

CHAPTER 8-4

PROOFS

1. 080401b, P.I. G.G.28

Which condition does *not* prove that two triangles are congruent?

- [A] $SSS \cong SSS$ [B] $SAS \cong SAS$
[C] $SSA \cong SSA$ [D] $ASA \cong ASA$

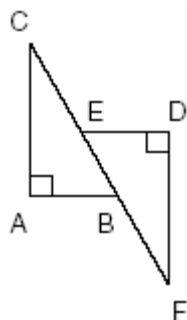
2. 010306b, P.I. G.G.28

Which statements could be used to prove that $\triangle ABC$ and $\triangle A'B'C'$ are congruent?

- [A] $\overline{AB} \cong \overline{A'B'}$, $\angle A \cong \angle A'$, and $\angle C \cong \angle C'$
[B] $\angle A \cong \angle A'$, $\overline{AC} \cong \overline{A'C'}$, and $\overline{BC} \cong \overline{B'C'}$
[C] $\overline{AB} \cong \overline{A'B'}$, $\overline{BC} \cong \overline{B'C'}$, and $\angle A \cong \angle A'$
[D] $\angle A \cong \angle A'$, $\angle B \cong \angle B'$, and $\angle C \cong \angle C'$

3. 060320b, P.I. G.G.28

In the accompanying diagram, $\overline{CA} \perp \overline{AB}$, $\overline{ED} \perp \overline{DF}$, $\overline{ED} \parallel \overline{AB}$, $\overline{CE} \cong \overline{BF}$, $\overline{AB} \cong \overline{ED}$ and $m\angle CAB = m\angle FDE = 90$.

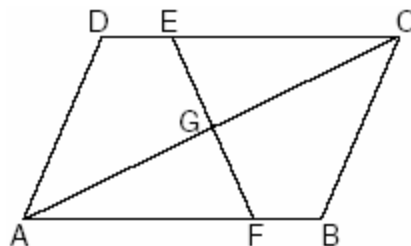


Which statement would *not* be used to prove $\triangle ABC \cong \triangle DEF$?

- [A] $HL \cong HL$ [B] $AAS \cong AAS$
[C] $SSS \cong SSS$ [D] $SAS \cong SAS$

4. 080310b, P.I. G.G.28

In the accompanying diagram of parallelogram $ABCD$, $\overline{DE} \cong \overline{BF}$.

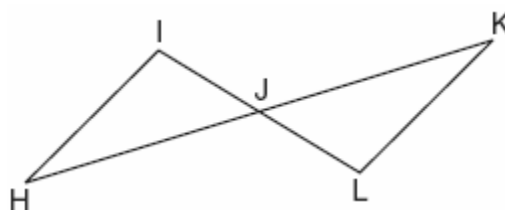


Triangle EGC can be proved congruent to triangle FGA by

- [A] $HL \cong HL$ [B] $AAS \cong AAS$
[C] $AAA \cong AAA$ [D] $SSA \cong SSA$

5. 060420b, P.I. G.G.28

In the accompanying diagram, \overline{HK} bisects \overline{IL} and $\angle H \cong \angle K$.



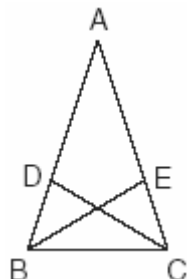
What is the most direct method of proof that could be used to prove $\triangle HIJ \cong \triangle K LJ$?

- [A] $ASA \cong ASA$ [B] $SAS \cong SAS$
[C] $HL \cong HL$ [D] $AAS \cong AAS$

6. 060204b, P.I. G.G.28

In the accompanying diagram of $\triangle ABC$,

$$\overline{AB} \cong \overline{AC}, \overline{BD} = \frac{1}{3}\overline{BA}, \text{ and } \overline{CE} = \frac{1}{3}\overline{CA}.$$

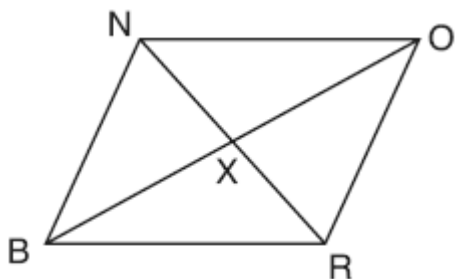


Triangle EBC can be proved congruent to triangle DCB by

- [A] HL \cong HL [B] SAS \cong SAS
[C] ASA \cong ASA [D] SSS \cong SSS

7. 080731b, P.I. G.G.27

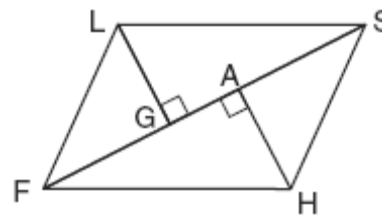
The accompanying diagram shows quadrilateral $BRON$, with diagonals \overline{NR} and \overline{BO} , which bisect each other at X .



