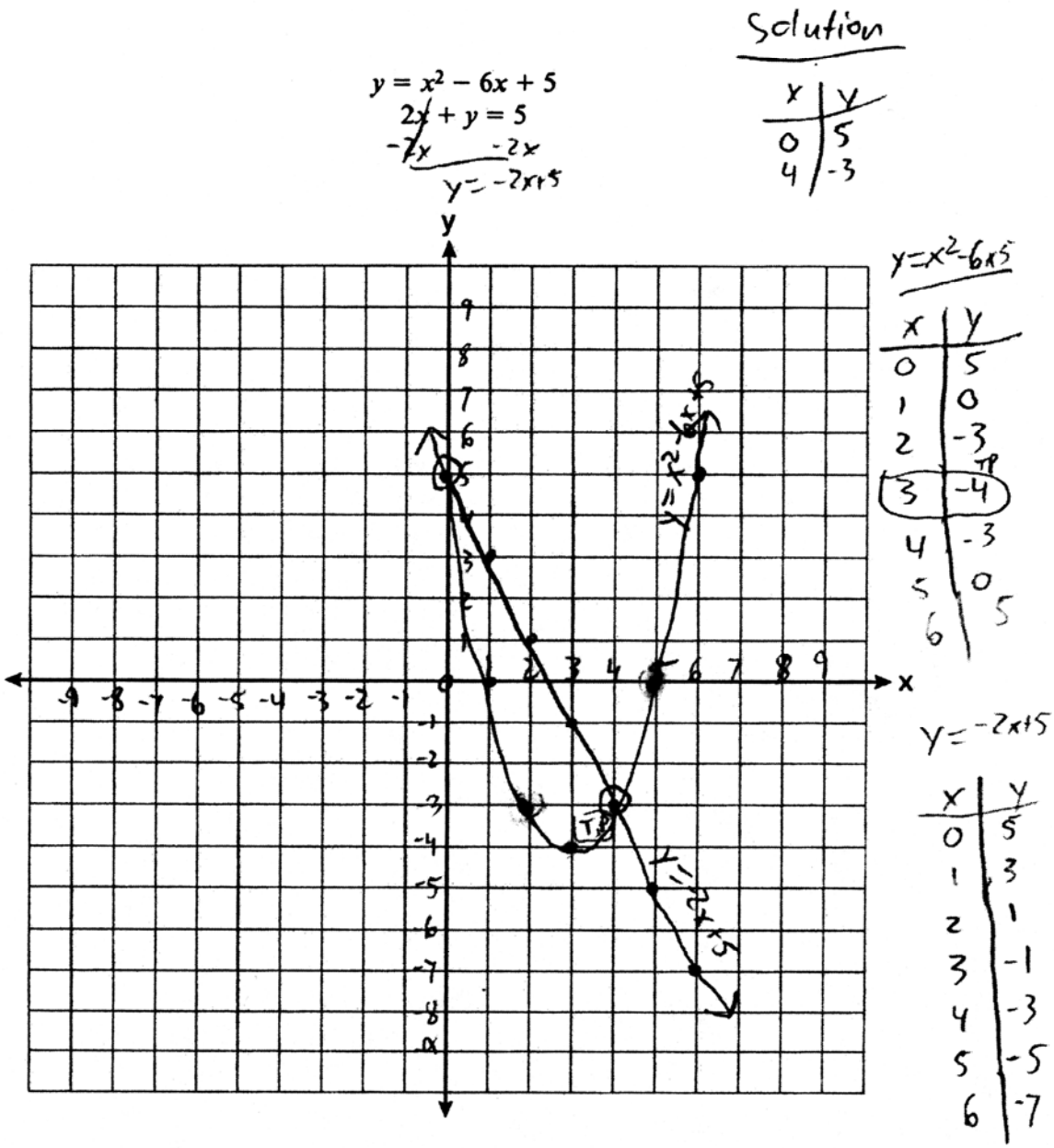
[1] (0,5) and (4,–3) are stated, but no work is shown.

[0] (0,5) or (4,–3) is stated, 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.

