

TOPIC: 4.4 Prove Triangles Congruent by SAS and HL

NAME: Mrs. H

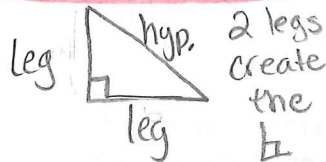
DATE: Key

ESSENTIAL QUESTION: How can you use 2 sides and an angle to prove Δ 's are \cong ?

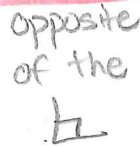
QUESTIONS:

Vocabulary:

leg of a right triangle



hypotenuse



included angle

\angle created by two given sides

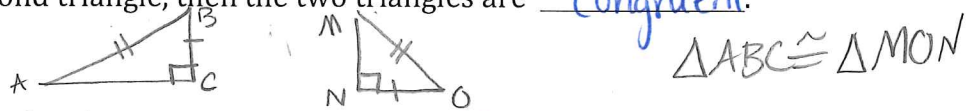
Postulate 20: Side-Angle-Side Congruence Postulate $SAS \cong \Delta$

If two sides and the included angle of one triangle are congruent to two sides and included angle of a second triangle, then the two triangles are congruent.



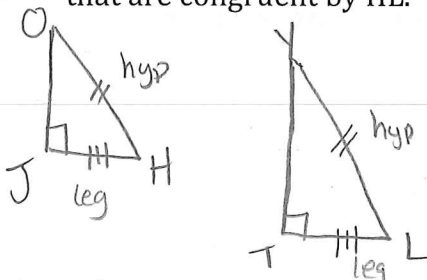
Theorem 4.5: Hypotenuse-Leg Congruence Theorem $HL \cong \Delta$

If the hypotenuse and a leg of one right triangle are congruent to the hypotenuse and a leg of a second triangle, then the two triangles are congruent.

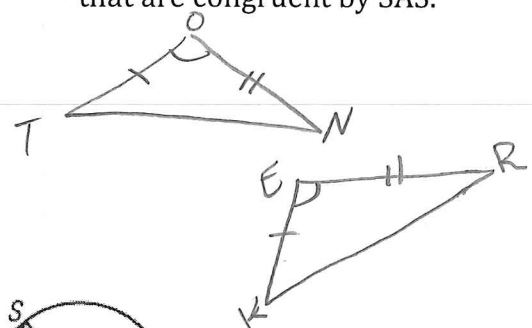


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A1. Sketch ΔJOH and ΔTYL that are congruent by HL.



*A2. Sketch ΔTON and ΔKER that are congruent by SAS.

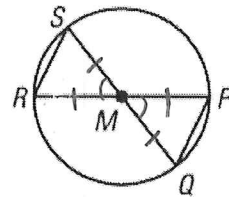


A3. Why is $\Delta SMR \cong \Delta PMQ$?
(M is the center of the circle)

$SM = PM = QM = RM$
(all radii)

$\angle SMR \cong \angle QMP$ VA

SAS
 $\Delta \cong$



SUMMARY:

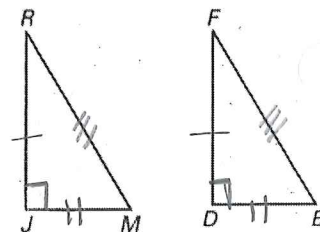
If 2 sides and the included angle of one Δ are \cong to another Δ then the Δ 's are \cong .

QUESTIONS:

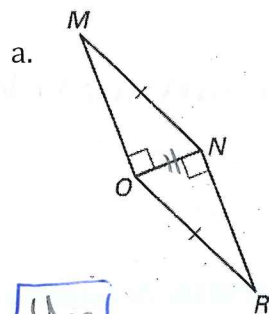
A4. State the third congruence that must be given to prove $\triangle JRM \cong \triangle DFB$.

a. $\overline{JR} \cong \overline{DF}$,
 $\overline{JM} \cong \overline{DB}$,
 $\angle J \cong \angle D$
 (by SAS)

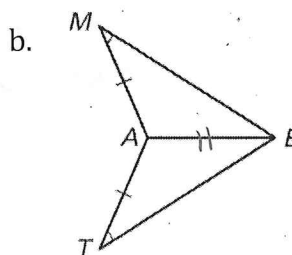
b. $\overline{MR} \cong \overline{BF}$,
 $\angle J$ is a right angle,
 $\angle J \cong \angle D$,
 $\overline{JM} \cong \overline{DB}$ or
 $\overline{JR} \cong \overline{DF}$
 (by HL)



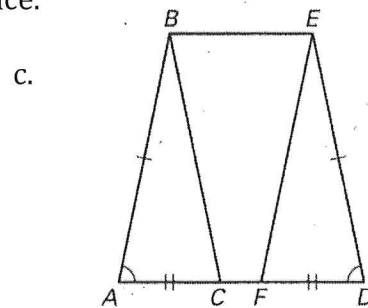
A5. Decide if there is enough information to prove that the two triangles are congruent. If there is, give a congruence statement for the triangles and the reason(s) for the congruence.



Yes
 $\text{HL } \triangle \cong$
 $\triangle MNO \cong \triangle RNO$



NO
 SSA is
 not a
 $\triangle \cong$ thm.



Yes
 $\text{SAS } \triangle \cong$
 $\triangle BAC \cong \triangle EDF$



A6. Given: $\overline{CB} \parallel \overline{FE}$, $\overline{AC} \cong \overline{DF}$, $BC = 2 \cdot 5$, and $EF = 10$
 Prove: $\triangle ABC \cong \triangle DEF$

Statement	Reason
1) $\overline{CB} \parallel \overline{FE}$	1) Given
2) $\overline{AC} \cong \overline{DF}$	2) Given
3) $BC = 10, EF = 10$	3) Given
4) $\angle BCA \cong \angle FED$	4) CA \cong thm
5) $BC = EF$	5) Transitive
6) $\overline{BC} \cong \overline{EF}$	6) Def. of \cong
7) $\triangle BCA \cong \triangle FED$	7) SAS $\triangle \cong$

