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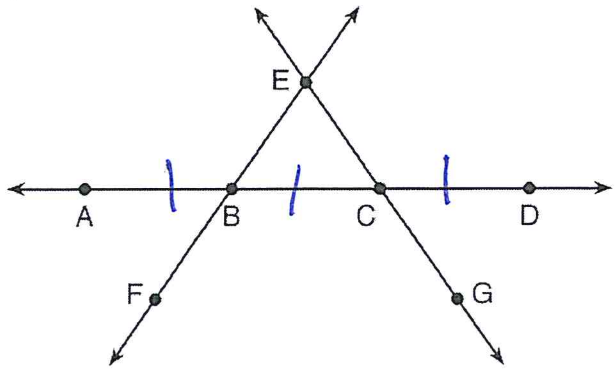
Date ______________
Geometry

Triangle Proofs Multiple Choice

1. In the diagram below, $\overleftrightarrow{FE}$ bisects $\overline{AC}$ at B, and $\overleftrightarrow{GE}$ bisects $\overline{BD}$ at C.

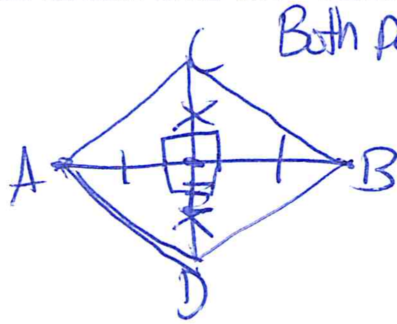


Which statement is always true?

1) $\overline{AB} \cong \overline{DC}$ ✓
2) $\overline{FB} \cong \overline{EB}$ X
3) $\overleftrightarrow{BD}$ bisects $\overline{GE}$ at C. X
4) $\overleftrightarrow{AC}$ bisects $\overline{FE}$ at B. X

2. Segment CD is the perpendicular bisector of $\overline{AB}$ at E. Which pair of segments does *not* have to be congruent?

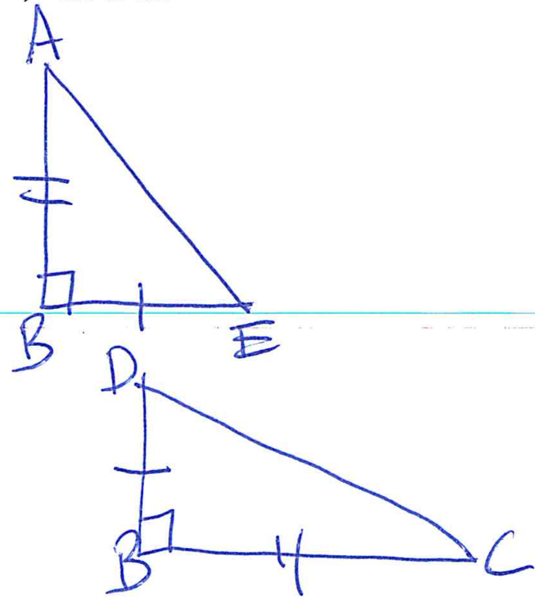
1) $\overline{AD}, \overline{BD}$
2) $\overline{AC}, \overline{BC}$
3) $\overline{AE}, \overline{BE}$
4) $\overline{DE}, \overline{CE}$

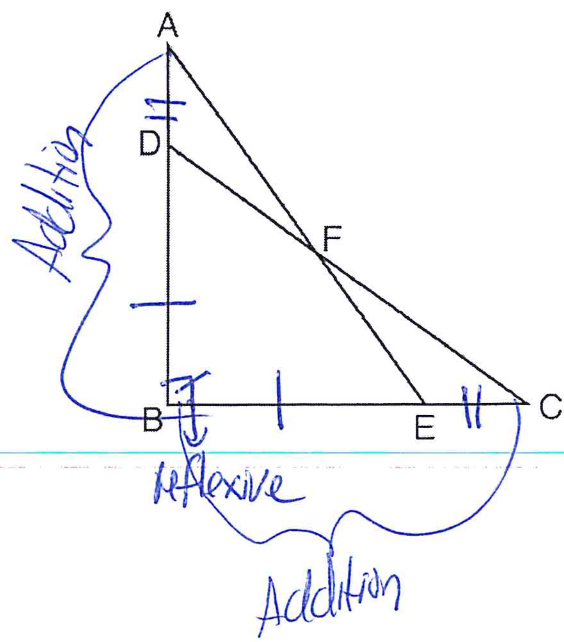


Both pairs of ~~All~~ triangles are congruent

3. Given: $\triangle ABE$ and $\triangle CBD$ shown in the diagram below with $\overline{DB} \cong \overline{BE}$
Which statement is needed to prove $\triangle ABE \cong \triangle CBD$ using only SAS ≅ SAS?