Student Response



Comment

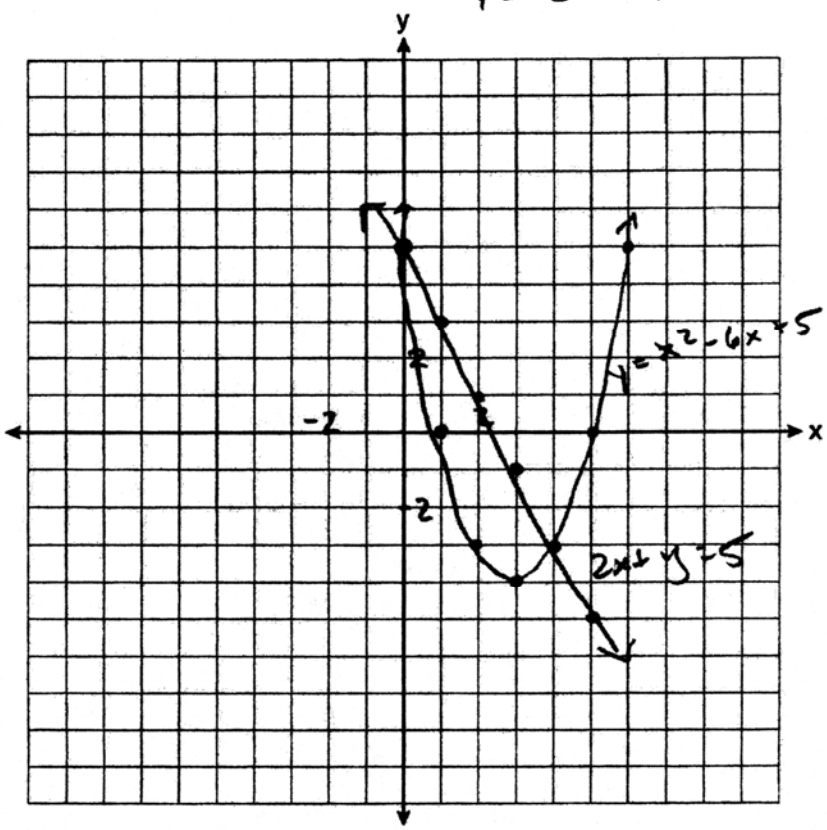
Score: 4

The student has a complete and correct response.

Student Response

$y = x^2 - 6x + 5$
$2x + y = 5$
$-2x \quad -2x$
$y = 5 - 2x$

solution = (0,5)

