

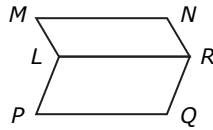
LESSON 60 Proofs with Quadrilaterals

□ WRITING PROOFS INVOLVING QUADRILATERALS

You have learned and proved in earlier lessons that particular types of quadrilaterals have certain properties. Using those properties often makes proofs simpler and shorter. Let's try.

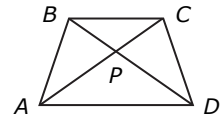
→ **TRY IT** Complete each proof.

1. Given: $\square LMNR$,
 $\square LPQR$
Prove: $\overline{MN} \cong \overline{PQ}$



STATEMENTS	REASONS
1. $\square LMNR$	1. Given
2. $\overline{MN} \cong \overline{LR}$	2.
3. $\square LPQR$	3. Given
4. $\overline{LR} \cong \overline{PQ}$	4.
5. $\overline{MN} \cong \overline{PQ}$	5.

2. Given: isosceles
trapezoid $ABCD$
Prove: $\triangle ABC \cong \triangle DCB$



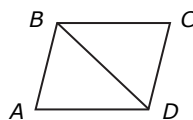
STATEMENTS	REASONS
1. iso. trapezoid $ABCD$	1. Given
2. $\overline{AB} \cong \overline{DC}$	2.
3. $\angle ABC \cong \angle DCB$	3.
4. $\overline{BC} \cong \overline{BC}$	4.
5. $\triangle ABC \cong \triangle DCB$	5.

□ PROVING QUADRILATERALS

To prove a quadrilateral is of a particular type, you must prove that it satisfies the type's definition. However, as you learned and proved in earlier lessons, certain properties can be used as shortcuts to conclude the type of a quadrilateral. For example, to prove a parallelogram, you can either use its definition or use *any* of the theorems in Lesson 57. See the proofs below.

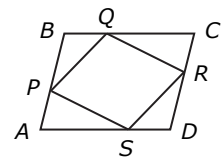
→ **TRY IT** Complete each proof.

3. Given: $\angle ABD \cong \angle CDB$,
 $\angle ADB \cong \angle CBD$
Prove: $ABCD$ is a \square .



STATEMENTS	REASONS
1. $\angle ABD \cong \angle CDB$	1. Given
2. $\overline{BA} \parallel \overline{CD}$	2.
3. $\angle ADB \cong \angle CBD$	3. Given
4. $\overline{BC} \parallel \overline{AD}$	4.
5. $ABCD$ is a \square .	5.

4. Given: $\triangle PAS \cong \triangle RCQ$,
 $\triangle QBP \cong \triangle SDR$
Prove: $ABCD$ is a \square .



STATEMENTS	REASONS
1. $\triangle PAS \cong \triangle RCQ$	1. Given
2. $\angle A \cong \angle C$	2.
3. $\triangle QBP \cong \triangle SDR$	3. Given
4. $\angle B \cong \angle D$	4.
5. $ABCD$ is a \square .	5.