Prove: $\triangle BNX \cong \triangle ORX$

8. 010634b, P.I. G.G.27

Given: parallelogram $FLSH$, diagonal \overline{FGAS} , $\overline{LG} \perp \overline{FS}$, $\overline{HA} \perp \overline{FS}$



Prove: $\triangle LGS \cong \triangle HAF$

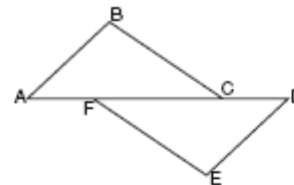
9. 010233b, P.I. G.G.27

Prove that the diagonals of a parallelogram bisect each other.

10. 060229b, P.I. G.G.27

Complete the partial proof below for the accompanying diagram by providing reasons for steps 3, 6, 8, and 9.

Given: \overline{AFCD}
 $\overline{AB} \perp \overline{BC}$
 $\overline{DE} \perp \overline{EF}$
 $\overline{BC} \parallel \overline{FE}$
 $\overline{AB} \cong \overline{DE}$



Prove: $\overline{AC} \cong \overline{FD}$

Statements	Reasons
1 \overline{AFCD}	1 Given
2 $\overline{AB} \perp \overline{BC}$, $\overline{DE} \perp \overline{EF}$	2 Given
3 $\angle B$ and $\angle E$ are right angles.	3 _____
4 $\angle B \cong \angle E$	4 All right angles are congruent.
5 $\overline{BC} \parallel \overline{FE}$	5 Given
6 $\angle BCA \cong \angle FED$	6 _____
7 $\overline{AB} \cong \overline{DE}$	7 Given
8 $\triangle ABC \cong \triangle DEF$	8 _____
9 $\overline{AC} \cong \overline{FD}$	9 _____

[1] C

[2] A

[3] C

[4] B

[5] D

[6] B

[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 the concluding statement is missing.

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

[1] Some correct relevant statements about the proof are made, but two or three statements and/or reasons are missing or are incorrect.

[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

[7] obviously incorrect procedure.

[6] A complete and correct proof is written.

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

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

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

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

[1] Only one correct 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

[8] obviously incorrect procedure.

[6] Either a correct Euclidean proof is written, with a concluding statement that the diagonals bisect each other, or a correct analytic proof using coordinate geometry is written, with a concluding statement that the diagonals bisect each other.

[5] One reason is omitted or incorrect.

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

[4] The appropriate triangles are proven to be congruent, but the corresponding parts and a final statement that indicates why the diagonals are bisected are omitted.

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

or [4] A correct analytic proof using coordinate geometry is written, but no concluding statement is made.

[3] An appropriate conclusion is drawn, including a statement that indicates why the diagonals are bisected; but only a partial proof is written, with two steps missing, and errors in the statements or reasons are made.

or [3] An analytic proof using coordinate geometry with more than two errors is written, but an appropriate concluding statement is made.

or [3] The diagram in an analytic proof is labeled incorrectly or numerically, but the rest of the proof is correct.

[2] Statements for the Euclidean proof are written, but no valid reasons are given.

or [2] A congruence proof is written with some valid statements and reasons, but a concluding statement that the diagonals bisect each other is not made.

[1] A correctly labeled diagram for a Euclidean proof is shown, but no proof is written.

or [1] An analytic proof using coordinate geometry with more than two errors is written, but no concluding statement is made.

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

[9] incorrect procedure.

[4] The reasons for all four steps are correct, such as:

Step 3: Perpendicular line segments form right angles.

Step 6: If two parallel lines are cut by a transversal, the alternate interior angles are congruent.

Step 8: $AAS \cong AAS$.

Step 9: Corresponding parts of congruent triangles are congruent.

[3] The reasons for only three steps are correct.

[2] The reasons for only two steps are correct.

[1] The reason for only one step is correct.

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

[10] incorrect procedure.