5-1 Midsegments of Triangles

Objective To use properties of midsegments to solve problems

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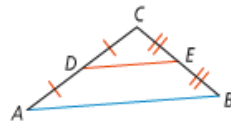
take note

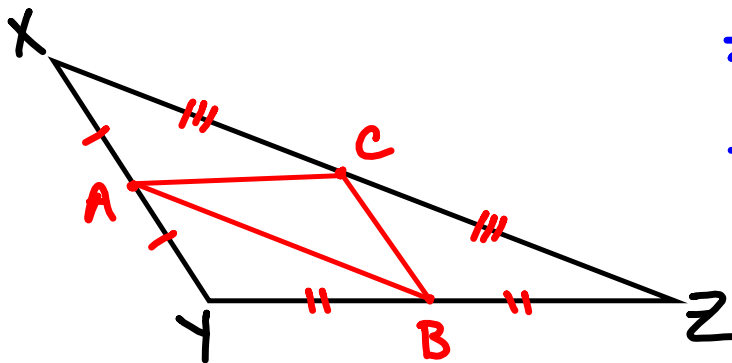## Theorem 5-1 Triangle Midsegment Theorem

Theorem
If a segment joins the midpoints of two sides of a triangle, then the segment is parallel to the third side and is half as long.

If . . .
D is the midpoint of $\overline{CA}$ and E is the midpoint of $\overline{CB}$

Then . . .
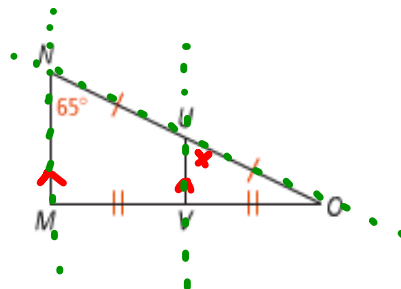$\overline{DE} \parallel \overline{AB}$ and $DE = \frac{1}{2}AB$

You will prove Theorem 5-1 in Lesson 6-9.

$\overline{AB} \parallel \overline{XZ} \qquad AB = \frac{1}{2}XZ$

$\overline{BC} \parallel \overline{XY} \qquad BC = \frac{1}{2}XY$

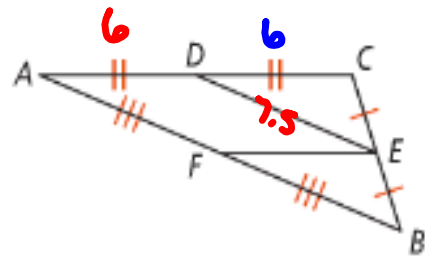$\overline{AC} \parallel \overline{YZ} \qquad AC = \frac{1}{2}YZ$

Got It? **1. a.** In $\triangle XYZ$, A is the midpoint of $\overline{XY}$, B is the midpoint of $\overline{YZ}$, and C is the midpoint of $\overline{ZX}$. What are the three pairs of parallel segments?

© b. Reasoning What is $m\angle VUO$ in the figure at the right? Explain your reasoning.

$m\angle VUO = 65°$

Corresponding $\angle$s Thm

Got It? **2.** In the figure at the right, $AD = 6$ and $DE = 7.5$.
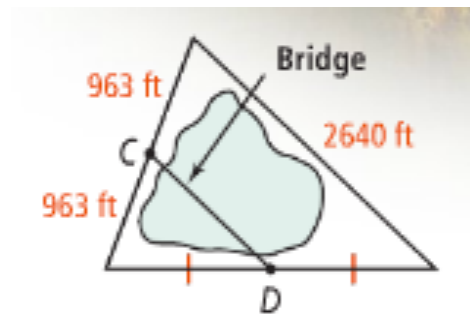What are the lengths of $\overline{DC}$, $\overline{AC}$, $\overline{EF}$, and $\overline{AB}$?

$\overline{DC} = 6$

$\overline{AC} = 6 + 6 = 12$

$\overline{EF} = \dfrac{12}{2} = 6$

$\overline{AB} = 7.5 + 7.5 = 15$

Got It? 3. $\overline{CD}$ is a bridge being built over a lake, as shown in the figure at the right. What is the length of the bridge?

963 ft

963 ft

Bridge

2640 ft

C

D

$$\overline{CD} = \frac{2640}{2}$$

$$= 1320 \text{ ft}$$

Name
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Notes 5.2