

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

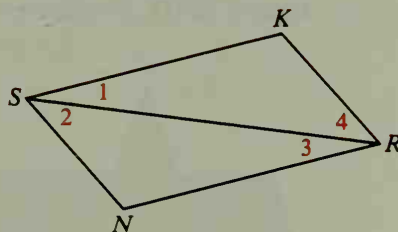
Given:  $\overline{SK} \parallel \overline{NR}$ ;  $\overline{SN} \parallel \overline{KR}$

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.

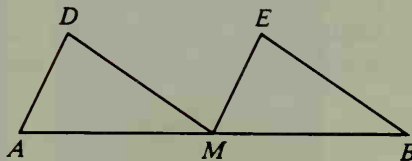
7. Given:  $\overline{AD} \parallel \overline{ME}$ ;  $\overline{MD} \parallel \overline{BE}$ ;  $M$  is the midpoint of  $\overline{AB}$ .

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

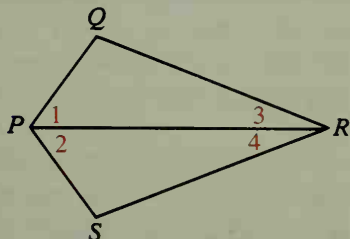


In Exercises 9 and 10 you are given more information than you need. For each exercise state one piece of given information that you do not need for the proof. Then give a two-column proof that does not use that piece of information.

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

$\angle 1 \cong \angle 2$

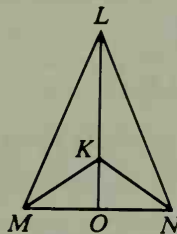
Prove:  $\angle 3 \cong \angle 4$



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.

