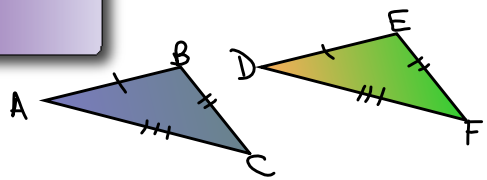
4.3 Proving Triangles are congruent by SSS and SAS

- Students will identify congruent triangles by SSS or SAS.
- Students will be able to identify the included angle

SSS

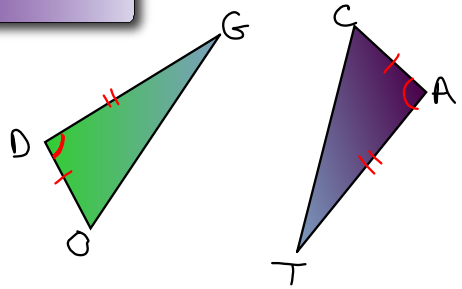
If 3 sides of one triangle are congruent to 3 sides of another triangle, then the triangles are congruent.



$\triangle ABC \cong \triangle DEF$

SAS

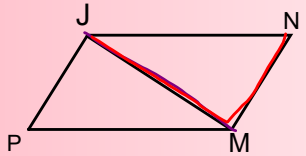
If 2 sides and the included angle of one triangle are congruent to two sides and the included angle of a second triangle, then the triangles are congruent.



$\triangle DOG \cong \triangle ACT$

More on "included angle"...

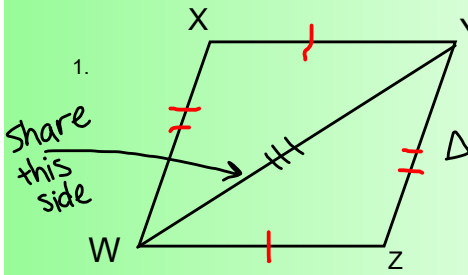
Ex. Which angle is included between:



1. $\overline{JM}$ & $\overline{JN}$ $\angle NJM$
2. $\overline{JM}$ & $\overline{MP}$ $\angle JMP$
3. $\overline{JM}$ & $\overline{NM}$ $\angle JMN$

For #1-4, is there enough information to show the triangles are congruent? If so, write a congruence statement. SSS SAS

1.



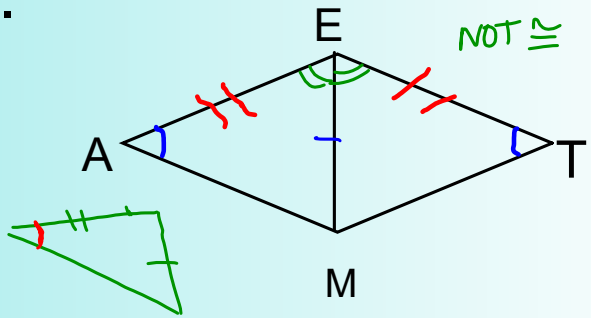
Yes, by S.S.S.

$\Delta YXW \cong \Delta WZY$

2.

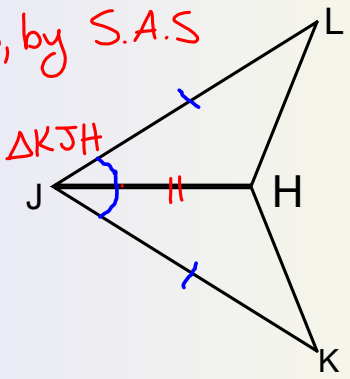
~~S.S.S. or S.A.S.~~

NOT ≅

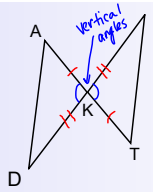


3. yes, by S.A.S

$\Delta LJH \cong \Delta KJH$



4.

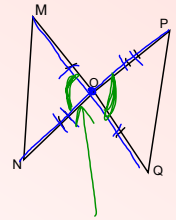


yes! by S.A.S.

$\Delta SKT \cong \Delta DKA$

5. Given: O is the midpoint of $\overline{MQ}$
O is the midpoint of $\overline{NP}$

Prove: $\triangle MON \cong \triangle QOP$



STATEMENTS	REASONS
1. O is m.pt. of $\overline{MQ}$ O is m.pt. of $\overline{NP}$	1. Given
2. $\overline{NO} \cong \overline{OQ}$	2. Def. of Midpt.
3. $\overline{NO} \cong \overline{OP}$	3. Def. of Midpt.
4. $\angle MON \cong \angle QOP$	4. vertical Angles
5. $\triangle MON \cong \triangle QOP$	5. by S.A.S. congruence