



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

## INFORMATION BOOKLET FOR SCORING THE REGENTS EXAMINATION IN GEOMETRY JUNE 2009

### GENERAL INFORMATION

The general procedures to be followed in administering the June 2009 Regents Examination in Geometry are provided in the publication *Directions for Administering and Scoring the Regents Examination in Geometry* (DET 545). Copies of the *Directions* will be sent to schools prior to the June 2009 Regents Examination period and may also be accessed on the Department's web site at: <http://www.emsc.nysed.gov/osa/hsgen.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 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 the Regents Examination in Geometry.

### SCORING THE EXAMINATION

The Regents Examination in Geometry is 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 comprise 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.

For the June 2009 administration, a scoring overlay is provided that includes the answers to the Part I multiple-choice questions. A rating guide is also provided that includes the 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 answer sheets provided to all schools by the Department's contractor, Pearson, for the June 2009 examination contain a table with spaces for recording the Part I score; the score for each question in Parts II, III, and IV; and the total-test raw score.

Multiple-choice questions must be hand scored using the scoring overlay provided in the package of scoring materials. Teachers of subjects other than mathematics may score the multiple-choice questions and tabulate students' total raw scores; this will enable the mathematics teachers to focus on scoring the students' responses to the open-ended questions.

When scoring the June 2009 Regents Examination in Geometry:

- use only a No. 2 pencil
- use scissors to cut out the rectangle as indicated on the bottom of the scoring overlay
- **do not** punch holes in the scoring overlay
- **do not** make any marks on the Pearson answer sheet, other than in the spaces provided for recording scores

- **do not** machine scan the Pearson answer sheets. Marking up or scanning these answer sheets will interfere with the Department's score collection.
- take extreme care in recording the student's scores on each part of the examination and adding these scores to determine the total-test raw score
- make a careful record of each student's total raw score on the form provided for this purpose in the *Directions for Administering and Scoring the Regents Examination in Geometry*
- make a photocopy of each student's answer sheet after the student's scores for all questions have been recorded on it

## DETERMINING THE STUDENT'S FINAL EXAMINATION SCORE

The Score Conversion Chart for this examination will be made available on the Department's web site on Thursday, June 25, which is the Rating Day for the June 2009 examination period. The conversion chart, which enables teachers to convert the raw score to the scale score, will be posted at: <http://www.emsc.nysed.gov/osa/concht/home.html>. Because the scale scores corresponding to raw scores in the Score Conversion Chart change from one examination administration to another, it is *crucial* that, for each administration, you use *only* the conversion chart provided for that administration to determine the student's final score. Use the school's record of each student's total raw score and the conversion chart to obtain the correct scale score.

It is recommended that once the conversion chart has been posted, all student answer papers with a scale score of 60-64 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. 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 above 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 Examination in Geometry

The information below refers to the scoring of open-ended questions on the Regents Examination in Geometry.

The open-ended questions (Parts II, III, and IV) on the Regents Examination in 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 (3 credits for a 6-credit question, 2 credits for a 4-credit question, and 1 credit for a 2-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.

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.

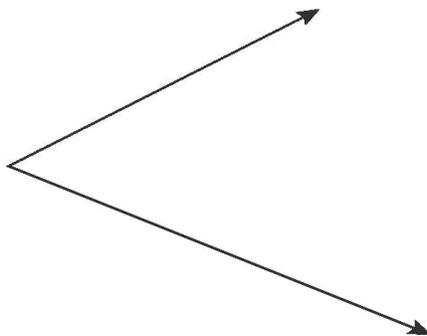
In some cases, the rubric will specifically state which responses should receive a score of 0.

- 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 – 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*

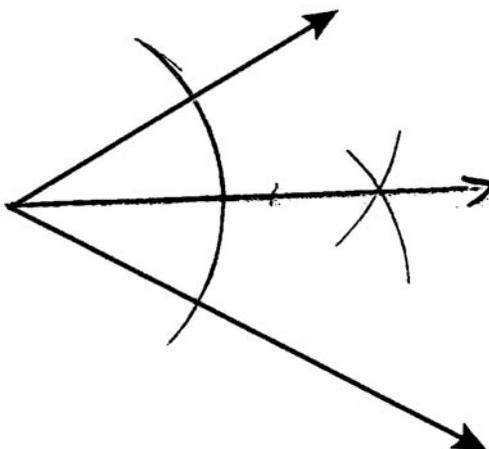
[1] The appropriate method is demonstrated, but one construction error is made, such as not extending the sides to show points of intersection by the arc.

