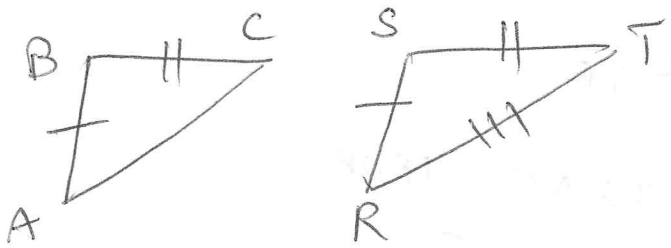
4-3 TRIANGLES CONGRUENT BY SSS

MR. Reddy's NOTES

1) IF THE THREE SIDES OF ONE TRIANGLE ARE CONGRUENT TO THREE SIDES OF A SECOND TRIANGLE, THEN THE TWO TRIANGLES ARE CONGRUENT.



IF SIDE $\overline{AB} \cong \overline{RS}$

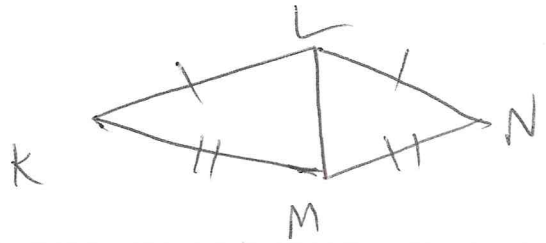
SIDE $\overline{BC} \cong \overline{ST}$

SIDE $\overline{CA} \cong \overline{TR}$

THEN $\triangle ABC \cong \triangle RST$

NOTE:- ORDER OF THE LETTERS ARE IMPORTANT:

EX:



IS $\triangle KLM \cong \triangle NLM$?

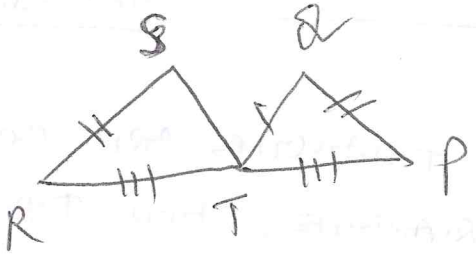
$\overline{KL} \cong \overline{NL}$

$\overline{LM} \cong \overline{LM}$ (REFLEXIVE PROPERTY)

$\overline{MK} \cong \overline{MN}$

$\triangle KLM \cong NLM$ (order IS TRUE)

EX. 2



IS $\triangle RST \cong \triangle TQP$

$\overline{RS} \not\cong \overline{TQ}$

ORDER IS NOT TRUE-

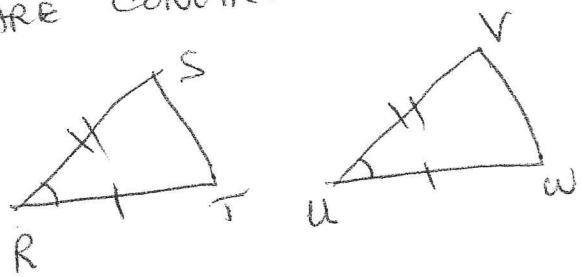
NOT CONGRUENT

H.H. SAS AND HL

MR. REDDY'S NOTES

(1) SIDE-ANGLE-SIDE:- (SAS):- IF TWO SIDES AND THE INCLUDED ANGLE OF ONE TRIANGLE ARE CONGRUENT TO TWO SIDES AND THE INCLUDED ANGLE OF A SECOND TRIANGLE, THEN THE TWO TRIANGLES ARE CONGRUENT.

IF SIDE $\overline{RS} \cong \overline{UV}$
ANGLE $\angle R \cong \angle U$ AND
SIDE $\overline{RT} \cong \overline{UW}$
then $\triangle RST \cong \triangle UVW$.



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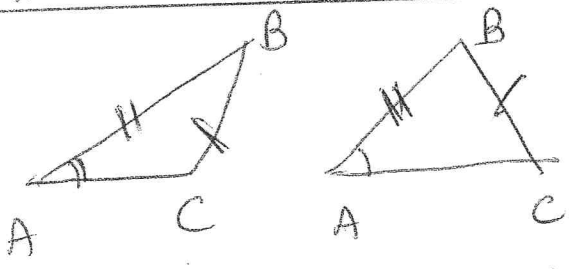
(2)



IN THIS CASE ANGLE $\angle A$ IS NOT INCLUDED ANGLE BETWEEN TH SIDES. SO (SSA) SIDE SIDE ANGLE IS NOT A VALID METHOD FOR PROVING THE CONGRUENCE OF TRIANGLES:- BUT THERE IS A SPECIAL CASE FOR RIGHT TRIANGLES:-

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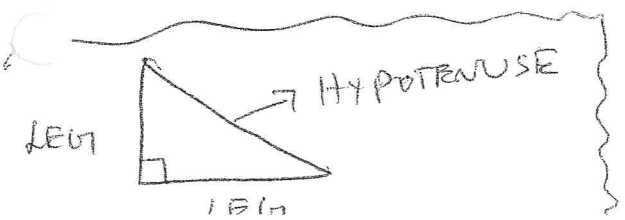
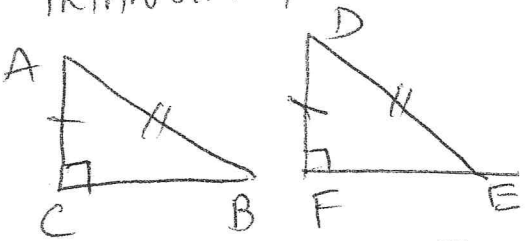
(3) HYPOTENUSE-LEG (HL) CONGRUENCE THEOREM:- IF the HYPOTENUSE AND LEG OF A RIGHT TRIANGLE ARE CONGRUENT to the hypotenuse AND a LEG OF A SECOND RIGHT TRIANGLE, then the two triangles are CONGRUENT.





