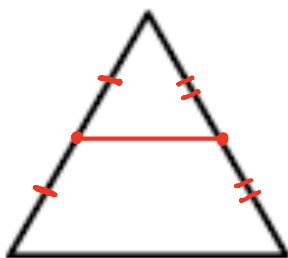
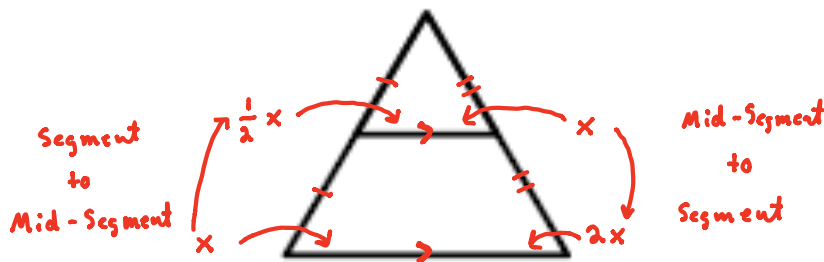


Mid – Segment: the **segment joining the midpoints of two sides of the triangle.**



Mid – Segment Theorem: the **segment connecting the midpoints of two sides of a triangle is parallel to the third side and is half as long as the third side.**



Examples:

1 Use $\triangle ABC$, where X, Y, Z are midpoints of the sides.

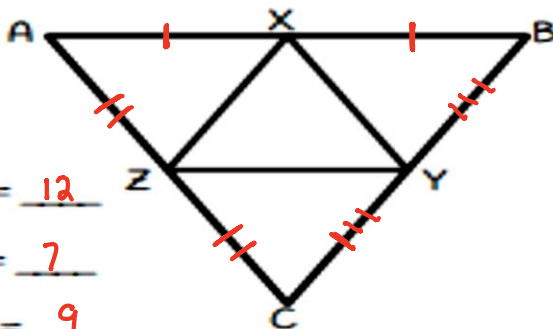
a) $\overline{XY} \parallel \overline{AC}$

b) $\overline{CB} \parallel \overline{ZX}$

c) If $\overline{ZY} = 6$, then $\overline{AB} = \underline{12}$

d) If $\overline{CY} = 7$, then $\overline{ZX} = \underline{7}$

e) If $\overline{AC} = 18$, then $\overline{XY} = \underline{9}$



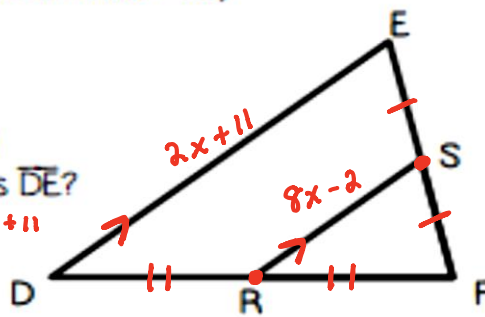
2 In the diagram below, \overline{RS} is the midpoint of $\triangle DEF$.

a) If \overline{RS} is $4x + 5$ and \overline{DE} is $3x + 25$, what is RS?

$= 4(3) + 5$
 $\textcircled{3} = 17$

b) If $\overline{DE} = 2x + 11$ and $\overline{RS} = 8x - 2$, what is \overline{DE} ?

$= 2(1.07) + 11$
 $\textcircled{2} = 13.14$



$2(4x + 5) = 3x + 25$

$8x + 10 = 3x + 25$

$-3x \quad -10 \quad -10$

$5x = 15$

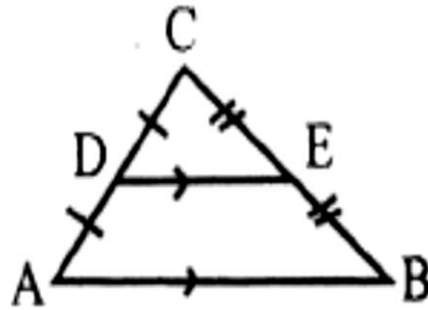
$\frac{5x}{5} = \frac{15}{5}$

$\textcircled{1} x = 3$

$2(8x - 2) = 2x + 11$
 $16x - 4 = 2x + 11$
 $-2x \quad -2x$
 $14x = 15$
 $\frac{14x}{14} = \frac{15}{14}$
 $x = 1.07 \textcircled{1}$

Examples Cont.:

Use the given figure to answer each of the following:



HW → 2, 3, & 4

1. Solve for x given the $DE = \frac{5}{2}x + 3$ and $AB = 6x + 4$.
Mid-Segment Segment

$$\begin{aligned} 2\left(\frac{5}{2}x + 3\right) &= 6x + 4 \\ 5x + 6 &= 6x + 4 \\ \underline{-6} \quad \quad \quad \underline{-6} & \\ 5x &= 6x - 2 \\ \underline{-6x} \quad \underline{-6x} & \\ -x &= -2 \\ \underline{-1} \quad \underline{-1} & \\ x &= 2 \end{aligned}$$

2. Solve for x given the $DE = \frac{7}{2}x + 2$ and $AB = 3x + 6$.

3. Solve for x given the $DE = 5x + 2$ and $AB = 6x + 4$.

4. Solve for x given the $DE = 4x + 2$ and $AB = 6x + 8$.