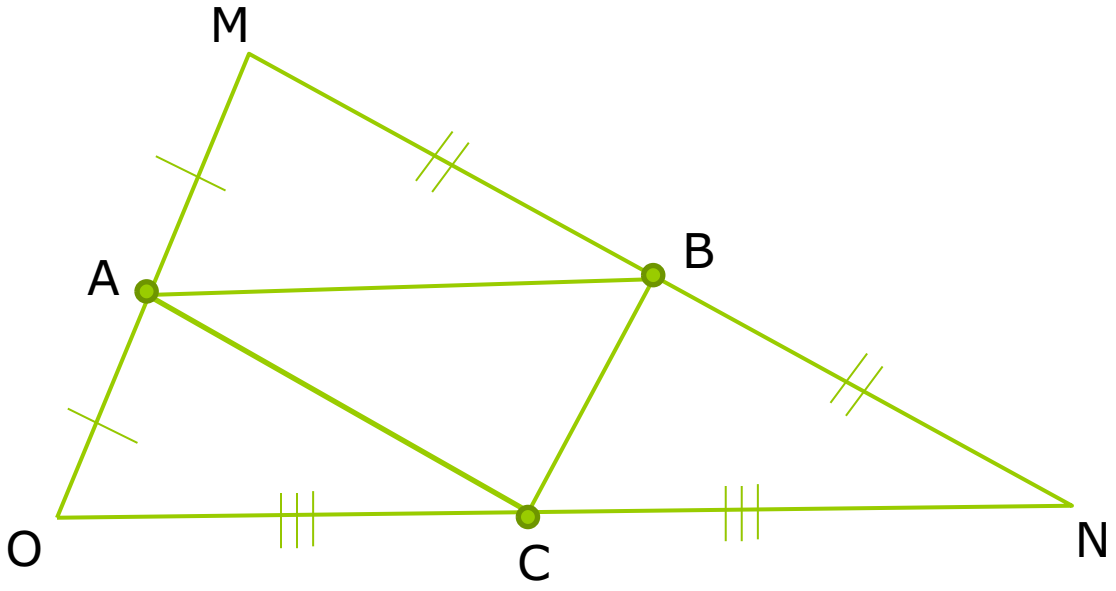
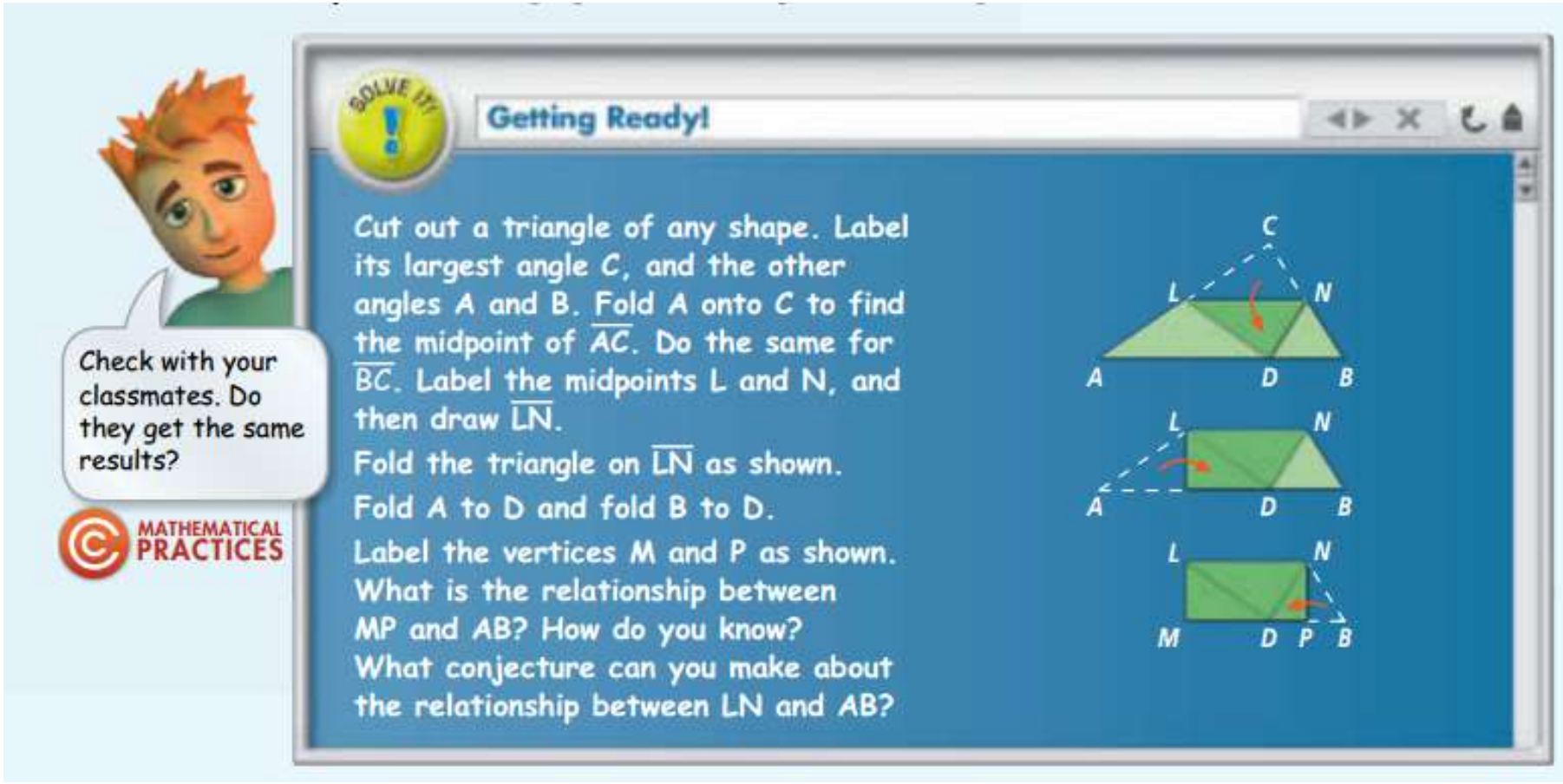
Midsegments of Triangles