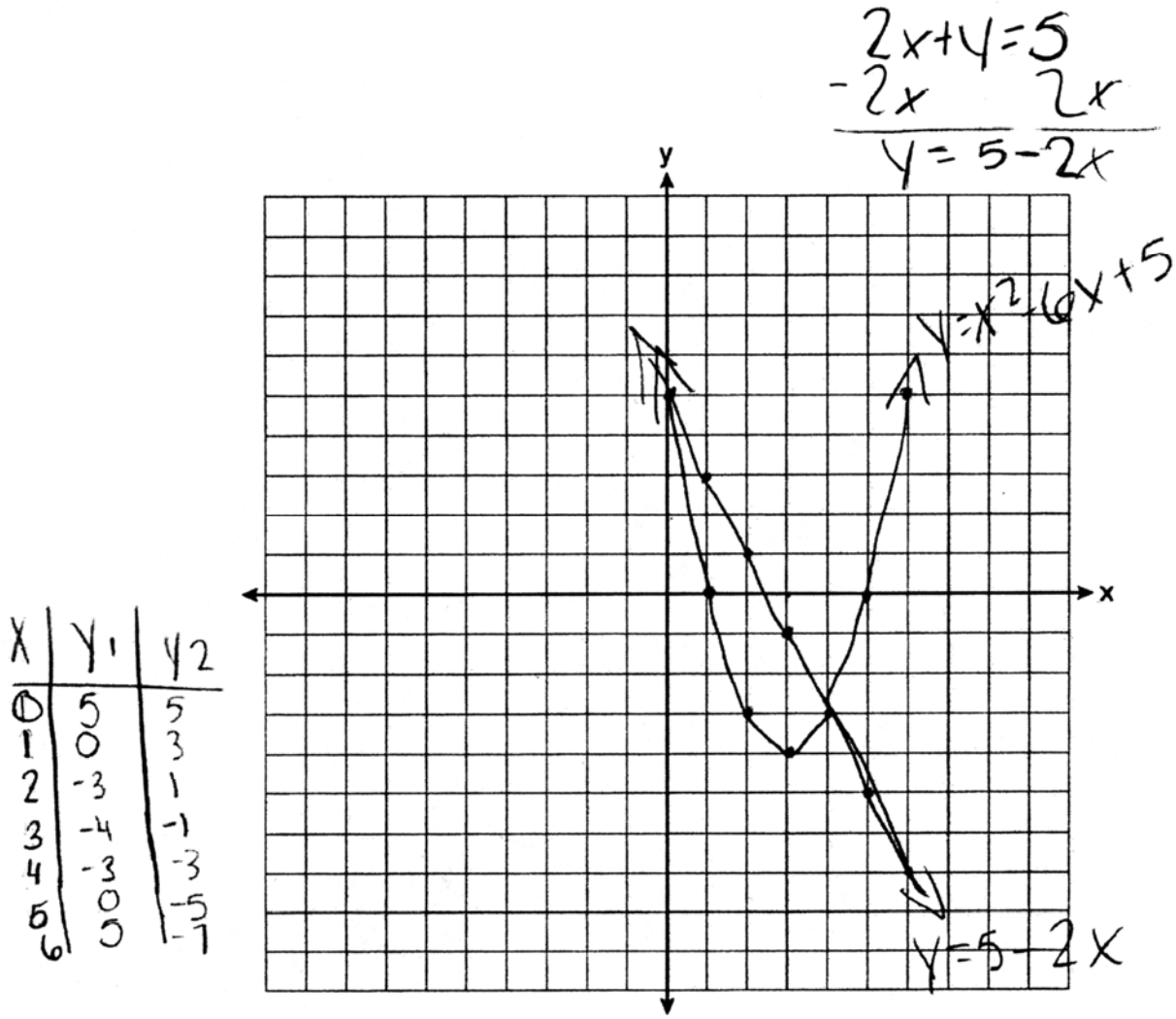


Comment

Score: 3

The student has stated only one solution.

Student Response



Comment

Score: 2

The student has not stated any solution.

Student Response

(0,5) and (4,3)

Comment

Score: 1

The student has stated the correct answers, but without showing any work.

Student Response

$$x^2 - 6x + 5 = 2x + 5$$

$$x^2 = 4x$$

$$x = 4$$

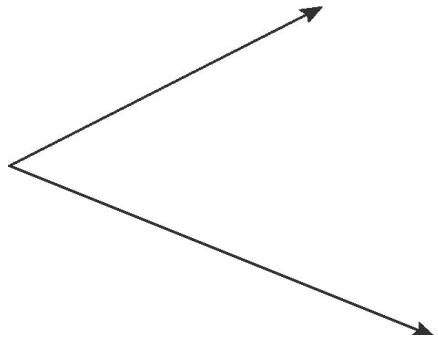
Comment

Score: 0

The student's response is completely incorrect.

Sample Question 1 – Geometry

Using a compass and straightedge, construct the bisector of the angle shown below. [*Leave all construction marks.*]



Rubric

[2] A correct construction is drawn showing all appropriate arcs, and the angle bisector is drawn.

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

or

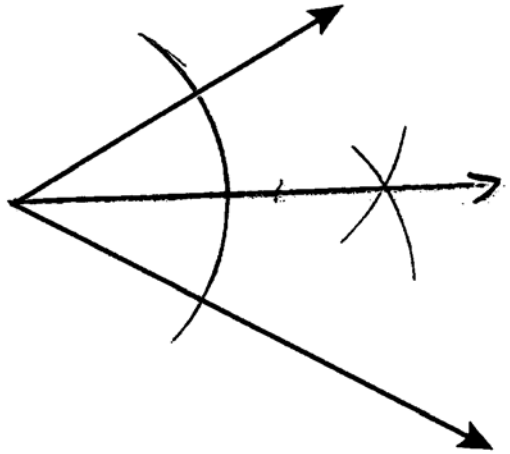
[1] The appropriate method is demonstrated, but one construction error is made, such as not extending the sides to show points of intersection by the arc.

