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*G.G.28: Determine the congruence of two triangles by using one of the five congruence techniques (SSS, SAS, ASA, AAS, HL), given sufficient information about the sides and/or angles of two congruent triangles*

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

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

[A]  $SAS \cong SAS$  [B]  $SSS \cong SSS$

[C]  $ASA \cong ASA$  [D]  $SSA \cong SSA$

2. 080913ge, P.I. G.G.28

The diagonal  $\overline{AC}$  is drawn in parallelogram  $ABCD$ . Which method can *not* be used to prove that  $\triangle ABC \cong \triangle CDA$ ?

[A] SAS [B] SSS [C] SSA [D] ASA

3. 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  $\angle C \cong \angle C'$

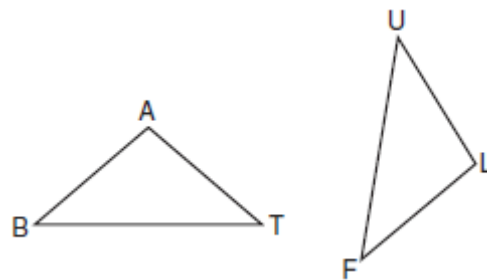
[B]  $\angle A \cong \angle A'$ ,  $\angle B \cong \angle B'$ , and  $\angle C \cong \angle C'$

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

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

4. 080907b, P.I. G.G.28

In the accompanying diagram of triangles  $BAT$  and  $FLU$ ,  $\angle B \cong \angle F$  and  $\overline{BA} \cong \overline{FL}$ .



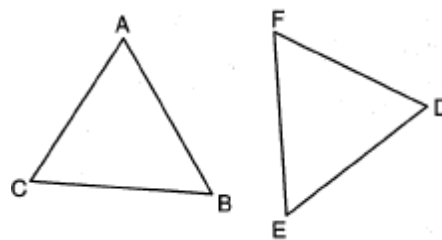
Which statement is needed to prove  $\triangle BAT \cong \triangle FLU$ ?

[A]  $\overline{BA} \parallel \overline{FL}$  [B]  $\angle A \cong \angle L$

[C]  $\angle A \cong \angle U$  [D]  $\overline{AT} \cong \overline{LU}$

5. 060902b, P.I. G.G.28

In the diagram of  $\triangle ABC$  and  $\triangle DEF$  below,  $\overline{AB} \cong \overline{DE}$ ,  $\angle A \cong \angle D$ , and  $\angle B \cong \angle E$ .



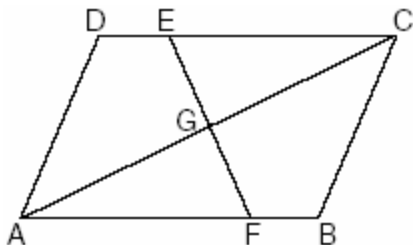
Which method can be used to prove  $\triangle ABC \cong \triangle DEF$ ?

[A] ASA [B] HL [C] SSS [D] SAS

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6. 080310b, P.I. G.G.28

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

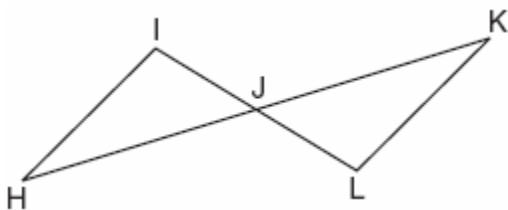


Triangle  $EGC$  can be proved congruent to triangle  $FGA$  by

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

7. 060420b, P.I. G.G.28

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

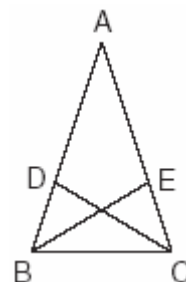


What is the most direct method of proof that could be used to prove  $\triangle HIJ \cong \triangle KLJ$ ?