[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**



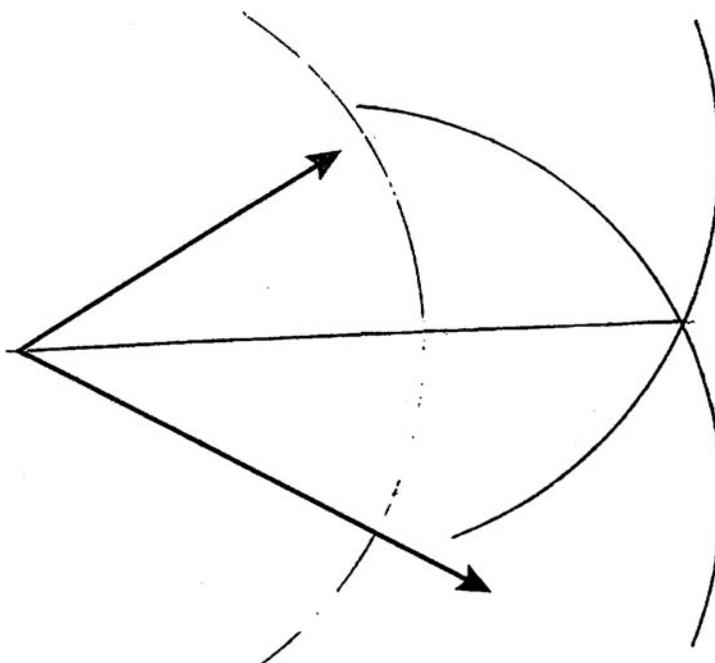
**Comment**

Score: 2

The student has a complete and correct response.

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**Student Response**



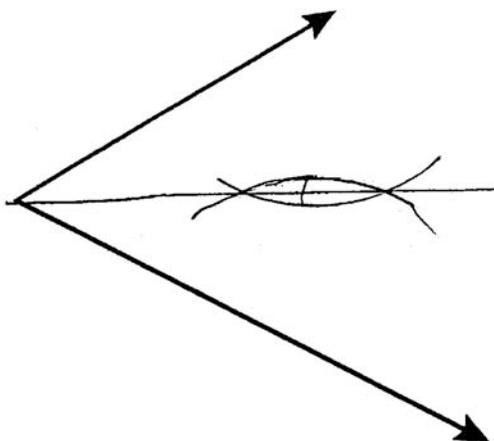
**Comment**

Score: 1

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

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**Student Response**



**Comment**

Score: 0

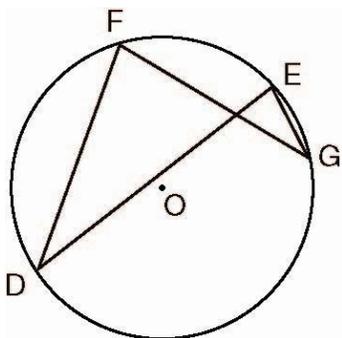
The student's response is completely incorrect.

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## 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.



### Rubric

[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.

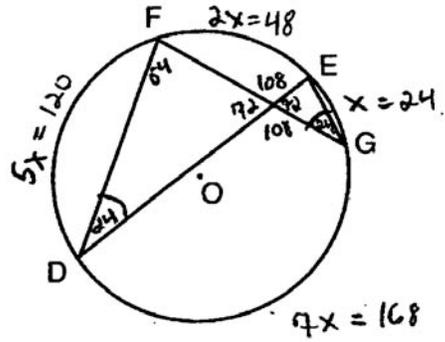
Student Response

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

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

$$x = 24$$

$m\angle FGE = 24$
$m\angle FDE = 24$

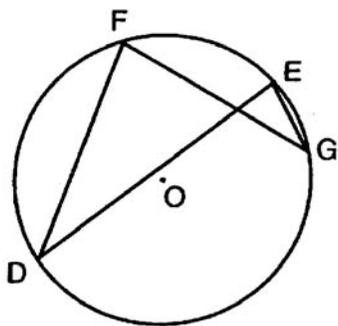


Comment

Score: 4

The student has a complete and correct response.