1) $\angle CDB \cong \angle AEB$
2) $\angle AFD \cong \angle EFC$
3) $\overline{AD} \cong \overline{CE}$
4) $\overline{AE} \cong \overline{CD}$



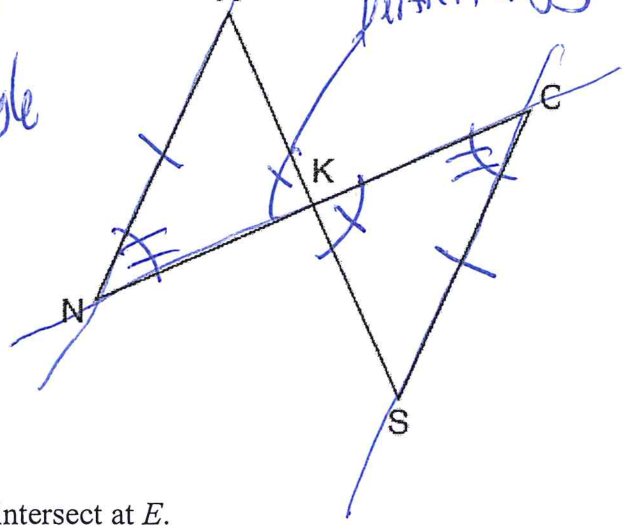


4. In the diagram below, $\overline{AKS}$, $\overline{NKC}$, $\overline{AN}$, and $\overline{SC}$ are drawn such that $\overline{AN} \cong \overline{SC}$. Which additional statement is sufficient to prove $\triangle KAN \cong \triangle KSC$ by AAS?

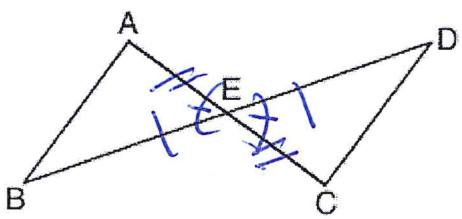
1) $\overline{AS}$ and $\overline{NC}$ bisect each other.
2) K is the midpoint of $\overline{NC}$.
3) $\overline{AS} \perp \overline{CN}$
4) $\overline{AN} \parallel \overline{SC}$

Need an angle

vertical angles



5. In the diagram below, $\overline{AC}$ and $\overline{BD}$ intersect at E.



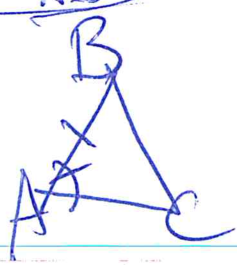
Which information is always sufficient to prove $\triangle ABE \cong \triangle CDE$?

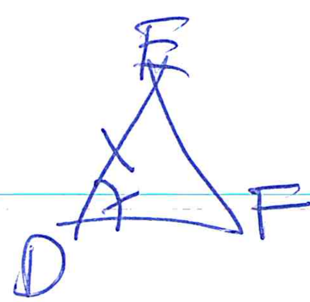
1) $\overline{AB} \parallel \overline{CD}$
2) $\overline{AB} \cong \overline{CD}$ and $\overline{BE} \cong \overline{DE}$
3) E is the midpoint of $\overline{AC}$.
4) $\overline{BD}$ and $\overline{AC}$ bisect each other.

6. She was given that $\angle A \cong \angle EDF$, and has already proven $\overline{AB} \cong \overline{DE}$. Which pair of corresponding parts and triangle congruency method would *not* prove $\triangle ABC \cong \triangle DEF$?

