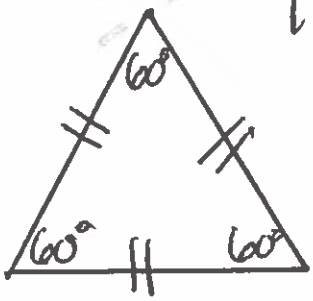
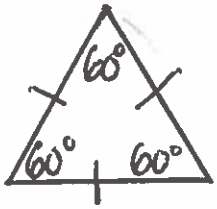
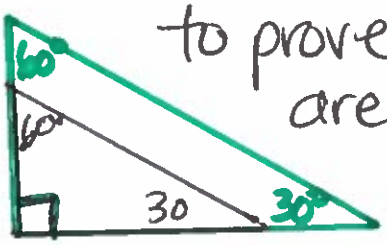
4-2 △ ≅ Shortcuts

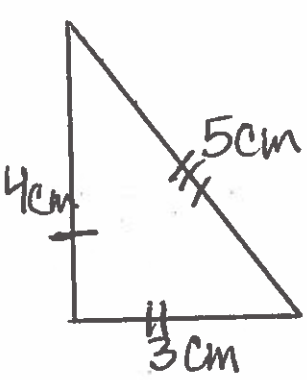
Day 34

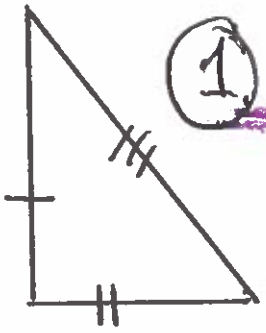
* you cannot use AAA (Angle-Angle-Angle) to prove 2 △'s are ≅.



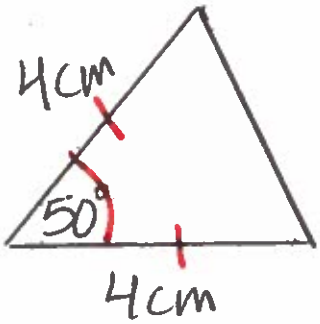


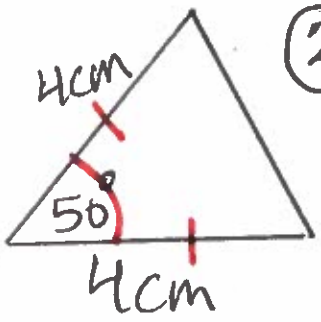






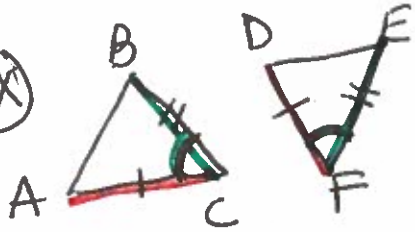
(1) SSS (Side-Side-Side) Postulate:
If 3 sides of 1 △ are ≅ to the corresponding 3 sides of another △, then the 2 △'s are ≅.





(2) SAS (Side-Angle-Side) Postulate
- If 2 sides and the included ∠ of 1 △ are ≅ to 2 sides + the included ∠ of another △, then the 2 △'s are ≅.

(ex)



△ABC ≅ △DEF by SAS

congruence statement — reason

Name _____ Class _____ Date _____

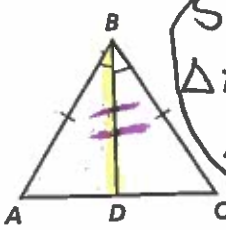
* you can always mark vertical ∠s ≅

Practice 4-2

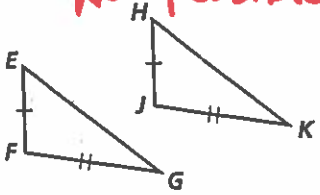
Triangle Congruence by SSS and SAS

If △'s share a side, you mark it ≅ to itself by the reflexive property

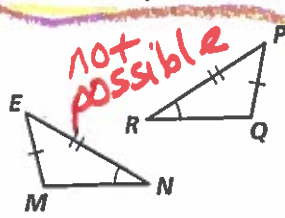
Decide whether you can use the SSS or SAS Postulate to prove the triangles congruent. If so, write the congruence statement, and identify the postulate. If not, write *not possible*.

1. 

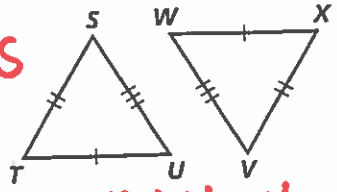
SAS
△ABD ≅ △CBD

2. 

