Name: Key

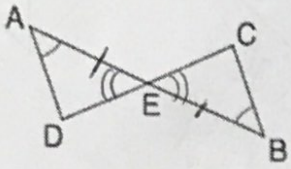
Date:

UNIT 3

QUIZ REVIEW

UNIT 3: TRIANGLE CONGRUENCY QUIZ REVIEW

1. In the accompanying diagram, $\overline{AB}$ and $\overline{CD}$ intersect at E, E is the midpoint of $\overline{AB}$, and $\angle A \cong \angle B$.



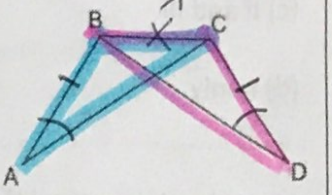
Which statement can be used to prove $\triangle ADE \cong \triangle BCE$

(1) ASA ≅ ASA
(2) HL ≅ HL
(3) SSS ≅ SSS
(4) SAS ≅ SAS

2. Given: $\overline{AB} \cong \overline{DC}$ and $\angle A \cong \angle D$

Which of the following methods can be used to prove that $\Delta ABC \cong \Delta DCB$?

overlap = reflexive



(1) Side-Angle-Side (SAS)

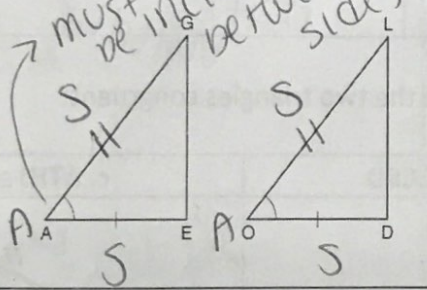
(2) Angle-Side-Angle (ASA)

(3) Side-Side-Side (SSS)

(4) There is insufficient information to determine if the triangles are congruent.

3. In the diagram below of $\triangle AGE$ and $\triangle OLD$, $\angle GAE \cong \angle LOD$, and $\overline{AE} \cong \overline{OD}$. To prove that $\triangle AGE$ and $\triangle OLD$ are congruent by SAS, what other information is needed?

must be included between sides



(1) $\overline{GE} \cong \overline{LD}$

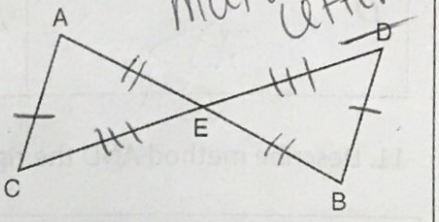
(2) $\overline{AG} \cong \overline{OL}$

(3) $\angle AGE \cong \angle OLD$

(4) $\angle AEG \cong \angle ODL$

4. In the diagram below, $\Delta AEC \cong \Delta BED$. Which statement is *not* always true?

match letters!



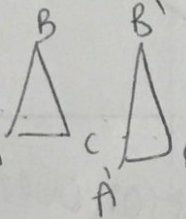
(1) $\overline{AC} \cong \overline{BD}$ ✓

(2) $\overline{CE} \cong \overline{DE}$ ✓

(3) $\angle EAC \cong \angle EBD$

(4) $\angle ACE \cong \angle DBE$

5. 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 $\angle A \cong \angle A'$

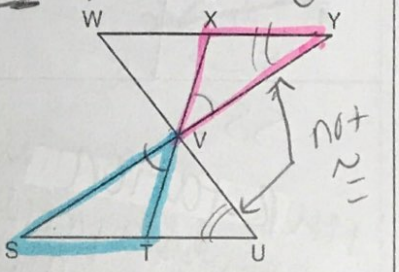
(2) $\overline{AB} \cong \overline{A'B'}$, $\angle A \cong \angle A'$, and $\angle C \cong \angle C'$

(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 $\overline{BC} \cong \overline{B'C'}$

6. In the diagram below, $\Delta XYV \cong \Delta TSV$. Which statement can *not* be proven?

match letters



not ≅

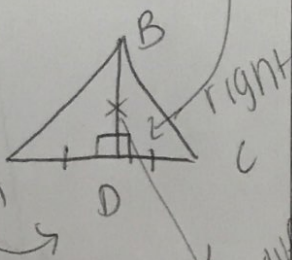
(1) $\angle XVY \cong \angle TVS$ ✓

(2) $\angle VYX \cong \angle VUT$

(3) $\overline{XY} \cong \overline{TS}$ ✓

(4) $\overline{YV} \cong \overline{SV}$ ✓

7. The line segment $\overline{BD}$ is the median and altitude of ΔABC. Which of the following statements must be false?



right ∠'s

d = midpoint

SAS reflexive

(1) $\overline{BD}$ bisects $\overline{AC}$. ✓

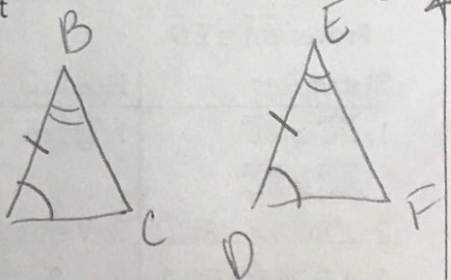
(2) ΔBDA is a right triangle. ✓

(3) $m\angle A = 90$.

