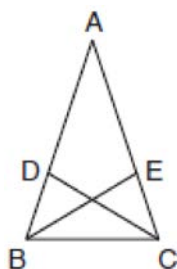


**G.G.28: Triangle Congruency 2: Determine the congruence of two triangles by using one of the five congruence techniques (SSS, SAS, ASA, AAS, HL), given sufficient information**

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

- 1)  $SSS \cong SSS$
- 2)  $SSA \cong SSA$
- 3)  $SAS \cong SAS$
- 4)  $ASA \cong ASA$

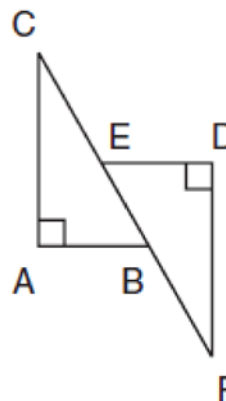
- 2 In the accompanying diagram of  $\triangle ABC$ ,  $\overline{AB} \cong \overline{AC}$ ,  $\overline{BD} = \frac{1}{3} \overline{BA}$ , and  $\overline{CE} = \frac{1}{3} \overline{CA}$ .



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

- 1)  $SAS \cong SAS$
- 2)  $ASA \cong ASA$
- 3)  $SSS \cong SSS$
- 4)  $HL \cong HL$

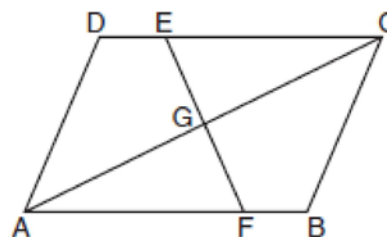
- 3 In the accompanying diagram,  $\overline{CA} \perp \overline{AB}$ ,  $\overline{ED} \perp \overline{DF}$ ,  $\overline{ED} \parallel \overline{AB}$ ,  $\overline{CE} \cong \overline{BF}$ ,  $\overline{AB} \cong \overline{ED}$ , and  $m\angle CAB = m\angle FDE = 90^\circ$ .



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

- 1)  $SSS \cong SSS$
- 2)  $SAS \cong SAS$
- 3)  $AAS \cong AAS$
- 4)  $HL \cong HL$

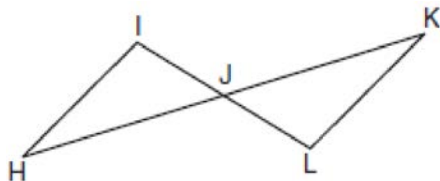
- 4 In the accompanying diagram of parallelogram  $ABCD$ ,  $\overline{DE} \cong \overline{BF}$ .



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

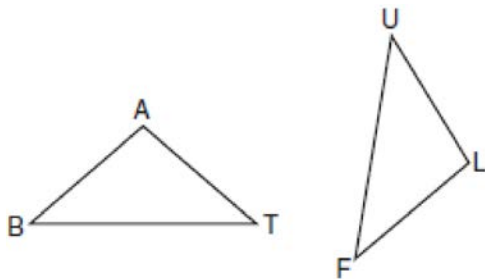
- 1)  $HL \cong HL$
- 2)  $AAA \cong AAA$
- 3)  $AAS \cong AAS$
- 4)  $SSA \cong SSA$

- 5 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  $\triangle HIJ \cong \triangle KLJ$ ?

- 1)  $HL \cong HL$
  - 2)  $SAS \cong SAS$
  - 3)  $AAS \cong AAS$
  - 4)  $ASA \cong ASA$
- 6 Which statements could be used to prove that  $\triangle ABC$  and  $\triangle A'B'C'$  are congruent?
- 1)  $\overline{AB} \cong \overline{A'B'}$ ,  $\overline{BC} \cong \overline{B'C'}$ , and  $\angle A \cong \angle A'$
  - 2)  $\overline{AB} \cong \overline{A'B'}$ ,  $\angle A \cong \angle A'$ , and  $\angle C \cong \angle C'$
  - 3)  $\angle A \cong \angle A'$ ,  $\angle B \cong \angle B'$ , and  $\angle C \cong \angle C'$
  - 4)  $\angle A \cong \angle A'$ ,  $\overline{AC} \cong \overline{A'C'}$ , and  $\overline{BC} \cong \overline{B'C'}$
- 7 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  $\triangle BAT \cong \triangle FLU$ ?

