

Bellwork
11/04/2011

For the following problems, use A(0,10), B(24,0), and C(0,0).

1. Find AB.

$$AB = 26$$

$$\sqrt{(24-0)^2 + (0-10)^2} = \sqrt{676} = 26$$

2. Find the midpoint of \overline{AB} .

$$(12, 5)$$

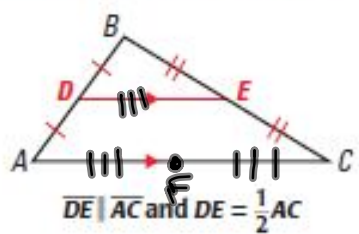
3. Find the slope of \overline{AB} .

$$-\frac{10}{24} = -\frac{5}{12}$$

Geometry
5.1 Midsegment Theorem
Standard(s): 3,7

Vocabulary:

- Midsegment of a Triangle:** A segment that connects the midpoints of two sides of the triangle.

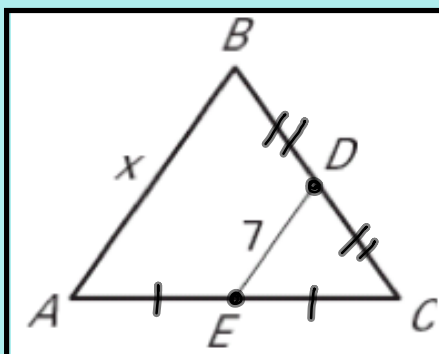
THEOREM	<i>For Your Notebook</i>
<p>THEOREM 5.1 Midsegment Theorem</p> <p>The segment connecting the midpoints of two sides of a triangle is parallel to the third side and is half as long as that side.</p> <p><i>Proof:</i> Example 5, p. 297; Ex. 41, p. 300</p>	 <p>$\overline{DE} \parallel \overline{AC}$ and $DE = \frac{1}{2}AC$</p>

$$OE = \frac{1}{2} AC$$

$$2(OE) = AC$$

Use the Midsegment Theorem to Find Lengths

\overline{DE} is a midsegment of $\triangle ABC$. Find the value of x .



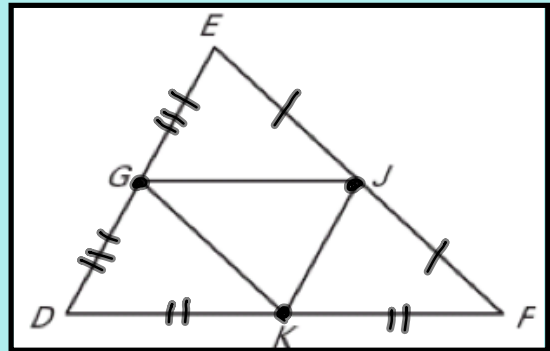
$$2(DE) = AB$$

$$2(7) = x$$

$$x = 14$$

Use the Midsegment Theorem

In $\triangle DEF$, $\overline{EJ} \cong \overline{JF}$, $\overline{FK} \cong \overline{KD}$, and $\overline{DG} \cong \overline{GE}$. Complete each statement.



$$\overline{GJ} \parallel \underline{\overline{DF}}$$

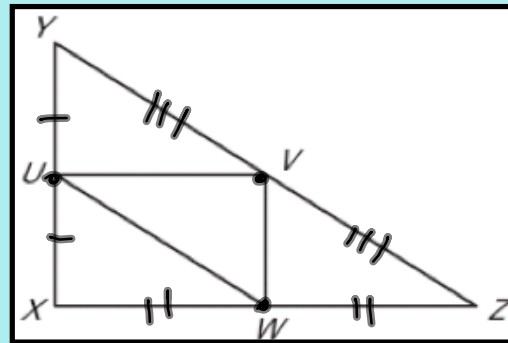
$$\overline{EJ} \cong \underline{\overline{JF}} \cong \underline{\overline{GK}}$$

$$\overline{DE} \parallel \underline{\overline{JK}}$$

$$\overline{GJ} \cong \underline{\overline{DK}} \cong \underline{\overline{KF}}$$

Find Side Lengths Using Midsegment Theorem

Use the diagram of $\triangle XYZ$, where U, V, and W are midpoints of the sides.



If $UW=4x-1$ and $YZ=5x+4$, what is UW ?

$$2(4x-1) = 5x+4$$

$$8x-2 = 5x+4$$

$$3x = 6$$

$$x = 2$$

$$4(2) - 1$$

$$UW = 7$$

Find YV .

$$YV = 7$$

Apply Variable Coordinates

Find the coordinates of the red points in the figure. Then show the given statement is true.

$$\left(\frac{-2h}{2}, \frac{2k}{2} \right)$$

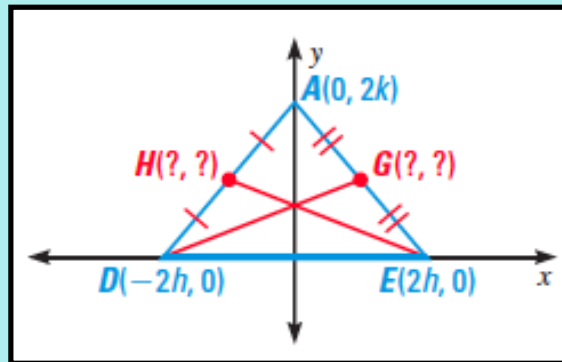
$$H(-h, k)$$

Slope $HE =$

$$\frac{0 - k}{2h + (+h)}$$

$$= \frac{-k}{3h}$$

slope of $\overline{HE} = -(\text{slope of } \overline{DG})$



$$\left(\frac{2h}{2}, \frac{2k}{2} \right)$$

$$G(h, k)$$

Slope $GD =$

$$\frac{0 - k}{-2h - h}$$

$$= \frac{k}{3h} \quad \checkmark$$

Homework Assignment

Worksheet 5.1B