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

8. 060204b, P.I. G.G.28

In the accompanying diagram of  $\triangle ABC$ ,  $\overline{AB} \cong \overline{AC}$ ,  $\overline{BD} = \frac{1}{3}\overline{BA}$ , and  $\overline{CE} = \frac{1}{3}\overline{CA}$ .

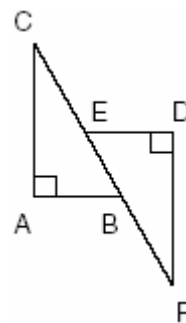


Triangle  $EBC$  can be proved congruent to triangle  $DCB$  by

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

9. 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  $m\angle CAB = m\angle FDE = 90$ .



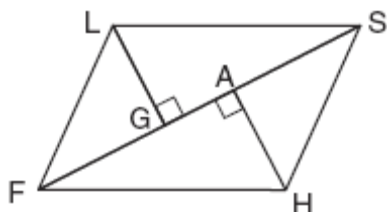
Which statement would *not* be used to prove  $\triangle ABC \cong \triangle DEF$ ?

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

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10. 010634b, P.I. G.G.28

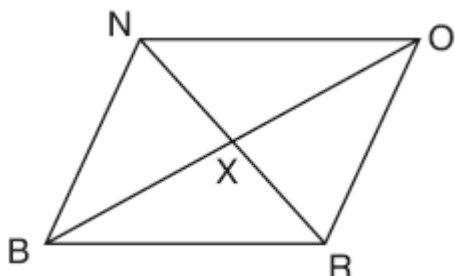
Given: parallelogram  $FLSH$ , diagonal  $\overline{FGAS}$ ,  $\overline{LG} \perp \overline{FS}$ ,  $\overline{HA} \perp \overline{FS}$



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

11. 080731b, P.I. G.G.28

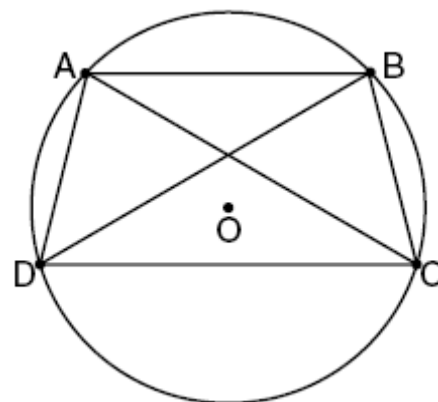
The accompanying diagram shows quadrilateral  $BRON$ , with diagonals  $\overline{NR}$  and  $\overline{BO}$ , which bisect each other at  $X$ .



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

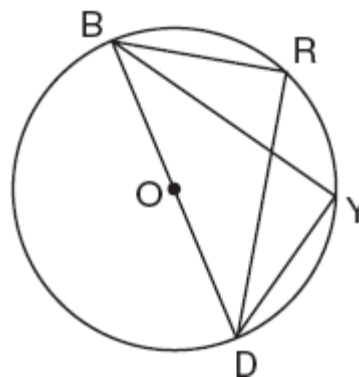
12. fall0838ge, P.I. G.G.28

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  $\triangle ACD \cong \triangle BDC$ .



13. 010732b, P.I. G.G.28

In the accompanying diagram,  $m\widehat{BR} = 70$ ,  $m\widehat{YD} = 70$ , and  $\overline{BOD}$  is the diameter of circle  $O$ . Write an explanation or a proof that shows  $\triangle RBD$  and  $\triangle YDB$  are congruent.



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[1] D

[2] C

[3] A

[4] B

[5] A

[6] D

[7] C

[8] C

[9] A

[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

[10] obviously incorrect procedure.

- [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
- [11] obviously incorrect procedure.

- [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
- [12] obviously incorrect procedure.

[4] Appropriate work is shown to explain why or prove the triangles are congruent.

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

[2] An explanation 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 method of proof are made, but two or three statements or reasons are missing or are incorrect.

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

[13] incorrect procedure.