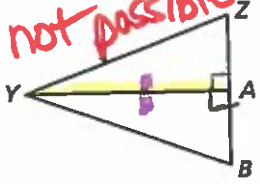
NOT possible

3. 

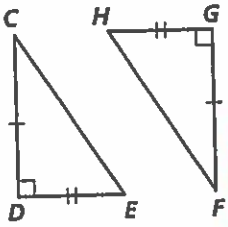
not possible

4. 

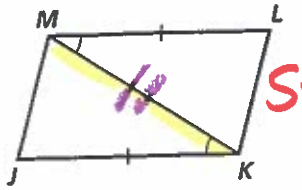
SSS
△STU ≅ △VXW

5. 

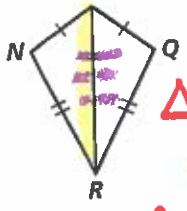
not possible

6. 

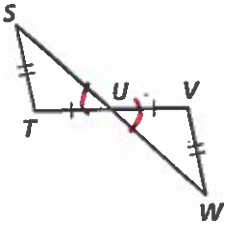
△CDE ≅ △FGH by SAS

7. 

SAS
△LMK ≅ △JKM

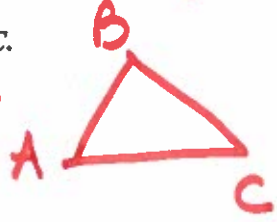
8. 

△PQR ≅ △PNR by SSS

9. 

not possible

Draw a triangle. Label the vertices *A*, *B*, and *C*.



10. What angle is between $\overline{BC}$ and $\overline{AC}$? ∠C

11. What sides include ∠B? $\overline{AB}$, $\overline{CB}$

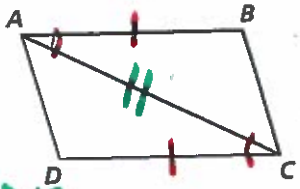
12. What angles include $\overline{AB}$? ∠A, ∠B

13. What side is included between ∠A and ∠C? $\overline{AC}$

14. **Developing Proof** Supply the reasons in this proof.

Given: $\overline{AB} \cong \overline{DC}$, $\angle BAC \cong \angle DCA$

Prove: $\triangle ABC \cong \triangle CDA$

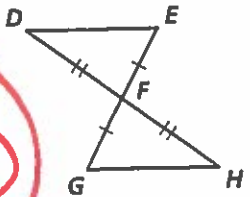


Statements	*Reasons*
1. $\overline{AB} \cong \overline{DC}$, $\angle BAC \cong \angle DCA$	a. Given
2. $\overline{AC} \cong \overline{CA}$	b. Reflexive
3. $\triangle ABC \cong \triangle CDA$	c. SAS

15. Write a proof.

Given: $\overline{EF} \cong \overline{FG}$, $\overline{DF} \cong \overline{FH}$

Prove: $\triangle DFE \cong \triangle HFG$



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4-2 △ ≅ Shortcuts

Pag 31

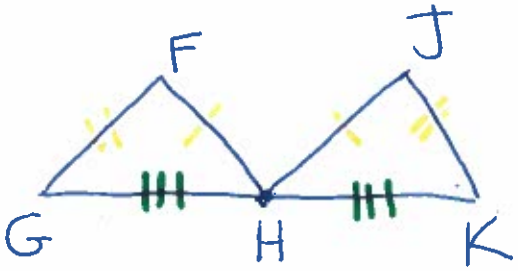
① SSS (Side-Side-Side Postulate)

If 3 sides of 1 △ are ≅ to 3 sides of another △, then the 2 △'s are ≅.

△GHF ≅ △PQR by SSS.

(ex) p.206 Quick √#1

Given: $\overline{HF} \cong \overline{HJ}$
$\overline{FG} \cong \overline{JK}$
H is the midpoint of $\overline{GK}$.



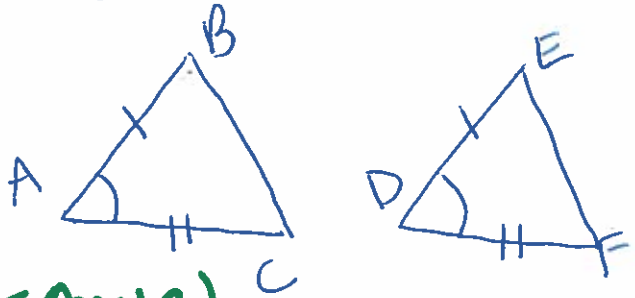
Prove: △FGH ≅ △JKH

	Statements	Reasons
1.	$\overline{HF} \cong \overline{HJ}$	Given
2.	$\overline{FG} \cong \overline{JK}$	Given
3.	H is the midpt. of $\overline{GK}$	Given
4.	$\overline{GH} \cong \overline{KH}$	Def. of midpt
5.	△FGH ≅ △JKH	SSS

last statement

② SAS (Side-Angle-Side Postulate)

- If 2 sides and the included ∠ of 1 △ are ≅ to 2 sides and the included angle of another △, then the 2 △'s are ≅.