5.1

Vocabulary

- **<u>The Midsegment of a Triangle</u> is** a segment that connects the midpoints of two sides of the triangle
- A, B, and C are midpoints
- $\overline{AB}$, $\overline{BC}$, and $\overline{CA}$ are midsegments of $\triangle MNO$.

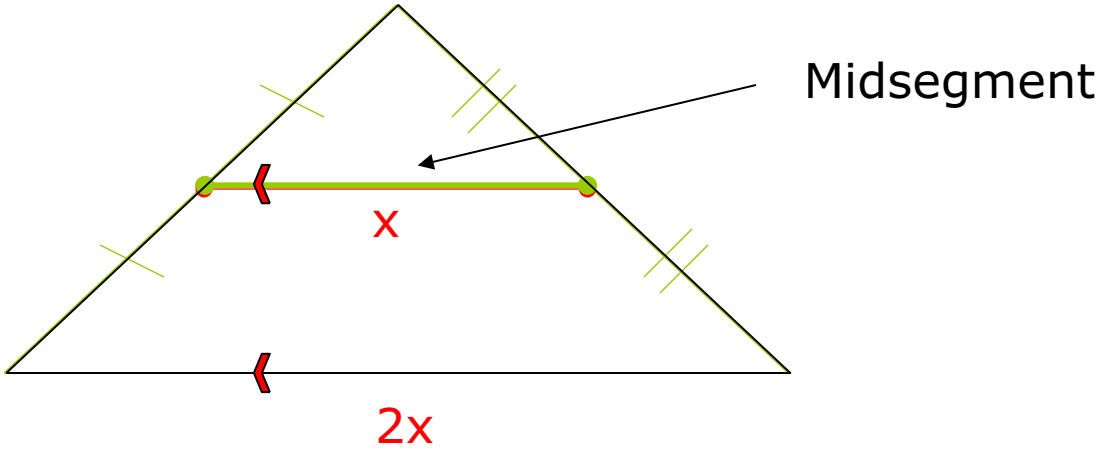



Check with your classmates. Do they get the same results?
MATHEMATICAL PRACTICES
SOLVE IT!
Getting Ready!
Cut out a triangle of any shape. Label its largest angle C, and the other angles A and B. Fold A onto C to find the midpoint of $\overline{AC}$. Do the same for $\overline{BC}$. Label the midpoints L and N, and then draw $\overline{LN}$.
Fold the triangle on $\overline{LN}$ as shown.
Fold A to D and fold B to D.
Label the vertices M and P as shown.
What is the relationship between MP and AB? How do you know?
What conjecture can you make about the relationship between LN and AB?
C
L
N
A
D
B
L
N
A
D
B
L
N
M
D
P
B