[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.

Student Response

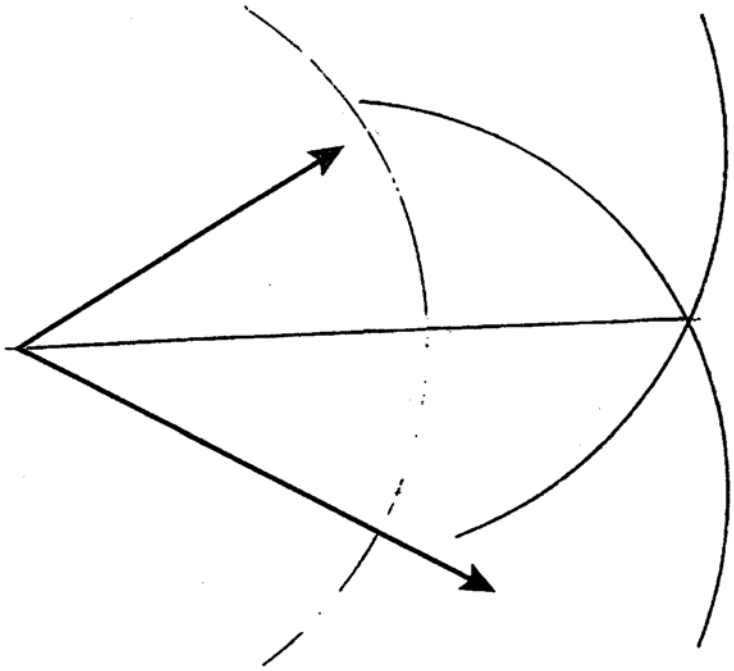


Comment

Score: 2

The student has a complete and correct response.

Student Response

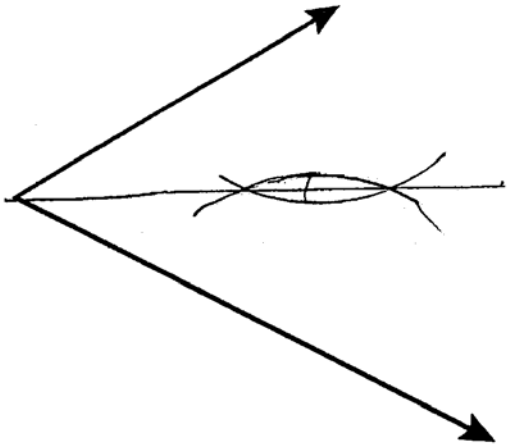


Comment

Score: 1

The student demonstrated an appropriate method, but one construction error is made. The first arc did not intersect both rays.

Student Response



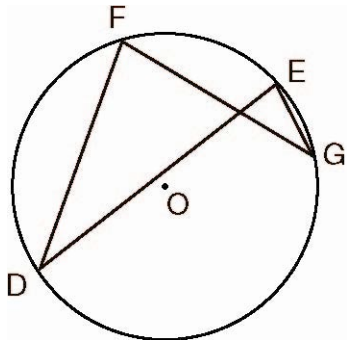
Comment

Score: 0

The student's response is completely incorrect.

Sample Question 2 – Geometry

In the diagram below of circle O, chords $\overline{DF}$, $\overline{DE}$, $\overline{FG}$, and $\overline{EG}$ are drawn such that $m\widehat{DF} : m\widehat{FE} : m\widehat{EG} : m\widehat{GD} = 5 : 2 : 1 : 7$. Identify one pair of inscribed angles that are congruent to each other and give their measure.



Student Response

[4] $\angle D$ and $\angle G$ and 24, or $\angle E$ and $\angle F$ and 84, and appropriate work is shown.

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

or

[3] The measure of at least one inscribed angle is found correctly, and appropriate work is shown, but a pair of angles is not identified or is identified incorrectly.

[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 the measures of all four arcs, but no further correct work is shown.

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

or

[1] One pair of inscribed angles is correctly identified, but no further correct work is shown.

or

[1] Appropriate work is shown to find $x = 24$, the measure of $\widehat{EG}$, but no further correct work is shown.

