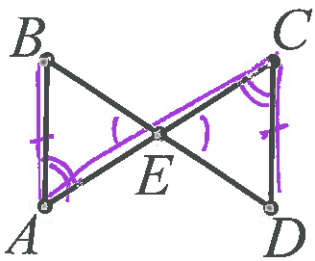


Triangle Congruency Proofs  
(SSS, SAS, ASA, AAS)  
1-2-1 Activity

1. Given:  $\overline{BA} \parallel \overline{CD}$   
 $\overline{BA} \cong \overline{DC}$

Prove:  $\triangle BAE \cong \triangle DCE$



①  $\overline{BA} \parallel \overline{CD}$   
 $\overline{BA} \cong \overline{DC}$

②  $\angle BEA \cong \angle DEC$

③  $\angle A \cong \angle C$

④  $\triangle BAE \cong \triangle DCE$

① given

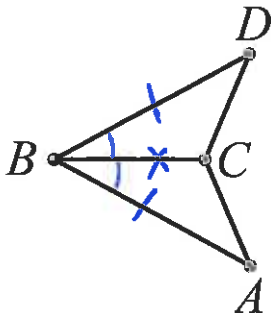
② vertical  $\angle$ s  $\cong$

③ if 2  $\parallel$  lines are cut by a trans., alt int  $\angle$ s  $\cong$

④ AAS

2. Given:  $\overline{BC}$  bisects  $\angle ABD$   
 $\overline{BD} \cong \overline{BA}$

Prove:  $\triangle BDC \cong \triangle BAC$



$\overline{BC}$  bis  $\angle ABD$   
given

$\angle DBC \cong \angle ABC$

$\angle$  bis  $\div$   $\angle$  into  
2  $\cong$   $\angle$ s

$\overline{BD} \cong \overline{BA}$

given

$\overline{BC} \cong \overline{BC}$

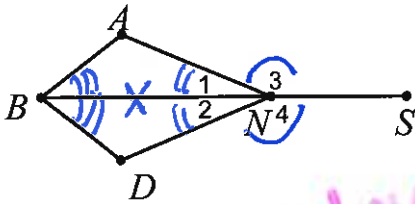
reflexive

$\triangle BDC \cong \triangle BAC$

SAS

3. Given:  $\overline{BNS}$   
 $\angle 3 \cong \angle 4$   
 $\angle ABN \cong \angle DBN$

Prove:  $\triangle BAN \cong \triangle BDN$



Side is between the 2  $\Delta$ s.

①  $\overline{BNS}$   
 $\angle 3 \cong \angle 4$

②  $\angle 1$  supp  $\angle 3$   
 $\angle 2$  supp  $\angle 4$

③  $\angle 1 \cong \angle 2$

④  $\angle ABN \cong \angle DBN$

⑤  $\overline{BN} \cong \overline{BN}$

⑥  $\triangle BAN \cong \triangle BDN$

① Given

② adj  $\angle$ s formed by intersecting lines are supp.

③  $\cong \angle$ s have  $\cong$  supps

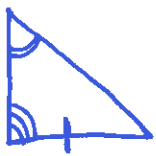
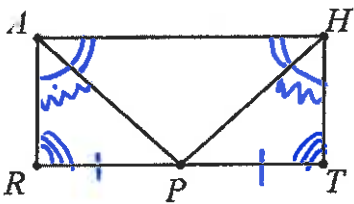
④ Given

⑤ reflexive

⑥ ASA

4. Given:  $\overline{AP}$  bisects  $\overline{RT}$  at P  
 $\angle RAH \cong \angle THA$   
 $\angle PAH \cong \angle PHA$   
 $\angle R \cong \angle T$

Prove:  $\triangle RAP \cong \triangle THP$



How are my  $\Delta$ 's  $\cong$ ?

①  $\overline{AP}$  bis  $\overline{RT}$  @ P  
 ② P is midpt  $\overline{RT}$   
 ③  $\overline{RP} \cong \overline{TP}$

④  $\angle RAH \cong \angle THA$   
 $\angle PAH \cong \angle PHA$

⑤  $m\angle RAP + m\angle PAH = m\angle RAH$   
 $m\angle THP + m\angle PHA = m\angle THA$

⑥  $m\angle RAP + m\angle PAH =$   
 $m\angle THP + m\angle PHA$

⑦  $\angle RAP \cong \angle THP$

⑧  $\angle R \cong \angle T$

⑨  $\triangle RAP \cong \triangle THP$

① Given

② seg bis passes thru midpt

③ midpt = seg into 2  $\cong$  seg.

④ Given

⑤ Angle Addition

⑥ Substitution

⑦ subtraction prop of eq

⑧ given

⑨ AAS