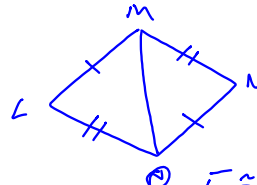


### 4.5 Using Congruence in Triangles

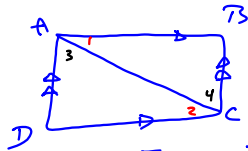
in 4.1 we said for triangles to be congruent all correspondings had to be congruent



Given  $\overline{LM} \cong \overline{NO}$   
 $\overline{LN} \cong \overline{MN}$

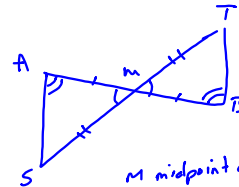
Prove  $\angle L \cong \angle N$

$\overline{LM} \cong \overline{NO}$  given  
 $\overline{LN} \cong \overline{LN}$  Reflexive  
 $\overline{LN} \cong \overline{MN}$  Reflexive  
 $\triangle LMO \cong \triangle NOM$  SSS  
 $\angle L \cong \angle N$  Corresponding parts of  $\cong \Delta$ 's



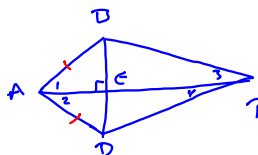
Given  $\overline{AB} \parallel \overline{CD}$   
 $\overline{AD} \parallel \overline{CB}$   
Prove  $\overline{AB} \cong \overline{CD}$

$\overline{AB} \parallel \overline{CD}$ ,  $\overline{AD} \parallel \overline{CB}$  given  
 $\angle BAC \cong \angle DCA$   $\angle 1 \cong \angle 2$  Alt Int  $\angle$ 's  
 $\angle DAC \cong \angle BCA$   $\angle 3 \cong \angle 4$  Alt Int  $\angle$ 's  
 $\overline{AC} \cong \overline{AC}$  Reflexive  
 $\triangle ACD \cong \triangle CAB$  ASA  
 $\overline{AB} \cong \overline{CD}$  Corresponding Parts of  $\cong \Delta$ 's



Given: M is the midpoint of  $\overline{AB}$ ,  $\overline{ST}$   
Prove  $\overline{AS} \parallel \overline{BT}$

M midpoint of  $\overline{AB}$ ,  $\overline{ST}$  given  
 $AM = MB$ ,  $SM = MT$  Def of midpoint  
 $\overline{AM} \cong \overline{MB}$ ,  $\overline{SM} \cong \overline{MT}$  Def of  $\cong$   
 $\angle AMS \cong \angle BMT$  Vertical  $\angle$ 's  
 $\triangle AMS \cong \triangle BMT$  SAS  
 $\angle A \cong \angle B$  Corresponding parts of  $\cong \Delta$ 's  
 $\overline{AS} \parallel \overline{BT}$  Alt Int  $\angle$  converse



Given  $\angle 1 \cong \angle 2$   
 $\angle 3 \cong \angle 4$   
Prove  $\overline{BE} \cong \overline{DE}$

$\angle 1 \cong \angle 2$ ,  $\angle 3 \cong \angle 4$  given  
 $\overline{AC} \cong \overline{AC}$  Reflexive  
 $\triangle ACD \cong \triangle ACB$  ASA  
 $\overline{AD} \cong \overline{AB}$  Corresponding Parts of  $\cong \Delta$ 's  
 $\overline{AE} \cong \overline{AE}$  Reflexive  
 $\triangle AED \cong \triangle AEB$  SAS  
 $\overline{BE} \cong \overline{DE}$  Corresponding Parts of  $\cong \Delta$ 's

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4-18 all