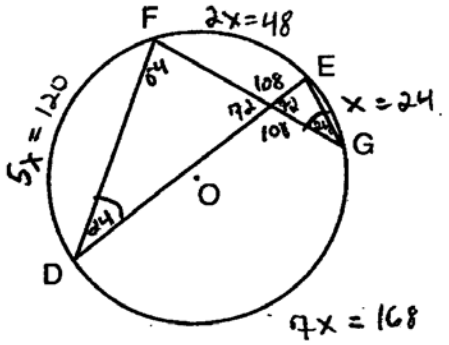
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

Student Response

$$5x + 2x + x + 7x = 360$$

$$\frac{\cancel{15}x}{\cancel{15}} = \frac{360}{15}$$

$$x = 24$$



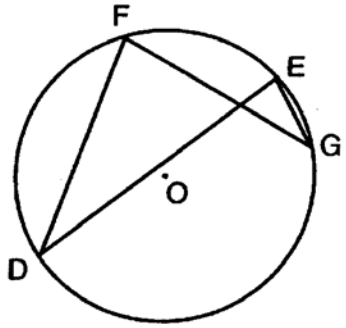
$$\boxed{\begin{array}{l} m\angle FGE = 24 \\ m\angle FDE = 24 \end{array}}$$

Comment

Score: 4

The student has a complete and correct response.

Student Response



$5x + 2x + x + 7x = 360$

$\frac{15x}{15} = \frac{360}{15}$

$x = 24$

$5x = 120 = \overset{\frown}{DF}$

$2x = 48 = \overset{\frown}{FE}$

$x = 24 = \overset{\frown}{EG}$

$7x = 188 = \overset{\frown}{GD}$

Inscribed angles are equal to one-half the measure of their intercepted arcs

$\angle F$ and $\angle E$ both intercept $\overset{\frown}{GD}$

$188 \div 2 = 94$

$\boxed{\angle F \text{ and } \angle E = 94^\circ}$

Comment

Score: 3

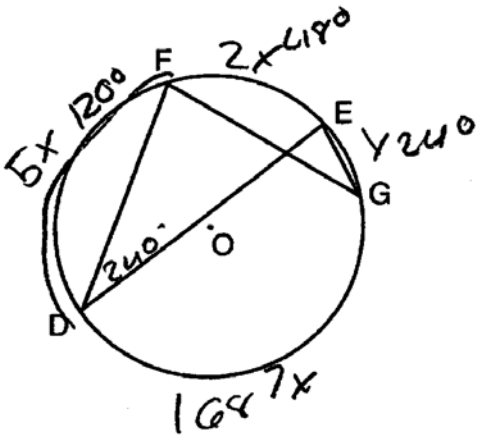
The student made one computational error.

Student Response

$5x + 2x + 1x + 7x =$

$\frac{15x}{15} = \frac{360}{15}$

$x = 24$



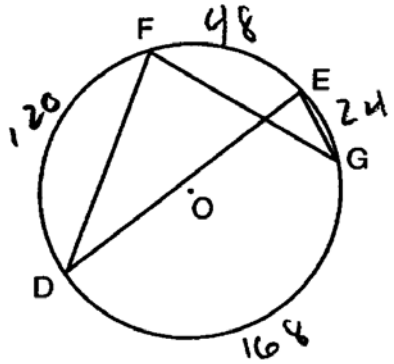
$m\angle FDE = 24°$

Comment

Score: 3

The student found the measure of only one angle.

Student Response



$\angle DEG \cong \angle DFG$

$\angle DEG = 168°$

$\angle DFG = 168°$

$5x + 2x + x + 7x = 360$

$15x = 360$

$x = 24$

$2x = 48$

$5x = 120$

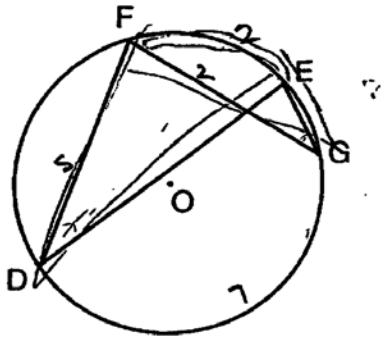
$7x = 168$

Comment

Score: 2

The student found the measures of all four arcs.

