

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

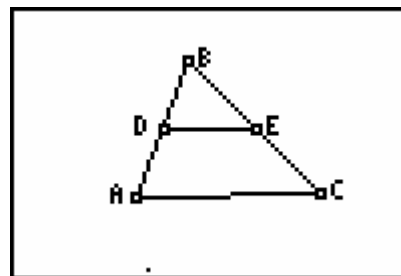
**Geometry: 8.5 Proportions in Triangles: Side-Splitter Theorem**

A **midsegment** of a triangle is a segment connecting the midpoints of two sides.

**Construction:**

**Part 1:** Construct  $\triangle ABC$ .

- ∇ Press **WINDOW** and scroll down to **Triangle** and press **ENTER**.
- ∇ Move the cursor and press enter at three different points to create your triangle.
- ∇ Label the vertices of your triangle **A, B, and C**.



**Part 2:** Construct point **D**.

- ∇ Press **WINDOW** and scroll up or down to **Point** and hit **▸**, then scroll up or down to **Point on** and press **ENTER**.
- ∇ Scroll and put point **D** on  $\overline{AB}$  so that **D** is closer to point **B** than to point **A**. and press **ENTER**. Your point will not be on  $\overline{AB}$  unless it is dancing when you press **ENTER**.
- ∇ Label the point **D**.

**Part 3:** Construct  $\overline{DE}$  so that it is parallel to  $\overline{AC}$ .

- ∇ Press **ZOOM** and scroll up or down to **Parallel** and press **ENTER**.
- ∇ Scroll to point **D** and press **ENTER**.
- ∇ Scroll to  $\overline{AC}$  until it starts to dance press **ENTER**.
- ∇ Press **WINDOW** and scroll up or down to **Point** and hit **▸**, then scroll up or down to **Intersection** and press **ENTER**.
- ∇ Scroll to the intersection of  $\overline{DE}$  and  $\overline{BC}$ . When they both start to dance press **ENTER**.
- ∇ Label the point **E**.

**Part 4:** Construct  $\overline{DE}$ .

- ∇ Press **GRAPH** scroll up and down to **Hide/Show** and hit **▸**, then scroll up or down to **Object** and press **ENTER**.
- ∇ Scroll to  $\overline{DE}$  and when it starts to dance press **ENTER**.
- ∇ Press **WINDOW** and scroll up or down to **Segment** and press **ENTER**.
- ∇ Scroll to point **D** and press **ENTER**.
- ∇ Scroll to point **E** and press **ENTER**.

**Exploration:**

1. Find (with Cabri® Jr.) the lengths **AD, DB, CE, EB** on your screen. (**GRAPH** - **Measure** **▸ D. & Length**).
  - a. Make sure you use two decimal accuracy.
2. Drag point **D** to four different locations on  $\overline{AB}$ . For each location record the four lengths in the table below.

Measurement	Location 1	Location 2	Location 3	Location 4
Length <b>AD</b>				
Length <b>DB</b>				
Length <b>CE</b>				
Length <b>EB</b>				

3. For each column in the table above, find the ratios  $\frac{AD}{DB}$  and  $\frac{CE}{EB}$ . Record the values in the table below to the nearest hundredths.

$\frac{AD}{DB}$				
$\frac{CE}{EB}$				

**Conjecture:**

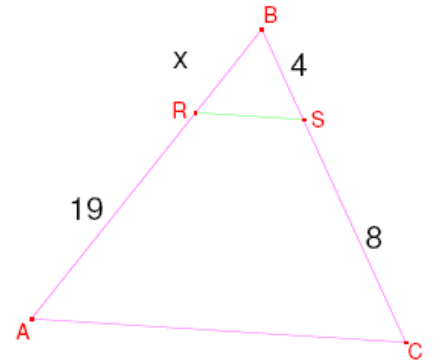
4. Use the table to complete the following conjecture about the relationship between  $\frac{AD}{DB}$  and  $\frac{CE}{EB}$ .

If  $\overline{DE}$  is parallel to side  $\overline{AC}$ , then \_\_\_\_\_.

5. Turn to page 446 in your book and copy **Theorem 8.4**.

**Side-Splitter Theorem:** \_\_\_\_\_

6. Using the **Side-Splitter Theorem**.  
Solve for  $x$ .



7. Turn to page 447 and copy corollary to Theorem 8-4 below.

**Corollary to Theorem 8-4:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_