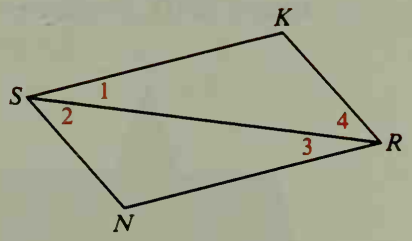
5. Prove the following statement: If both pairs of opposite sides of a quadrilateral are parallel, then they are also congruent.

Given: $\overline{SK} \parallel \overline{NR}$; $\overline{SN} \parallel \overline{KR}$

Prove: $\overline{SK} \cong \overline{NR}$; $\overline{SN} \cong \overline{KR}$



6. Prove the converse of the statement in Exercise 5: If both pairs of opposite sides of a quadrilateral are congruent, then they are also parallel.

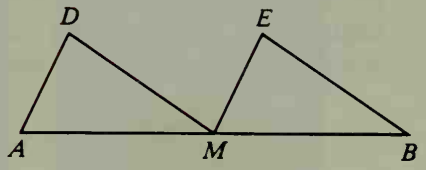
Given: $\overline{SK} \cong \overline{NR}$; $\overline{SN} \cong \overline{KR}$

Prove: $\overline{SK} \parallel \overline{NR}$; $\overline{SN} \parallel \overline{KR}$

Write proofs in two-column form.

7. Given: $\overline{AD} \parallel \overline{ME}$; $\overline{MD} \parallel \overline{BE}$; M is the midpoint of $\overline{AB}$.

Prove: $\overline{MD} \cong \overline{BE}$



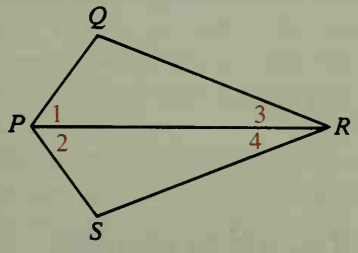
B **8.** Given: M is the midpoint of $\overline{AB}$; $\overline{AD} \cong \overline{ME}$; $\overline{AD} \parallel \overline{ME}$

Prove: $\overline{MD} \parallel \overline{BE}$

In Exercises 9 and 10 you are given more information than you need. For each exercise state one piece of given information that you do not need for the proof. Then give a two-column proof that does not use that piece of information.

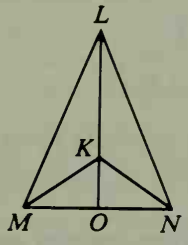
9. Given: $\overline{PQ} \cong \overline{PS}$; $\overline{QR} \cong \overline{SR}$; $\angle 1 \cong \angle 2$

Prove: $\angle 3 \cong \angle 4$



10. Given: $\overline{LM} \cong \overline{LN}$; $\overline{KM} \cong \overline{KN}$; $\overline{KO}$ bisects $\angle MKN$.

Prove: $\overline{LO}$ bisects $\angle MLN$.



11. Given: $\overline{WX} \perp \overline{YZ}$; $\angle 1 \cong \angle 2$; $\overline{UX} \cong \overline{VX}$

Which one(s) of the following statements *must* be true?

(1) $\overline{XW} \perp \overline{UV}$ (2) $\overline{UV} \parallel \overline{YZ}$ (3) $\overline{VX} \perp \overline{UX}$

12. Given: $\overline{WX} \perp \overline{UV}$; $\overline{WX} \perp \overline{YZ}$; $\overline{WU} \cong \overline{WV}$

Prove whatever you can about angles 1, 2, 3, and 4.