5.1 Midsegments of Triangles

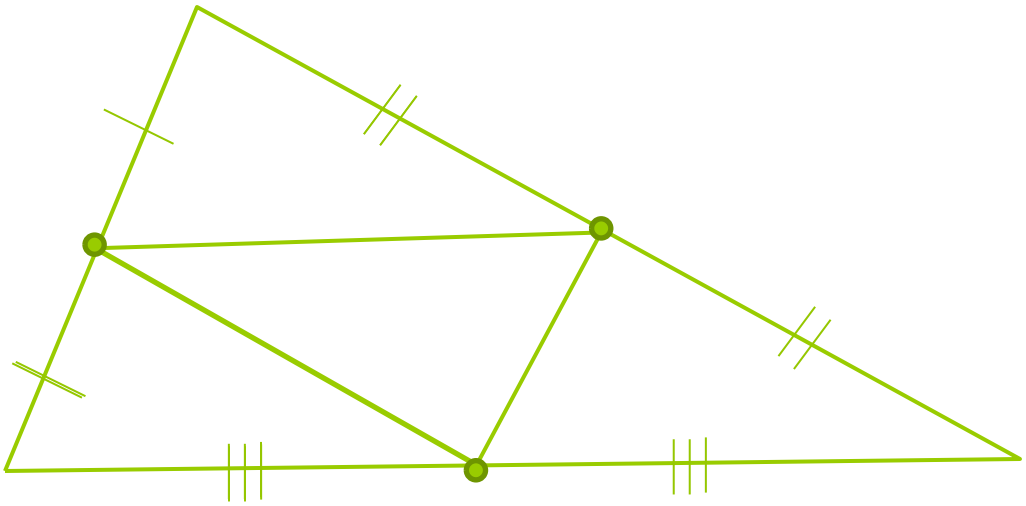
Theorem 5-1 Triangle Midsegment Theorem

If a segment joins the midpoints of two sides of a triangle, then the segment is *parallel to the third side*, and is *half of its length*



Think About It…

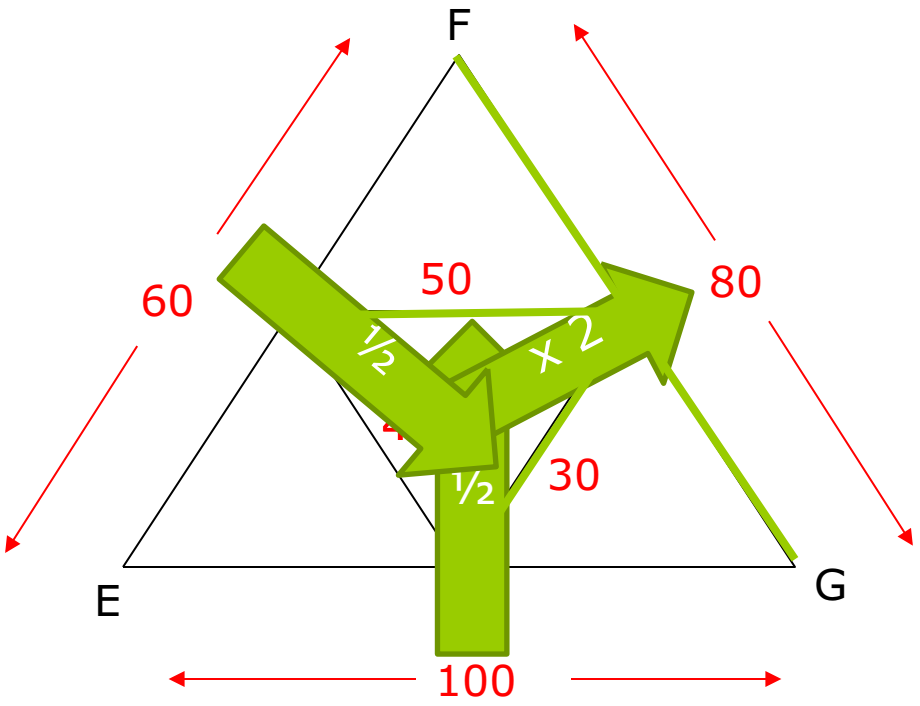
- If we draw all three midsegments, all four interior triangles are congruent. Why???



- The triangles are congruent by SSS.
- Note: The center triangle is rotated!

Example 1:

In ΔEFG, H, J, and K are midpoints. Find HJ, JK, and FG.



