

GEOMETRY CC - UNIT 6
LESSON 3: Parallel Lines (Mixed Proofs)
M1 L22-27

Homework: Finish CW

Homework Answers 6.2

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 $\overline{AC} \cong \overline{CE}$	③ def. of a segment bisector
④ $\angle 1 \cong \angle 2$	④ def. of vertical \angle 's
⑤ $\angle 3 \cong \angle 4$	⑤ 2 // lines cut by a transversal form a pair of alt. int. \angle 's
⑥ $\triangle ABC \cong \triangle DEC$	⑥ ASA \cong ASA

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 $\angle 1 \cong \angle 2$	④ 2 // lines cut by a transversal form a pair of corresponding \angle 's
⑤ $\triangle ABC \cong \triangle DEB$	⑤ SAS \cong SAS

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Proofs

① Proving lines \parallel

② Using \parallel lines in proofs

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1. Given: $\angle ACB \cong \angle EFD$,
 $\overline{CB} \cong \overline{EF}$,
 $\overline{AB} \parallel \overline{ED}$.
Prove: $\triangle ABC \cong \triangle DEF$

Statement	Reason
① $\angle ACB \cong \angle EFD$, $\overline{CB} \cong \overline{EF}$, $\overline{AB} \parallel \overline{ED}$	① Given
② $\angle ABC \cong \angle DEF$	② If \Rightarrow \rightarrow \neq
③ $\triangle ABC \cong \triangle DEF$	③ ASA \cong ASA

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3. Given: $\angle A \cong \angle E$,
 $\overline{BA} \cong \overline{BE}$.
Prove: $\overline{BC} \cong \overline{BD}$

Statement	Reason
① $\angle A \cong \angle E$	① Given
② $\overline{BA} \cong \overline{BE}$	② Given
③ $\overline{AB} \cong \overline{AB}$	③ Reflexive Prop
④ $\triangle ABC \cong \triangle EBD$	④ ASA \cong ASA
⑤ $\overline{BC} \cong \overline{BD}$	⑤ CPCTC

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5. Given: $\overline{DB} \perp \overline{AC}$,
 $\angle 1 \cong \angle 2$.
Prove: $\overline{AB} \cong \overline{CB}$

STATEMENTS	REASONS
1. $\overline{DB} \perp \overline{AC}$ $\angle 1 \cong \angle 2$	1. Given
2. $\angle DBA \cong \angle DBC$ $\angle DBA$ and $\angle DBC$ are r.t. \angle 's	2. Perpendicular lines form right angles.
3. $\angle DBA \cong \angle DBC$	3. All right angles are \cong
4. $\overline{DB} \cong \overline{DB}$	4. Reflexive Property
5. $\angle 1$ and $\angle 3$ are suppl. $\angle 2$ and $\angle 4$ are suppl.	5. Definition of a linear pair
6. $\angle 3 \cong \angle 4$	6. Supplements of \cong angles are \cong
7. $\triangle ABD \cong \triangle CBD$	7. AAS \cong AAS
8. $\overline{AB} \cong \overline{CB}$	8. CPCTC

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7. Given: $\overline{DC} \cong \overline{DE}$,
 $\angle x \cong \angle y$,
 $\angle z \cong \angle w$.
Prove: $\triangle ACD \cong \triangle AED$

Statement	Reason
① $\overline{DC} \cong \overline{DE}$ $\angle x \cong \angle y$ $\angle z \cong \angle w$	① Given
② $\angle x + \angle z \cong \angle y + \angle w$ $\angle CDA \cong \angle EDA$	② addition Postulate
③ $\overline{DA} \cong \overline{DA}$	③ Reflexive Prop
④ $\triangle ACD \cong \triangle AED$	④ SAS \cong SAS

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