- 1)  $\angle A \cong \angle L$
- 2)  $\overline{AT} \cong \overline{LU}$
- 3)  $\angle A \cong \angle U$
- 4)  $\overline{BA} \parallel \overline{FL}$

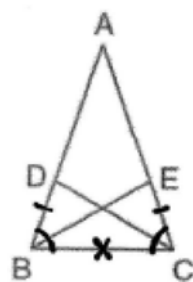
- 8 In  $\triangle BAT$  and  $\triangle CRE$ ,  $\angle A \cong \angle R$  and  $\overline{BA} \cong \overline{CR}$ . Write *one* additional statement that could be used to prove that the two triangles are congruent. State the method that would be used to prove that the triangles are congruent.

**G.G.28: Triangle Congruency 2: Determine the congruence of two triangles by using one of the five congruence techniques (SSS, SAS, ASA, AAS, HL), given sufficient information**

**Answer Section**

1 ANS: 2 REF: 080401b

2 ANS: 1

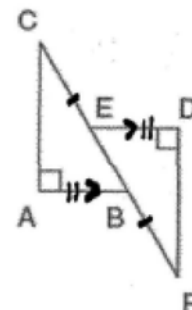


Since  $\overline{AB} \cong \overline{AC}$ ,  $\triangle ABC$  is an isosceles triangle and  $\angle ABC \cong \angle ACB$ .

REF: 060204b

3 ANS: 1

Since  $\overline{ED} \parallel \overline{AB}$  and  $\overline{CEBF}$  is a transversal,  $\angle ABC$  and  $\angle DEF$  are alternate interior angles and congruent.

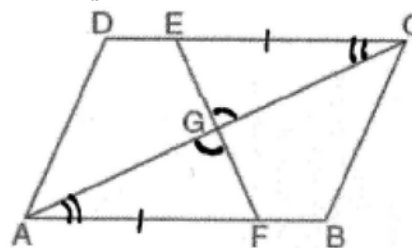


SSS  $\cong$  SSS can not be used because no statement is made that  $\overline{AC}$  and  $\overline{DF}$  are congruent.

REF: 060320b

4 ANS: 3

$\angle AGF$  and  $\angle CGE$  are congruent vertical angles. Because  $ABCD$  is a parallelogram,  $\overline{AB} \cong \overline{CD}$  and since  $\overline{DE} \cong \overline{BF}$ ,  $\overline{AF} \cong \overline{CE}$ . Because  $ABCD$  is a parallelogram,  $\overline{AB} \parallel \overline{CD}$  and since  $\overline{AGC}$  is a transversal,  $\angle CAB$

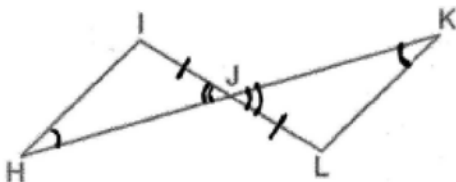


and  $\angle ACD$  are alternate interior angles and congruent. This problem can also be solved using elimination. Since they are not right triangles, HL does not apply, AAA only proves similarity and SSA does not prove congruence.

REF: 080310b

5 ANS: 3

Because  $\overline{HK}$  bisects  $\overline{IL}$ ,  $\overline{JI} \cong \overline{JL}$ .  $\angle HJI$  and  $\angle KJL$  are congruent vertical angles. Since  $\angle H \cong \angle K$  is



given, AAS  $\cong$  AAS.

REF: 060420b

6 ANS: 2

(2) is AAS, which proves congruency. (1) and (4) are SSA and (3) is AAA.

REF: 010306b

7 ANS: 1

REF: 080907b

8 ANS:

$\angle B \cong \angle C$  and ASA, or  $\angle T \cong \angle E$  and AAS, or  $\overline{AT} \cong \overline{RE}$  and SAS

REF: 011022b