△ABC ≅ △DEF by SAS

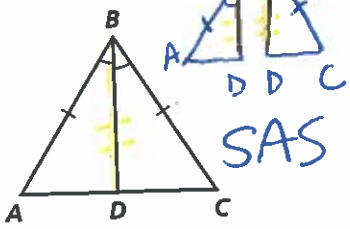
(Angle-Angle-Angle)
AAA doesn't prove 2 △'s are ≅.

Name _____ Class _____ Date _____

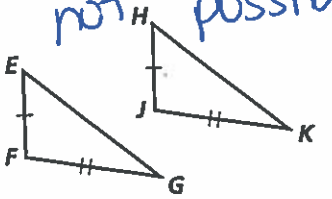
Practice 4-2

Triangle Congruence by SSS and SAS

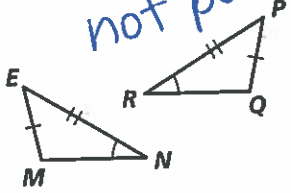
Decide whether you can use the SSS or SAS Postulate to prove the triangles congruent. If so, write the congruence statement, and identify the postulate. If not, write *not possible*.

1. 

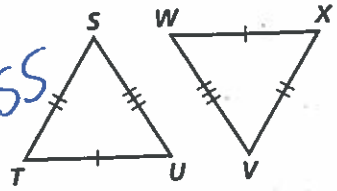
B B A D D C SAS

2. 

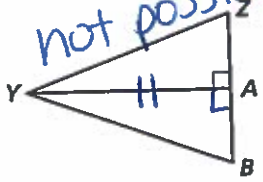
not possible

3. 

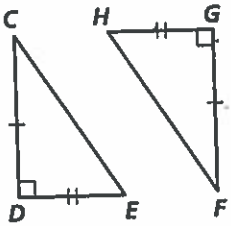
not possible

4. 

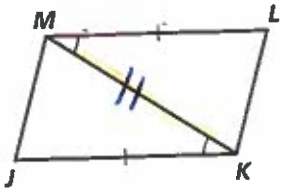
SSS

5. 

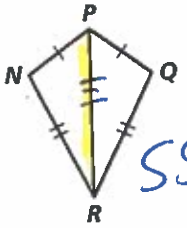
not possible

6. 

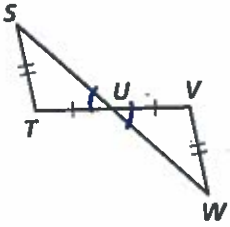
SAS

7. 

SAS

8. 

SSS

9. 

SSA not SAS

Draw a triangle. Label the vertices *A*, *B*, and *C*.

10. What angle is between $\overline{BC}$ and $\overline{AC}$?

11. What sides include $\angle B$?

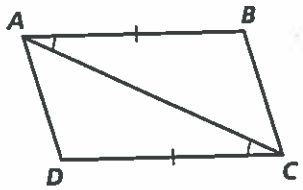
12. What angles include $\overline{AB}$?

13. What side is included between $\angle A$ and $\angle C$?

14. **Developing Proof** Supply the reasons in this proof.

Given: $\overline{AB} \cong \overline{DC}$, $\angle BAC \cong \angle DCA$

Prove: $\triangle ABC \cong \triangle CDA$

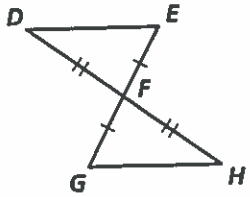


Statements	*Reasons*
1. $\overline{AB} \cong \overline{DC}$, $\angle BAC \cong \angle DCA$	a. ?
2. $\overline{AC} \cong \overline{CA}$	b. ?
3. $\triangle ABC \cong \triangle CDA$	c. ?

15. Write a proof.

Given: $\overline{EF} \cong \overline{FG}$, $\overline{DF} \cong \overline{FH}$

Prove: $\triangle DFE \cong \triangle HFG$



Warm-ups

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