

## ACTIVITY 8.6

### Using Technology

#### STUDENT HELP



Visit our Web site  
[www.mcdougallittell.com](http://www.mcdougallittell.com)  
to see instructions for  
several software  
applications.

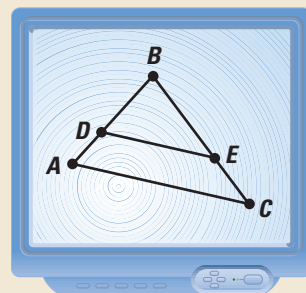
Geometry Software Activity for use with Lesson 8.6

# Investigating Proportional Segments

You can use geometry software to compare segment lengths in triangles.

### ► CONSTRUCT Construct a line parallel to a triangle's third side.

- 1 Draw a triangle. Label the vertices  $A$ ,  $B$ , and  $C$ .
- 2 Draw a point on  $\overline{AB}$ . Label the point  $D$ .
- 3 Draw a line through  $D$  that is parallel to  $\overline{AC}$ . Label the intersection of the line and  $\overline{BC}$  as point  $E$ .



### ► INVESTIGATE

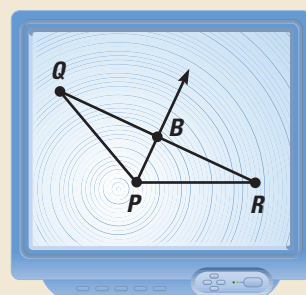
1. Measure  $\overline{BD}$ ,  $\overline{DA}$ ,  $\overline{BE}$ , and  $\overline{EC}$ .  
Calculate the ratios  $\frac{BD}{DA}$  and  $\frac{BE}{EC}$ .
2. Drag  $\overline{DE}$  to different locations and compare the ratios from Exercise 1.
3. Drag one or more of the triangle's vertices to change its shape. Continue to compare the ratios as the shape changes.

### ► MAKE A CONJECTURE

4. Make a conjecture about the ratios of segment lengths of a triangle's sides when the triangle is cut by a line parallel to the triangle's third side.

### ► CONSTRUCT Construct an angle bisector of a triangle.

- 4 Draw a triangle. Label the vertices  $P$ ,  $Q$ , and  $R$ .
- 5 Draw the angle bisector of  $\angle QPR$ . Label the intersection of the angle bisector and  $\overline{QR}$  as point  $B$ .



### ► INVESTIGATE

5. Measure  $\overline{BR}$ ,  $\overline{RP}$ ,  $\overline{BQ}$ , and  $\overline{QP}$ .  
Calculate the ratios  $\frac{BR}{BQ}$  and  $\frac{RP}{QP}$ .
6. Drag one or more of the triangle's vertices to change its shape. Continue to compare the ratios as the shape changes.

### ► MAKE A CONJECTURE

7. Make a conjecture about how the ratio of two side lengths of a triangle relates to the ratio of the segment lengths of the third side formed by an angle bisector.

### EXTENSION

**CRITICAL THINKING** Are the two triangles formed by the angle bisector similar? Explain your reasoning.