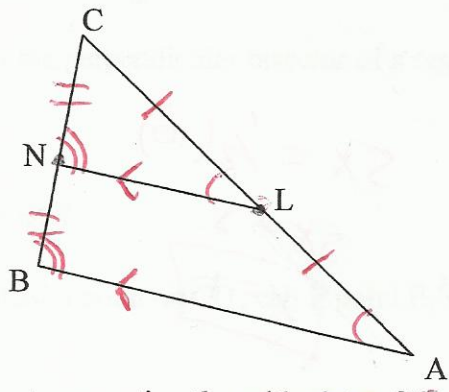


5-1 Midsegments of Triangles

Given: Point L is the midpoint of \overline{AC}
 Point N is the midpoint of \overline{CB}



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

What is the midsegment of $\triangle ABC$? NL

Triangle Midsegment 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 its length.

What can we conclude knowing the midsegment?

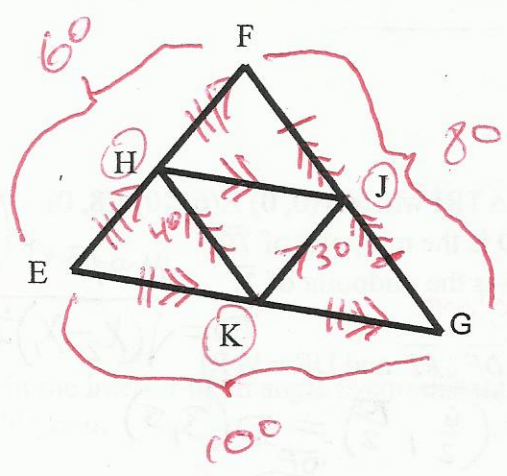
$LN = \frac{1}{2}AB$ $AB = 2LN$ $\overline{LN} \parallel \overline{AB}$

Ex. 1)

Given: H, J, and K are midpoints
 $EF = 60$
 $HK = 40$
 $EG = 100$

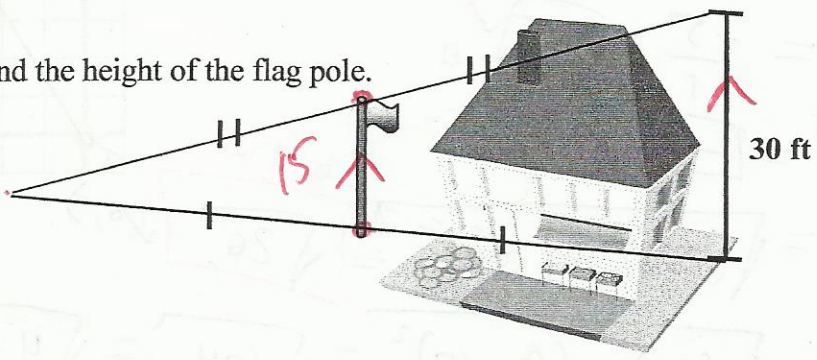
$FG = 80$, $HJ = 50$, $KJ = 30$

$\overline{EF} \parallel \overline{KJ}$; $\overline{EG} \parallel \overline{HJ}$; $\overline{FG} \parallel \overline{HK}$



Ex. 2)

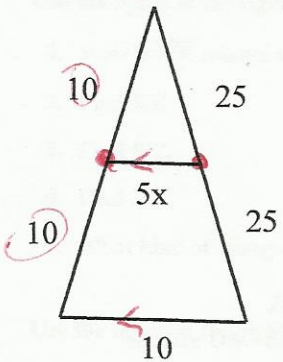
Using the given information, find the height of the flag pole.



Ex. 3)

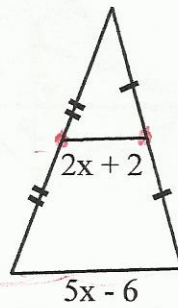
Solve for x

$x = 1$



$5x = \frac{1}{2}(10)$
 $5x = 5$
 $x = 1$

$x = 10$



$2(2x+2) = 5x-6$

Ex. 4)

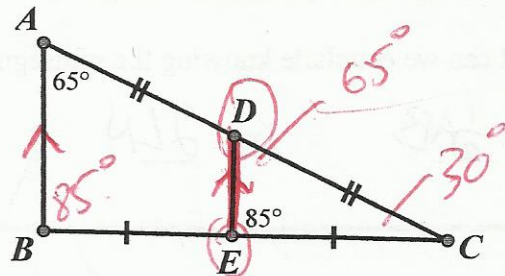
Given: $m\angle A = 65^\circ$
 $m\angle DEC = 85^\circ$

Find the following:

$m\angle B =$ _____

$m\angle CDE =$ _____

$m\angle C =$ _____



Ex. 5)

Given: $\triangle TRI$ where $T(0, 0)$ $R(6, 10)$ $I(8, 0)$

D is the midpoint of \overline{TR}

F is the midpoint of \overline{TI}

Verify: $\overline{DF} \parallel \overline{RI}$ and $DF = \frac{1}{2} RI$

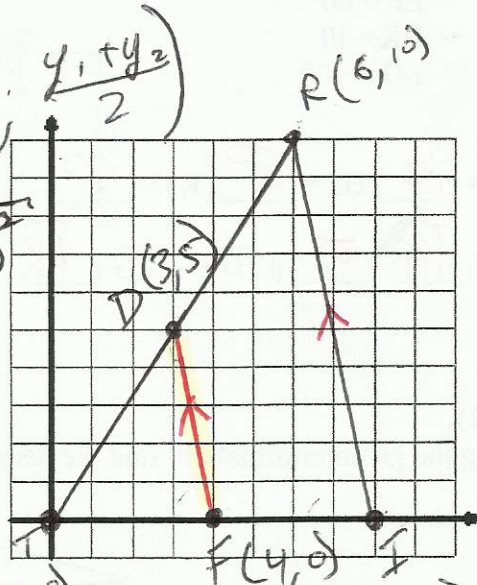
midpoint $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2} \right)$

$D = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

midpt. $\overline{TR} \left(\frac{0+6}{2}, \frac{0+10}{2} \right) = D(3, 5)$

$m\overline{DF} = \frac{-5}{1} = -5$

$m\overline{RI} = -5$



$D_{DF} = \sqrt{(4-3)^2 + (0-5)^2} = \sqrt{26}$

$D_{RI} = \sqrt{(8-6)^2 + (0-10)^2} = \sqrt{104} = \sqrt{4 \cdot 26} = 2\sqrt{26}$