

# Practice 3-2

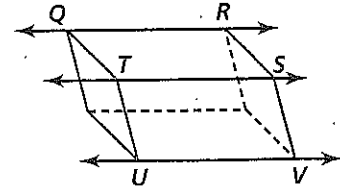
## Proving Lines Parallel

1. **Developing Proof** Complete the paragraph proof for the figure shown.

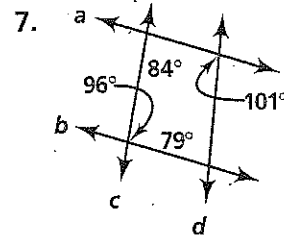
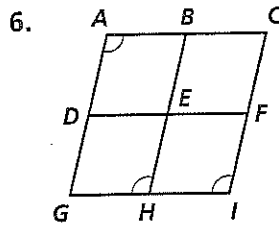
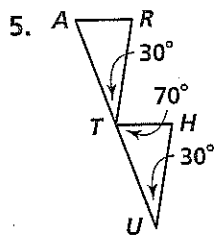
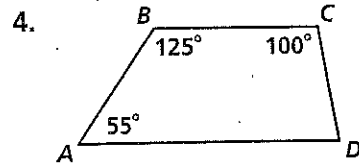
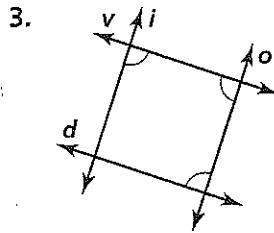
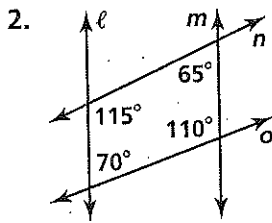
Given:  $\angle RQT$  and  $\angle QTS$  are supplementary.  
 $\angle TSV$  and  $\angle SVU$  are supplementary.

Prove:  $\overleftrightarrow{QR} \parallel \overleftrightarrow{UV}$

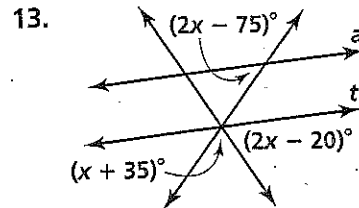
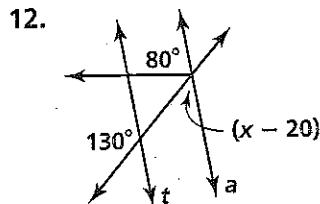
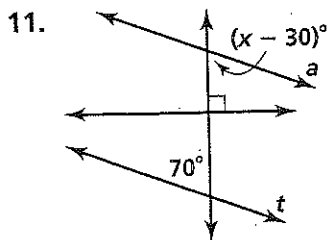
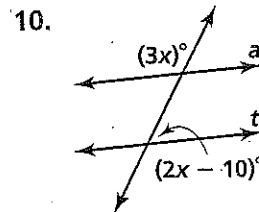
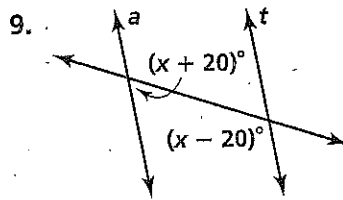
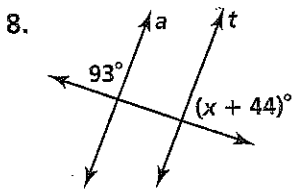
**Proof** Because  $\angle RQT$  and  $\angle QTS$  are supplementary,  $\angle RQT$  and  $\angle QTS$  are a. ? angles. By the Same-Side Interior Angles Theorem, b. ?  $\parallel$  c. ?. Because  $\angle TSV$  and  $\angle SVU$  are supplementary,  $\angle TSV$  and  $\angle SVU$  are d. ? angles. By the e. ? Theorem,  $\overleftrightarrow{TS} \parallel \overleftrightarrow{UV}$ . Because  $\overleftrightarrow{QR}$  and  $\overleftrightarrow{UV}$  both are parallel to f. ?,  $\overleftrightarrow{QR} \parallel \overleftrightarrow{UV}$  by Theorem g. ?.