(4) B is equidistant from A and C. ✓

8. In ΔABC and ΔDEF, $\overline{AB} \cong \overline{DE}$, & $\angle A \cong \angle D$. In order to prove $\Delta ABC \cong \Delta DEF$ using ASA, we need to prove that

need another ≅



(1) $\angle B \cong \angle E$

(2) $\angle C \cong \angle E$

(3) $\overline{BC} \cong \overline{EF}$

(4) $\overline{AC} \cong \overline{DF}$

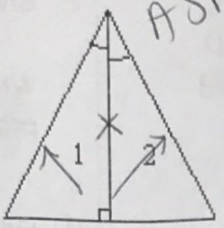
9. In which triangles could you efficiently prove $\Delta 1 \cong \Delta 2$ using the HL Theorem?

(a) II only

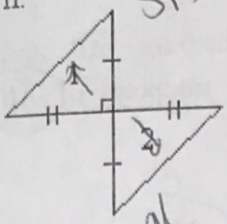
(b) III only

(c) II and III

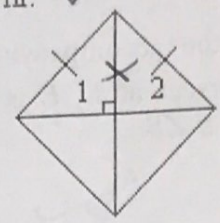
(d) I only

I. 

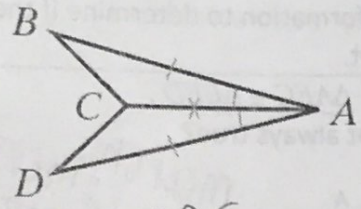
ASA
need hyp

II. 

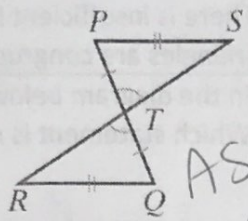
SAS
need hyp

III. ✓ HL 

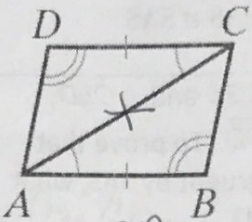
10. Write the method that is being illustrated in the following triangles to prove congruency. Then, state if that is a valid method.

i. 

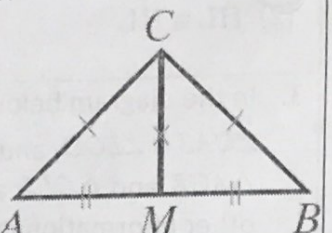
SAS
valid

ii. 

ASS
NOT valid

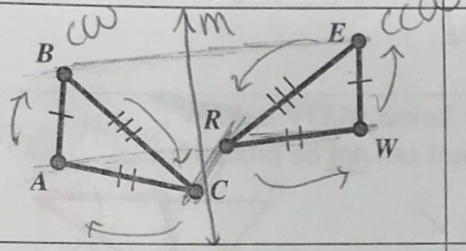
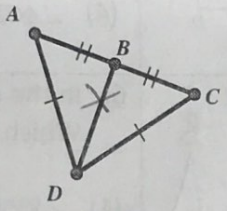
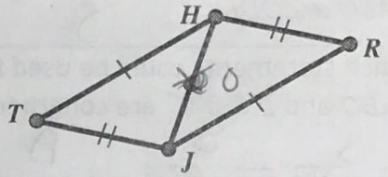
iii. 

ASA
valid ✓

iv. 

SSS
valid ✓

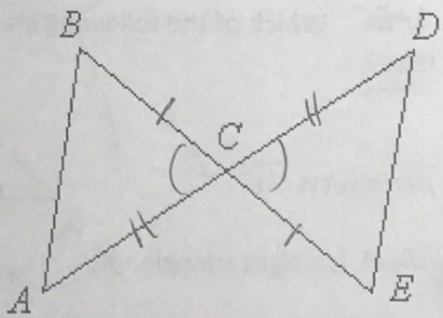
11. Describe method AND the rigid motion(s) which make the two triangles congruent:

a. $\Delta ABC \cong \Delta WER$	b. $\Delta ABD \cong \Delta CBD$	c. $\Delta THJ \cong \Delta RJH$
		
SSS reflection over line $\overleftrightarrow{m}$ followed by a translation along vector $\overrightarrow{CE}$	SSS reflection over $\overline{BD}$	SSS rotation about O of 180°

12. Directions: Fill in the question marks in the proof below.

Given: $\overline{BC} \cong \overline{EC}$ & $\overline{AC} \cong \overline{DC}$

Prove: $\overline{BA} \cong \overline{ED}$

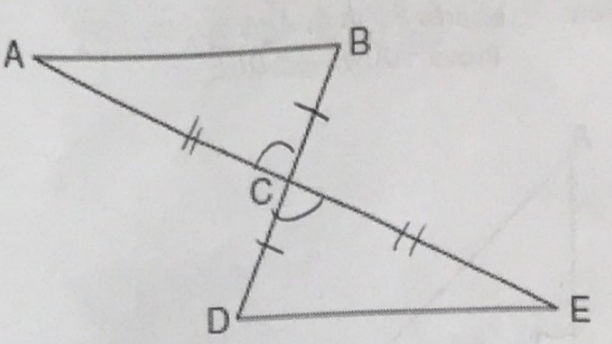


Statements	Reasons
1. $\overline{BC} \cong \overline{EC}$, $\overline{AC} \cong \overline{DC}$	1. given
2. $\angle BCA \cong \angle ECD$	2. Vertical angles are congruent.
3. $\Delta BCA \cong \Delta ECD$	3. ? SAS ≅ SAS
4. $\overline{BA} \cong \overline{ED}$	4. ?