Student Response



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

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

$$x = 24$$

$$5x = 120 = \widehat{DF}$$

$$2x = 48 = \widehat{FE}$$

$$x = 24 = \widehat{EG}$$

$$7x = 168 = \widehat{GD}$$

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

$\angle F$  and  $\angle E$  both intercept  $\widehat{GD}$

$$168 \div 2 = 84$$

$\angle F \text{ and } \angle E = 84^\circ$

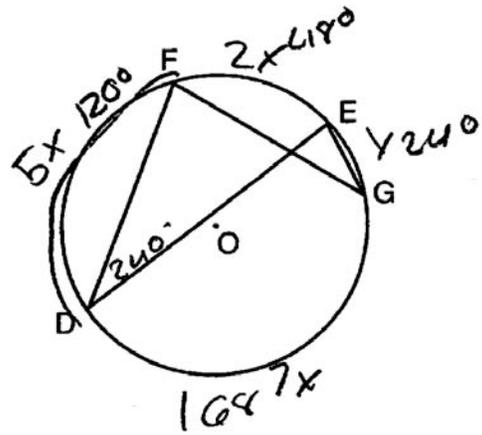
Comment

Score: 3

The student made one computational error.

Student Response

$$5x + 2x + 1x + 7x =$$
$$\frac{15x = 360}{16 \quad 15}$$
$$x = 24$$



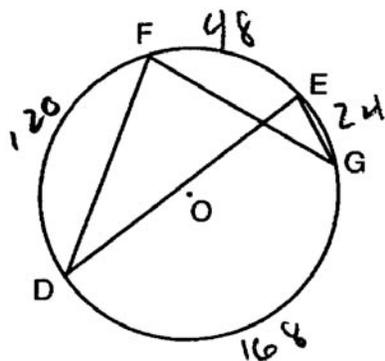
$$m\angle FDE = 240$$

Comment

Score: 3

The student found the measure of only one angle.

Student Response



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

$$15x = 360$$

$$x = 24$$

$$2x = 48$$

$$5x = 120$$

$$7x = 168$$

$$\angle DEG \cong \angle DFG$$

~~∠DEG = 168°~~

$$\angle DEG = 168^\circ$$

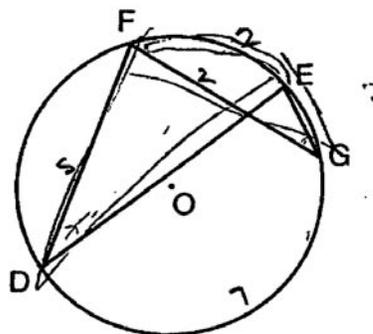
$$\angle DFG = 168^\circ$$

Comment

Score: 2

The student found the measures of all four arcs.

Student Response



$$\angle FDE \approx \angle FGE$$

Comment

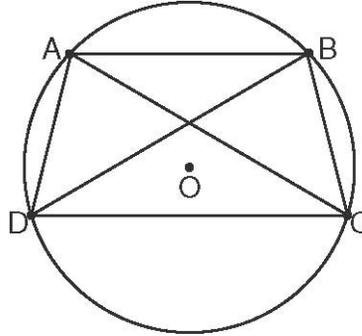
Score: 1

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.

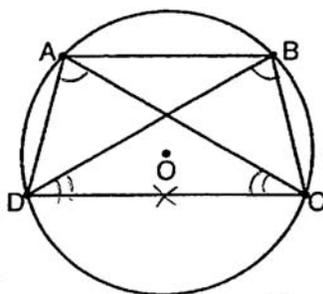
*or*

- [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

1.  $\overline{AB} \parallel \overline{DC}$
2.  $\angle DAC \cong \angle DBC$
3.  $\overline{DC} \cong \overline{DC}$
4.  $\widehat{AD} \cong \widehat{BC}$
5.  $\angle BDC \cong \angle ACD$
6.  $\triangle ACD \cong \triangle BDC$

Reason

1. Given
2. Inscribed angles intercepting the same arc are congruent
3. Reflexive Property
4. Parallel Lines intercept congruent arcs
5. Inscribed angles intercepting congruent arcs are congruent
6. AAS