$\triangle ABC \cong \triangle DEF$

Name _____ Date _____

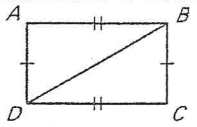
LESSON 4.3

Practice

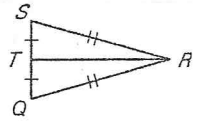
For use with pages 233–239

Decide whether the congruence statement is true. *Explain* your reasoning.

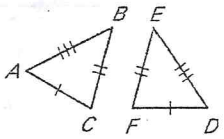
1. $\triangle ABD \cong \triangle CDB$



2. $\triangle RST \cong \triangle RQT$



3. $\triangle ABC \cong \triangle DEF$



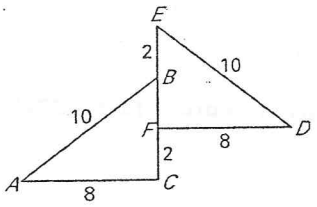
Use the given coordinates to determine if $\triangle ABC \cong \triangle DEF$.

4. $A(1, 2)$, $B(4, -3)$, $C(2, 5)$, $D(4, 7)$, $E(7, 2)$, $F(5, 10)$

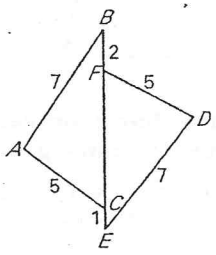
5. $A(1, 1)$, $B(4, 0)$, $C(7, 5)$, $D(4, -5)$, $E(6, -6)$, $F(9, -1)$

Determine whether $\triangle ABC \cong \triangle DEF$. *Explain* your reasoning.

11.



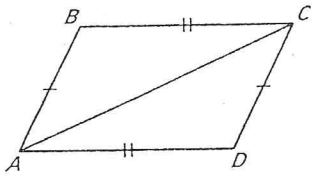
12.



13. Proof Complete the proof.

GIVEN: $\overline{AB} \cong \overline{CD}$, $\overline{BC} \cong \overline{AD}$

PROVE: $\triangle ABC \cong \triangle CDA$



Statements	Reasons
1. $\overline{AB} \cong \overline{CD}$	1. ?
2. $\overline{BC} \cong \overline{AD}$	2. ?
3. $\overline{AC} \cong \overline{AC}$	3. ?
4. $\triangle ABC \cong \triangle CDA$	4. ?

Name _____ Date _____

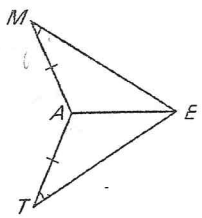
LESSON 4.4

Practice

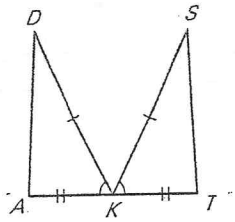
For use with pages 240–247

Decide whether enough information is given to prove that the triangles are congruent using the SAS Congruence Postulate.

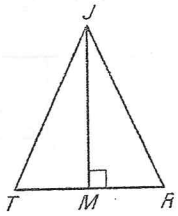
7. $\triangle MAE, \triangle TAE$



8. $\triangle DKA, \triangle TKS$

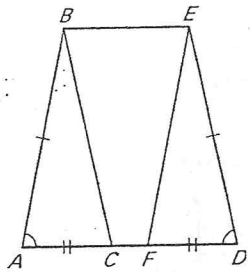


9. $\triangle JRM, \triangle JTM$

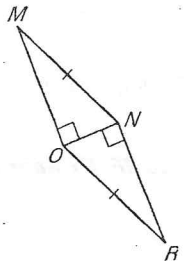


Decide whether enough information is given to prove that the triangles are congruent. If there is enough information, state the congruence postulate or theorem you would use.

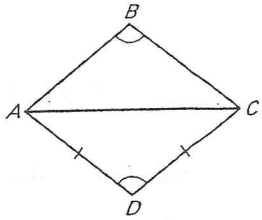
10. $\triangle ABC, \triangle DEF$



11. $\triangle MNO, \triangle RON$



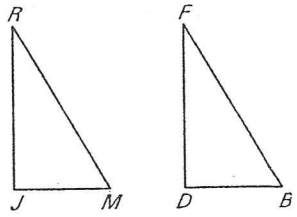
12. $\triangle ABC, \triangle ADC$



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

13. GIVEN: $\overline{JR} \cong \overline{DF}$, $\overline{JM} \cong \overline{DB}$, ? $\cong$?
Use the SSS Congruence Postulate.

14. GIVEN: $\overline{JR} \cong \overline{DF}$, $\overline{JM} \cong \overline{DB}$, ? $\cong$?
Use the SAS Congruence Postulate.

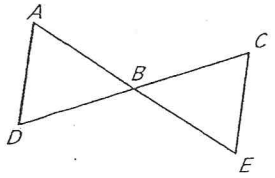


15. GIVEN: $\overline{RM} \cong \overline{FB}$, $\angle J$ is a right angle and $\angle J \cong \angle D$, ? $\cong$?
Use the HL Congruence Theorem.

16. **Proof** Complete the proof.

GIVEN: B is the midpoint of $\overline{AE}$.
B is the midpoint of $\overline{CD}$.

PROVE: $\triangle ABD \cong \triangle EBC$



Statements	Reasons
1. B is the midpoint of $\overline{AE}$.	1. ?
2. ?	2. Definition of midpoint
3. B is the midpoint of $\overline{CD}$.	3. ?
4. ?	4. Definition of midpoint
5. $\angle ABD \cong \angle EBC$	5. ?
6. $\triangle ABD \cong \triangle EBC$	6. ?