1) $\overline{AC} \cong \overline{DF}$ and SAS
2) $\overline{BC} \cong \overline{EF}$ and SAS
3) $\angle C \cong \angle F$ and AAS
4) $\angle CBA \cong \angle FED$ and ASA

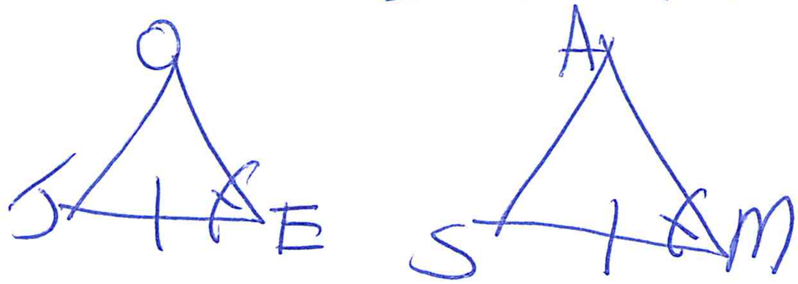
ASS





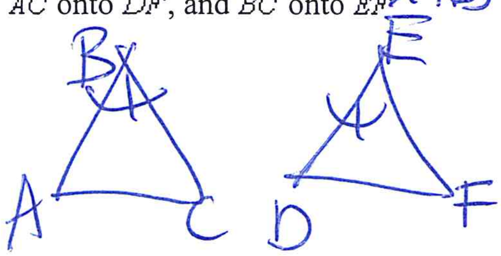
7. Triangles JOE and SAM are drawn such that $\angle E \cong \angle M$ and $\overline{EJ} \cong \overline{MS}$. Which mapping would *not* always lead to $\triangle JOE \cong \triangle SAM$?

1) $\angle J$ maps onto $\angle S$ ✓ ASA
2) $\angle O$ maps onto $\angle A$ ✓ AAS
3) $\overline{EO}$ maps onto $\overline{MA}$ ✓ SAS
4) $\overline{JO}$ maps onto $\overline{SA}$ X ASS



8. In the two distinct acute triangles ABC and DEF, $\angle B \cong \angle E$. Triangles ABC and DEF are congruent when there is a sequence of rigid motions that maps

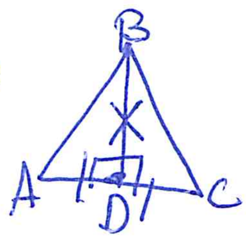
1) $\angle A$ onto $\angle D$, and $\angle C$ onto $\angle F$ X AAA
2) $\overline{AC}$ onto $\overline{DF}$, and $\overline{BC}$ onto $\overline{EF}$ X ASS
3) $\angle C$ onto $\angle F$, and $\overline{BC}$ onto $\overline{EF}$ ✓ ASA
4) point A onto point D, and $\overline{AB}$ onto $\overline{DE}$ X only 2 things



9. In $\triangle ABC$, $\overline{BD}$ is the perpendicular bisector of $\overline{ADC}$. Based upon this information, which statements below can be proven?

I. $\overline{BD}$ is a median. ✓ $\overline{AD} \cong \overline{DC}$
II. $\overline{BD}$ bisects $\angle ABC$. ✓ $\angle ABD \cong \angle CBD$
III. $\triangle ABC$ is isosceles. ✓ $\overline{AB} \cong \overline{BC}$

1) I and II, only
2) I and III, only
3) II and III, only
4) I, II, and III



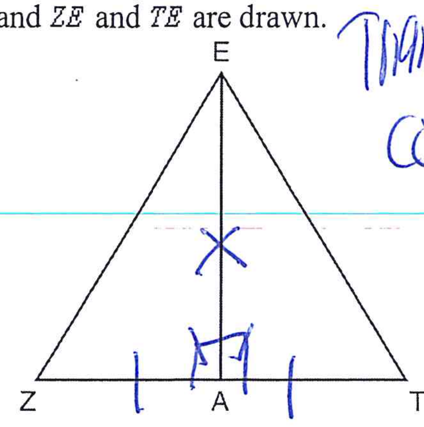
Triangles are congruent

CPCTC

10. Line segment EA is the perpendicular bisector of $\overline{ZT}$, and $\overline{ZE}$ and $\overline{TE}$ are drawn.

Which conclusion can *not* be proven?

1) $\overline{EA}$ bisects angle ZET. ✓ $\angle ZEA \cong \angle TEA$
2) Triangle EZT is equilateral. X
3) $\overline{EA}$ is a median of triangle EZT. ✓ $\overline{ZA} \cong \overline{AT}$
4) Angle Z is congruent to angle T. ✓



Triangles are congruent