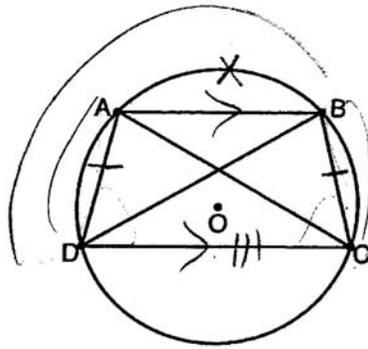
## Comment

Score: 6

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



Student Response

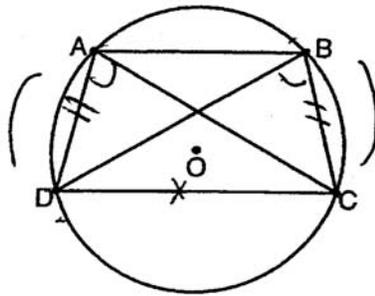


Statements	
1.	_____
2.	$\overline{AD} \cong \overline{BC}$
3.	$\overline{AD} \cong \overline{BC}$
4.	$\overline{DC} \cong \overline{DC}$
5.	$\overline{AD} \cong \overline{BC}$
6.	$\angle DAB \cong \angle CBA$
7.	$\overline{DB} \cong \overline{AC}$
8.	$\triangle ACD \cong \triangle BDC$
1. given	
2.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

Comment

Score: 4  
 The student inserted two statements but didn't supply reasons.

Student Response



① Given

②  $\widehat{AD} \cong \widehat{BC}$

③  $\overline{AD} \cong \overline{BC}$

④  $\angle DAC \cong \angle CBD$

⑤  $\overline{OC} \cong \overline{OC}$

⑥  $\triangle DAC \cong \triangle CBD$   
 $\triangle ACD \cong \triangle BDC$

①

② // lines intercept  $\cong$  arcs

③  $\cong$  arcs intercept  $\cong$  chords

④ Inscribed Angles that intercept the same chord are  $\cong$

⑤ Reflexive Prop  $\cong$

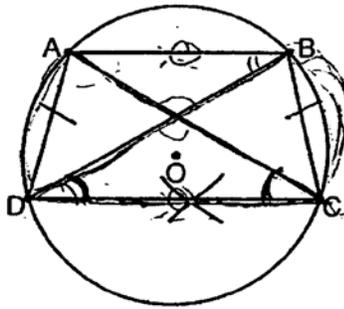
⑥ SSA

Comment

Score: 3

The student made one conceptual error.

Student Response



- ① Quad  $\overline{ABCD}$
- ②  $\overline{AB} \parallel \overline{DC}$
- ③ Quad  $\overline{ABCD}$  is a trap
- ~~④  $\overline{AD} \cong \overline{BC}$~~
- ④  $DC = DC$
- ⑤  $\overline{AD} \cong \overline{BC}$
- ⑥  $\angle C \cong \angle D$
- ⑦  $AD = BC$
- ⑧  $\triangle ACD \cong \triangle BDC$

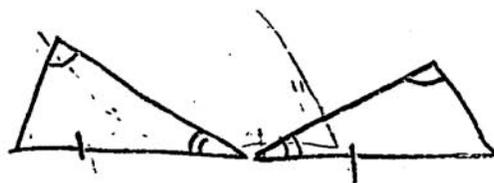
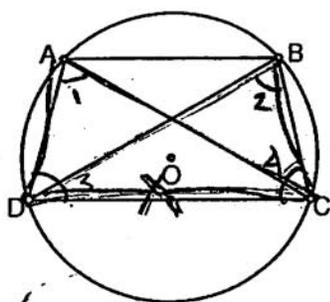
- ① Given
- ② Given
- ③ <sup>only</sup> One pair of opposite sides are  $\parallel$
- ~~④~~
- ④ Reflexive
- ⑤ Two Arcs are  $\cong$  if they connect  $\parallel$  lines
- ⑥ Same Arcs have same inscribed  $\angle$
- ⑦ Lines of  $\cong$  Arc are  $\cong$
- ⑧ SAS

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 AC & BD are diagonals	1. given
2. $\overline{DC} \cong \overline{DC}$	2. Reflexive Property
3. $\angle 1 \cong \angle 2$ $\angle 3 \cong \angle 4$	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.