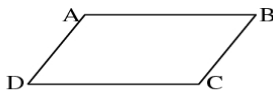


### Worksheet: Geometry Chapter 8 Proofs

1. Given:  $\square ABCD$

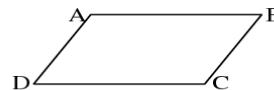
Prove:  $\overline{AB} \cong \overline{CD}$ ;  $\overline{AD} \cong \overline{BC}$



Statements	Reasons
1. $\square ABCD$	1. Given
2. Draw $\overline{AC}$	2. 2 pts. Determine a line
3. $\overline{AB} \parallel \overline{CD}$ ; $\overline{AD} \parallel \overline{BC}$	3. Def. of $\square$
4. $\angle BAC \cong \angle DCA$ $\angle DAC \cong \angle BCA$	4. Alt. Int. Angles Th.
5. $\overline{AC} \cong \overline{AC}$	5. Reflexive Prop.
6. $\triangle ABC \cong \triangle CDA$	6. ASA
7. $\overline{AB} \cong \overline{CD}$ ; $\overline{AD} \cong \overline{BC}$	7. CPCTC

2. Given:  $\square ABCD$

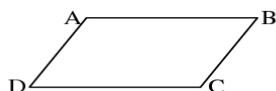
Prove:  $\angle A \cong \angle C$ ;  $\angle B \cong \angle D$



Statements	Reasons
1. $\square ABCD$	1. Given
2. Draw $\overline{AC}$	2. 2 pts. Determine a line
3. $\overline{AB} \parallel \overline{CD}$ ; $\overline{AD} \parallel \overline{BC}$	3. Def. of $\square$
4. $\angle BAC \cong \angle DCA$ $\angle DAC \cong \angle BCA$	4. Alt. Int. Angles Th.
5. $m\angle BAC = m\angle DCA$ $m\angle DAC = m\angle BCA$	5. Def. $\cong$ Angles
6. $m\angle BAC + m\angle DAC = m\angle DCA + m\angle BCA$	6. Add. Prop. of =
7. $m\angle BAD = m\angle BAC + m\angle DAC$ $m\angle DCB = m\angle DCA + m\angle BCA$	7. Angle Add. Post.
8. $m\angle BAD = m\angle DCB$	8. Substitution
9. $\angle A \cong \angle C$	9. Def. $\cong$ Angles
10. $\overline{AC} \cong \overline{AC}$	10. Reflexive Prop.
11. $\triangle ABC \cong \triangle CDA$	11. ASA
12. $\angle B \cong \angle D$	12. CPCTC

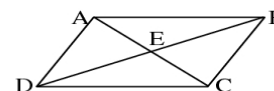
3. Given:  $\square ABCD$

$\angle A$  and  $\angle B$  are supplementary  
 $\angle B$  and  $\angle C$  are supplementary  
 Prove:  $\angle C$  and  $\angle D$  are supplementary  
 $\angle D$  and  $\angle A$  are supplementary



Statements	Reasons
1. $\square ABCD$	1. Given
2. $\overline{AB} \parallel \overline{CD}$	2. Def. of $\square$
3. $\angle A$ & $\angle D$ are consecutive int. $\angle$ 's $\angle B$ & $\angle C$ are consecutive int. $\angle$ 's	3. Def. Consec. Int. $\angle$ 's
4. $\angle A$ & $\angle D$ are supplementary $\angle B$ & $\angle C$ are supplementary	4. Consec. Int. Angles Th
5. $\overline{AD} \parallel \overline{BC}$	5. Def. of $\square$
6. $\angle A$ & $\angle B$ are consecutive int. $\angle$ 's $\angle C$ & $\angle D$ are consecutive int. $\angle$ 's	6. Def. Consec. Int. $\angle$ 's
7. $\angle A$ & $\angle B$ are supplementary $\angle C$ & $\angle D$ are supplementary	7. Consec. Int. Angles Th

4. Given:  $\square ABCD$   
 $\overline{AC}$  bisects  $\overline{DB}$   
 $\overline{DB}$  bisects  $\overline{AC}$



Statements	Reasons
1. $\square ABCD$	1. Given
2. $\overline{AB} \parallel \overline{CD}$ ; $\overline{AD} \parallel \overline{BC}$	2. Def. of $\square$
3. $\angle BAC \cong \angle DCA$ $\angle DAC \cong \angle BCA$	3. Alt. Int. Angles Th.
4. $\overline{AC} \cong \overline{AC}$	4. Reflexive Prop.
5. $\triangle ABC \cong \triangle CDA$	5. ASA
6. $\overline{AB} \cong \overline{CD}$	6. CPCTC
7. $\angle AEB \cong \angle CED$	7. Vert. Angles $\cong$ Th.
8. $\triangle AEB \cong \triangle CED$	8. AAS
9. $\overline{AE} \cong \overline{CE}$ ; $\overline{BE} \cong \overline{DE}$	9. CPCTC
10. E is the midpoint of $\overline{AC}$ and $\overline{BD}$	10. Def. of Midpoint
11. $\overline{AC}$ bisects $\overline{DB}$ ; $\overline{DB}$ bisects $\overline{AC}$	11. Def. Seg. Bisector