→ skip for now! ☺

13. Given: $\overline{BD}$ and $\overline{AE}$ bisect each other.

Prove: $\Delta ABC \cong \Delta EDC$



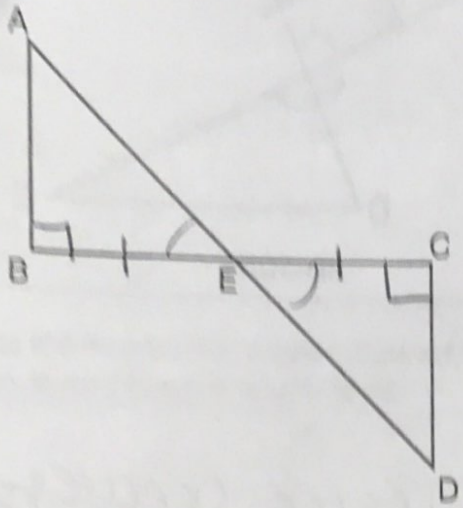
(S)
(A)
(S)

STATEMENTS	REASONS
① BD and AE bisect eachother	① Given
② $\overline{AC} \cong \overline{CE}$ $\overline{DE} \cong \overline{BC}$	② A bisector creates 2 $\cong$ segments
③ $\angle ACB \cong \angle ECB$	③ Vertical $\angle$'s are $\cong$
④ $\Delta ABC \cong \Delta EDC$	④ SAS $\cong$ SAS

(b) Describe the rigid motion(s) that would map one triangle onto the other.

Rotation 180° about C

14. Given: $\overline{AD}$ bisects $\overline{BC}$ at E, $\overline{AB} \perp \overline{BC}$, $\overline{DC} \perp \overline{BC}$
Prove: $\triangle ABE \cong \triangle DCE$



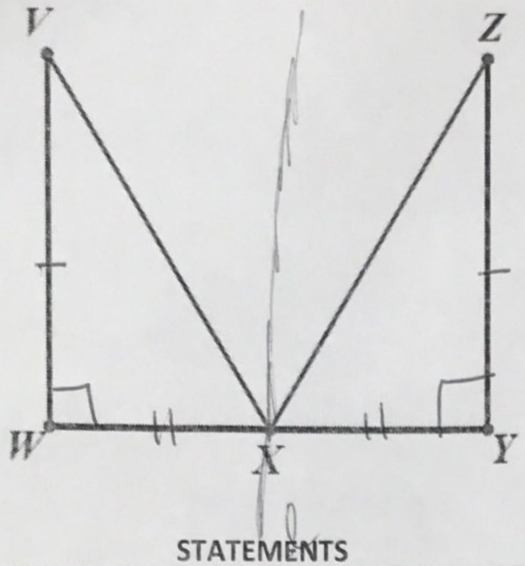
A ✓
S ✓
A ✓

STATEMENT	REASON
① $\overline{AD}$ bisects $\overline{BC}$ at E $\overline{AB} \perp \overline{BC}$, $\overline{DC} \perp \overline{BC}$	① Given
② $BE \cong EC$ ✓	② A bisector creates 2 ≅ segments
③ $\angle ABE \cong \angle DCE$ ✓	③ ⊥ lines form ≅ right ∠'s
④ $\angle AEB \cong \angle CED$ ✓	④ vertical ∠'s are ≅
⑤ $\triangle ABE \cong \triangle DCE$	⑤ ASA ≅ ASA

(b) Describe the rigid motion(s) that would map one triangle onto the other.

Rotation about E of 180°

Given: $\overline{VW} \perp \overline{WX}$, $\overline{ZY} \perp \overline{YX}$, $\overline{VW} \cong \overline{ZY}$, X is the midpoint of $\overline{WY}$.
Prove: $\Delta VWX \cong \Delta ZYX$



S ✓
A ✓
S ✓

STATEMENTS	REASONS
① $\overline{VW} \perp \overline{WX}$, $\overline{ZY} \perp \overline{YX}$, $\overline{VW} \cong \overline{ZY}$ ✓ X is midpoint of $\overline{WY}$	① Given
② $\overline{WX} \cong \overline{XY}$ ✓	② A midpoint creates $\cong$ segments
③ $\angle VWX \cong \angle ZYX$ ✓	③ $\perp$ lines form $\cong$ right $\angle$s
④ $\Delta VWX \cong \Delta ZYX$	④ SAS $\cong$ SAS

Describe the rigid motion(s) that would map one triangle onto the other.

A reflection over line ℓ