Which lines or segments are parallel? Justify your answer with a theorem or postulate.



**Algebra** Find the value of  $x$  for which  $a \parallel t$ .



# Reteaching 3-2

Proving Lines Parallel

**OBJECTIVE:** Writing flow proofs

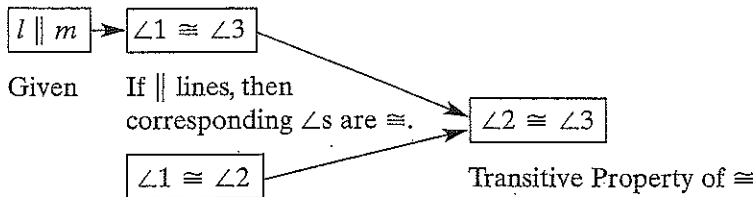
**MATERIALS:** None

### Example

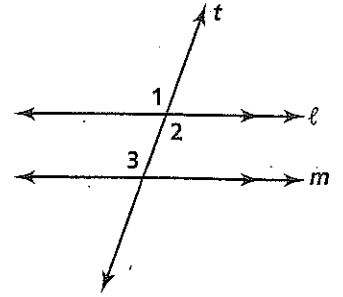
Write a flow proof for Theorem 3-1: If two parallel lines are cut by a transversal, then alternate interior angles are congruent.

Given:  $l \parallel m$

Prove:  $\angle 2 \cong \angle 3$



Vertical angles are  $\cong$ .



### Exercises

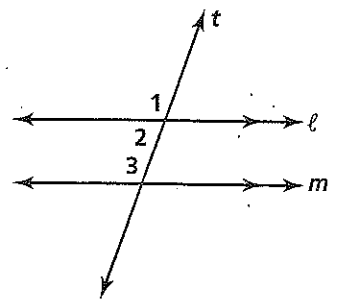
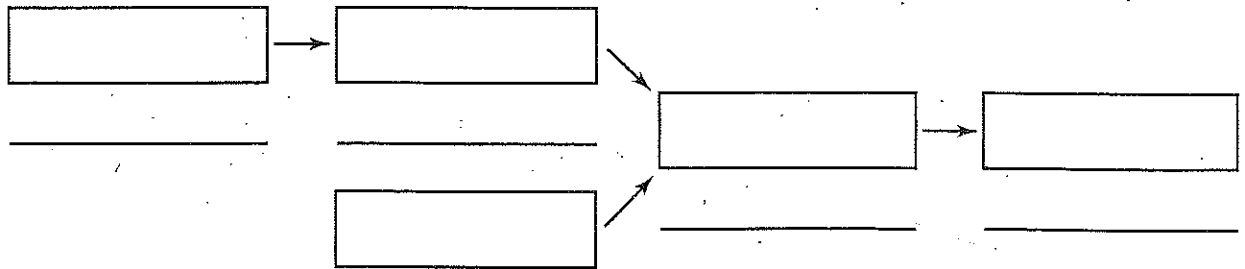
Complete a flow proof for each.

- Complete the flow proof for Theorem 3-2 using the following steps. Then write the reasons for each step.
  - $\angle 2$  and  $\angle 3$  are supplementary.
  - $\angle 1 \cong \angle 3$
  - $l \parallel m$
  - $m\angle 1 + m\angle 2 = 180$
  - $m\angle 3 + m\angle 2 = 180$

Theorem 3-2: If two parallel lines are cut by a transversal, then same-side interior angles are supplementary.

Given:  $l \parallel m$

Prove:  $\angle 2$  and  $\angle 3$  are supplementary.



- Write a flow proof for the following:

Given:  $\angle 2 \cong \angle 3$

Prove:  $a \parallel b$

