

# Geometry

## Notes Section 5.1

### Midsegment Theorem and Coordinate Proof

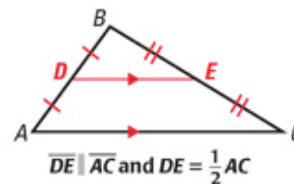
#### VOCABULARY

Midsegment of a triangle: \_\_\_\_\_

Coordinate Proof: \_\_\_\_\_

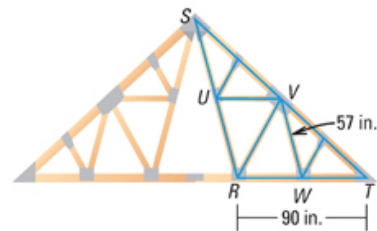
#### THEOREM 5.1 Midsegment Theorem

The segment connecting the midpoints of two sides of a triangle is parallel to the third side and is half as long as that side.



**EXAMPLE 1** UV and VW are midsegments of  $\triangle RST$ .

Find UV and RS.



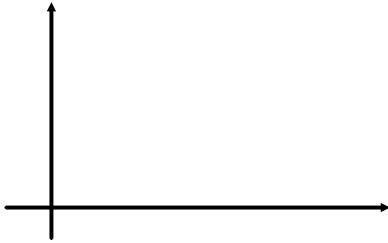
**EXAMPLE 2** In the Kaleidoscope image,  $AE \cong BE$  and  $AD \cong CD$ .

Show that  $CB \parallel DE$ .



**Example 3** Place each figure in a coordinate plane in a way that is convenient for finding side lengths. Assign coordinate to each vertex.

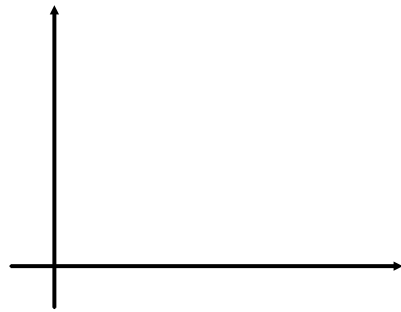
a) Rectangle



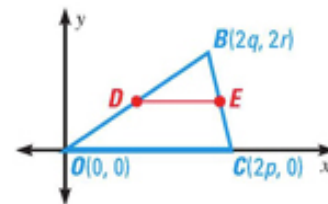
b) scalene triangle



**Example 4** Place an isosceles right triangle in a coordinate plane. Then find the length of the hypotenuse and the coordinates of its midpoint  $M$ .



**Example 5** Given:  $DE$  is a midsegment of  $\triangle OBC$   
 Prove:  $DE \parallel OC$  and  $DE = \frac{1}{2}OC$



**Step 1:** Find  $D$  and  $E$

**Step 2:** Find  $m$  of  $DE$  and  $OC$

**Step 3:** Find  $DE$  and  $OC$