Student Response



$\angle FDE \approx \angle FGE$

Comment

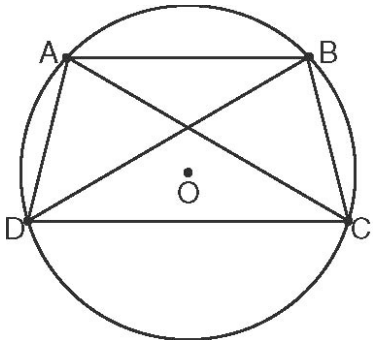
Score: 1

The student identified one pair of inscribed angles correctly.

Sample Question 3 – Geometry

In the diagram below, quadrilateral $ABCD$ is inscribed in circle O, $\overline{AB} \parallel \overline{DC}$, and diagonals $\overline{AC}$ and $\overline{BD}$ are drawn.

Prove that $\triangle ACD \cong \triangle BDC$.



Rubric

[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 incorrect.

[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 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 an understanding of the method of proof, but one conceptual error is made and one statement or reason is missing or incorrect.

or

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

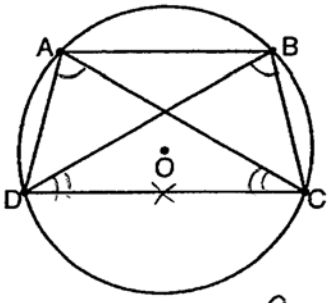
[1] Only one correct relevant statement and reason are written.

[0] The "given" and/or the "prove" statements are rewritten 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.

Student Response



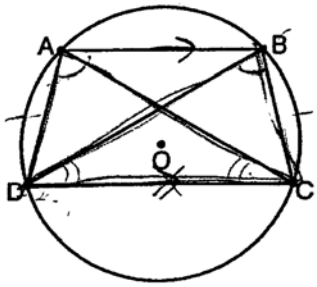
Statement	Reason
1. $\overline{AB} \parallel \overline{DC}$	1. Given
2. $\angle DAC \cong \angle DBC$	2. Inscribed angles intercepting the same arc are congruent
3. $\overline{DC} \cong \overline{DC}$	3. Reflexive Property
4. $\widehat{AD} \cong \widehat{BC}$	4. Parallel Lines intercept congruent arcs
5. $\angle BDC \cong \angle ACD$	5. Inscribed angles intercepting congruent arcs are congruent
6. $\triangle ACD \cong \triangle BDC$	6. AAS

Comment

Score: 6

The student has a complete and correct proof that includes a concluding statement.

Student Response



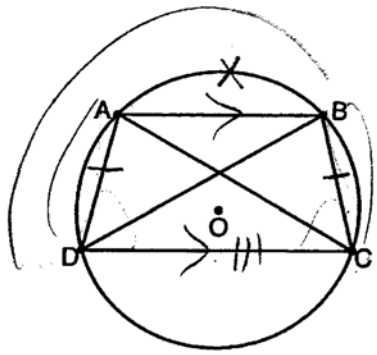
Statements	Reasons
(1) _____	(1) Given
(2) $\overline{DC} \cong \overline{DC}$	(2) Reflexive Prop. of $\cong$
(3) $\angle ACD \cong \angle BDC$	(3) inscribed angles that intercept $\cong$ arcs are $\cong$
(4) $\angle DAC \cong \angle CBD$	(4) inscribed angles that intercept the same arc are $\cong$
(5) $\triangle ACD \cong \triangle BDC$	(5) aas $\cong$ aas.

Comment

Score: 5

The student is missing the statement show $m\overset{\frown}{AD} = m\overset{\frown}{BC}$.

