

Geometry CC - Unit 6  
 LESSON 2: Using Parallel Lines in a Proof  
 M1 L22-27

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Homework Answers 6.1

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## Remember....

THEOREMS we can use when GIVEN PARALLEL LINES:

- If parallel lines are cut by a transversal line, the corresponding angles are congruent.
- If parallel lines are cut by a transversal line, the alternate interior angles are congruent.
- If parallel lines are cut by a transversal line, the alternate exterior angles are congruent.

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1. Given:  $\overline{AB} \parallel \overline{ED}$   
 $\overline{AD}$  bisects  $\overline{EB}$   
 Prove:  $\triangle ABC \cong \triangle DEC$

Statement	Reason
1) $\overline{AB} \parallel \overline{ED}$	1) Given
2) $\overline{AD}$ bisects $\overline{EB}$	2) Given
3) $\overline{EC} \cong \overline{BC}$	3) Def. of a seg. bisector
4) $\angle 1 \cong \angle 2$	4) If $\nabla \nabla \rightarrow \nabla \nabla$
5) $\angle 3 \cong \angle 4$	5) Vertical $\angle$ 's are $\cong$
6) $\triangle ABC \cong \triangle DEC$	6) $ASA \cong ASA$

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2. Given:  $\overline{QU} \parallel \overline{DA}$   
 $\overline{QU} \cong \overline{DA}$   
 Prove:  $\triangle QUD \cong \triangle ADU$

Statement	Reason
1) $\overline{QU} \parallel \overline{DA}$	1) Given
2) $\overline{QU} \cong \overline{DA}$	2) Given
3) $\angle 1 \cong \angle 2$	3) If $\nabla \nabla \rightarrow \nabla \nabla$
4) $\overline{UD} \cong \overline{UD}$	4) Reflexive Property
5) $\triangle QUD \cong \triangle ADU$	5) SAS $\cong$ SAS

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3. Given:  $T$  is the midpoint of  $\overline{NK}$ ,  
 $\angle TKI \cong \angle NTE$   
 $\overline{TI} \parallel \overline{NE}$   
 Prove:  $\triangle KIT \cong \triangle TEN$

Statement	Reason
1) $T$ is the midpoint of $\overline{NK}$	1) Given
2) $\angle TKI \cong \angle NTE$	2) Given
3) $\overline{TI} \parallel \overline{NE}$	3) Given
4) $\overline{NT} \cong \overline{TK}$	4) Def. of a midpoint
5) $\angle KTI \cong \angle NTE$	5) If $\nabla \nabla \rightarrow \nabla \nabla$
6) $\triangle KIT \cong \triangle TEN$	6) ASA $\cong$ ASA

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4. Given:  $l \parallel m$ ,  $\angle 1 \cong \angle 2$   
 Prove:  $\angle 2 \cong \angle 3$

Statement	Reason
1) $l \parallel m$	1) Given
2) $\angle 1 \cong \angle 2$	2) Given
3) $\angle 1 \cong \angle 3$	3) If $\nabla \nabla \rightarrow \nabla \nabla$
4) $\angle 2 \cong \angle 3$	4) Substitution Property

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5. Given:  $\overline{AB} \parallel \overline{ED}$   
 $\overline{BE}$  bisects  $\overline{AD}$   
 Prove:  $\triangle ABC \cong \triangle DEC$

Statement	Reason
1) $\overline{AB} \parallel \overline{ED}$	1) Given
2) $\overline{BE}$ bisects $\overline{AD}$	2) Given
3) $\overline{EC} \cong \overline{BC}$	3) Def. of a seg. bisector
4) $\angle 1 \cong \angle 2$	4) If parallel lines are cut by a transversal line, the alternate interior angles are congruent.
5) $\angle 3 \cong \angle 4$	5) Vertical $\angle$ 's are $\cong$
6) $\triangle ABC \cong \triangle DEC$	6) $asa \cong asa$

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6. Given:  $\overline{AC} \cong \overline{DB}$   
 $\overline{CB} \cong \overline{BE}$   
 $\overline{AC} \parallel \overline{DB}$   
 Prove:  $\triangle ABC \cong \triangle DEB$

Statement	Reason
1) $\overline{AC} \cong \overline{DB}$	1) Given
2) $\overline{CB} \cong \overline{BE}$	2) Given
3) $\overline{AC} \parallel \overline{DB}$	3) Given
4) $\triangle ABC \cong \triangle DEB$	4) If $\Rightarrow$ <del><math>\Rightarrow</math></del> $\rightarrow$
5) $\triangle ABC \cong \triangle DEB$	5) $SAS \cong SAS$

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