Student Response



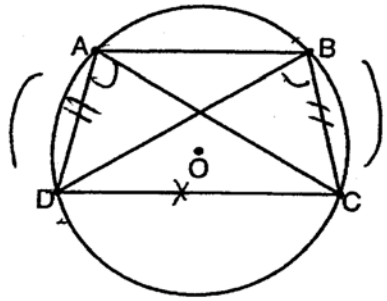
Statements	
1.	1. given
2. $\overset{\frown}{AD} \cong \overset{\frown}{BC}$	2. // lines intercept ≅ arcs
3. $\overline{AD} \cong \overline{BC}$	3. ≅ arcs have ≅ chords
4. $\overline{DC} \cong \overline{DC}$	4. Reflexive
5. $\overset{\frown}{AD} \cong \overset{\frown}{BC}$	5. // lines intercept ≅ arcs
$\overset{\frown}{AB} = \overset{\frown}{AD}$	
$\overset{\frown}{AD} + \overset{\frown}{AB} = \overset{\frown}{BC} + \overset{\frown}{AB}$ 6. $\overset{\frown}{DAB} \cong \overset{\frown}{CBA}$	6. Addition
7. $\overline{DB} \cong \overline{AC}$	7. ≅ arcs have ≅ chords
8. $\triangle ACD \cong \triangle BDC$	8. SSS ≅ SSS

Comment

Score: 4

The student inserted two statements but didn't supply reasons.

Student Response



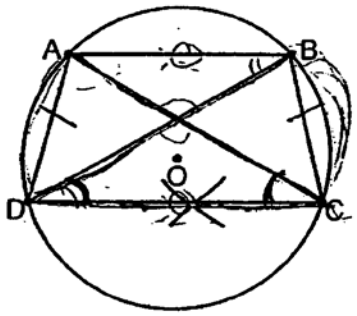
1. Given	1.
2. $\overset{\frown}{AD} \cong \overset{\frown}{BC}$	2. // lines intercept $\cong$ arcs
3. $\overline{AD} \cong \overline{BC}$	3. $\cong$ arcs intercept $\cong$ chords
4. $\angle DAC \cong \angle CBD$	4. Inscribed Angles that intercept ~~the~~ the same chord are $\cong$
5. $\overline{DC} \cong \overline{DC}$	5. Reflexive Prop
6. $\triangle ACD \cong \triangle BDC$	6. SSA

Comment

Score: 3

The student made one conceptual error.

Student Response



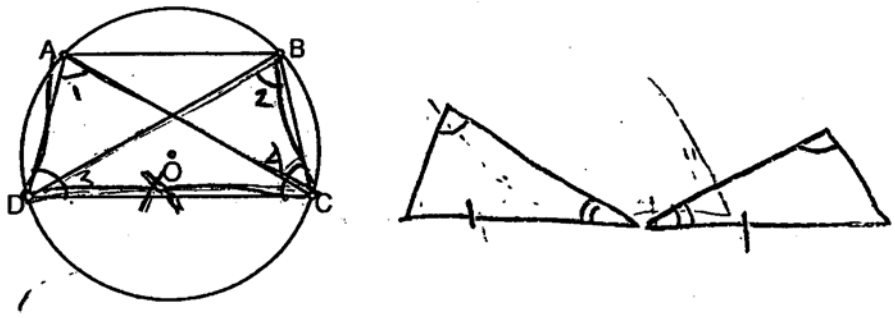
① Quad $\overline{ABCD}$	① Given
② $\overline{AB} \parallel \overline{DC}$	② Given
③ Quad $\overline{ABCD}$ is a trap	③ only One pair of opposite sides are ∥
~~④ $\overline{AD} \cong \overline{BC}$~~	~~④~~
④ $DC = DC$	④ Reflexive
⑤ $\overline{AD} \cong \overline{BC}$	⑤ Two Arcs are ≅ if they connect ∥ lines
⑥ $\angle C \cong \angle D$	⑥ Same Arcs have same inscribed ∠
⑦ $\overline{AD} = \overline{BC}$	⑦ Lines of ≅ Arc are ≅
⑧ $\triangle ACD \cong \triangle BDC$	⑧ SAS

Comment

Score: 2

The student made one conceptual error and one reason is incorrect.

Student Response



Statement	Reason
1. ABCD is inscribed in circle O, $\overline{AB} \parallel \overline{DC}$, and $\overline{AC}$ & $\overline{BD}$ are diagonals	1. given
2. $\overline{DC} \cong \overline{DC}$	2. Reflexive Property
3. $\angle 1$ & $\angle 2 \cong$ $\angle 3$ & $\angle 4 \cong$	3. alt interior $\angle$s are $\cong$
4. $\triangle ACD \cong \triangle BDC$	4. AAS $\cong$ AAS

Comment

Score: 1

The student has written only one correct relevant statement and reason.