HJ: 50

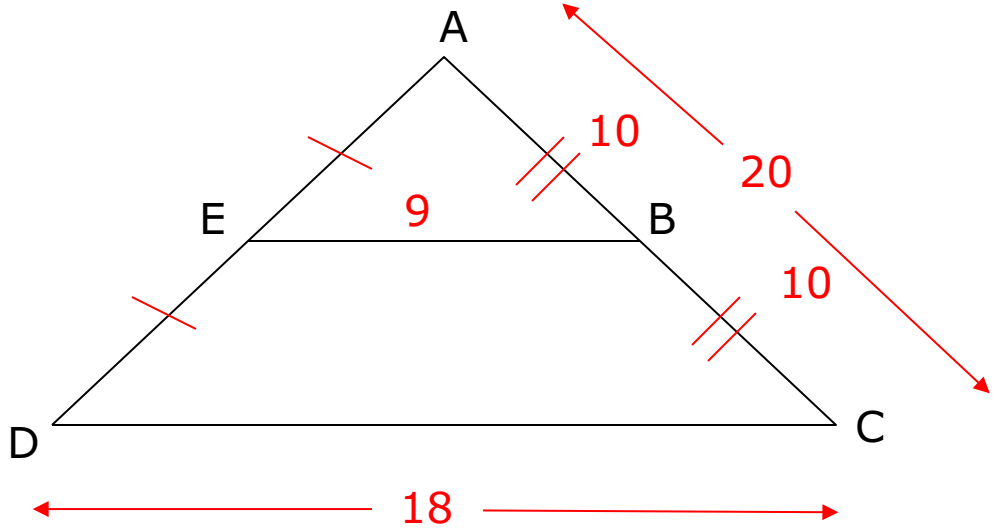
JK: 30

FG: 80

Find the parallel midsegment; it is half the length of the side parallel to it.

You Try!

AB = 10 and CD = 18. Find EB, BC, and AC



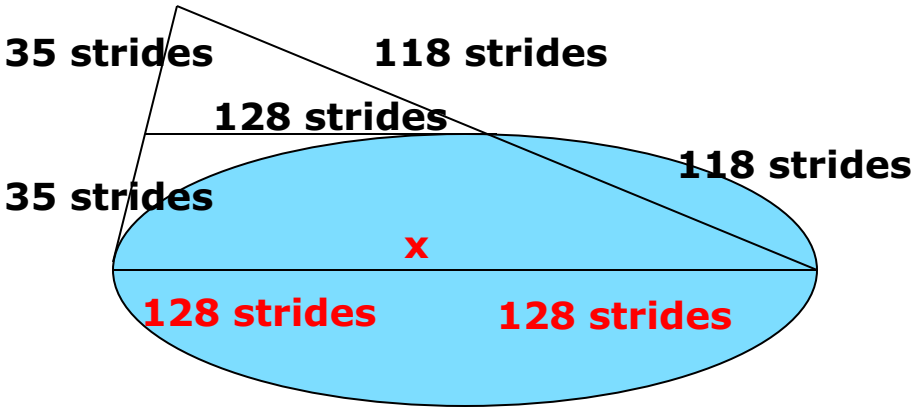
EB: 9

BC: 10

AC: 20

Example 2:

Dean plans to swim the length of the lake (x), as shown in the picture. He counts the distances shown by counting 3ft strides. How far would Dean swim in feet?

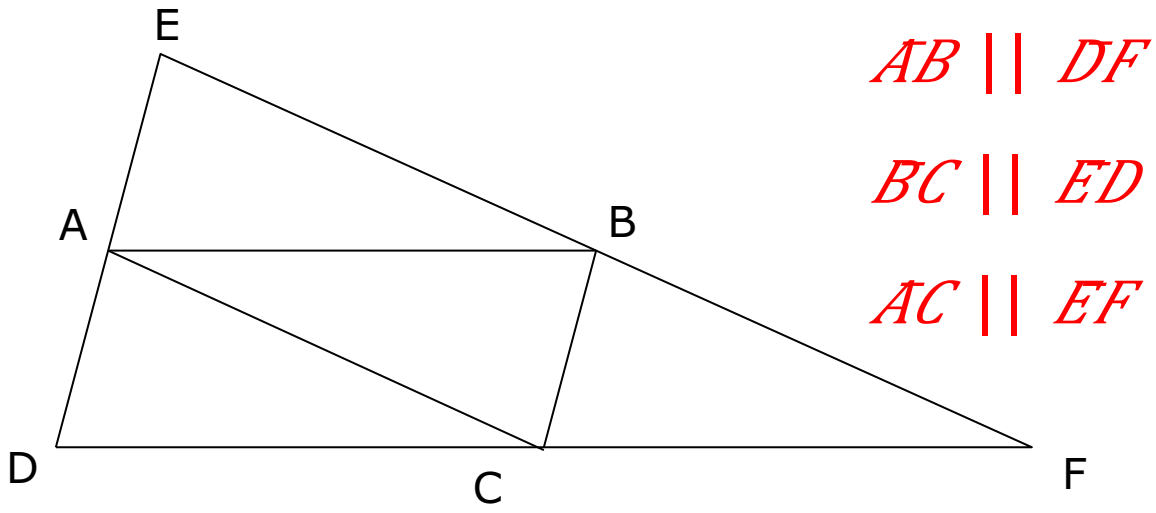


x 3 ft/stride

768 ft.

Example 3:

In ΔDEF, A, B, and C are midpoints. Name the midsegments that are parallel to each side.



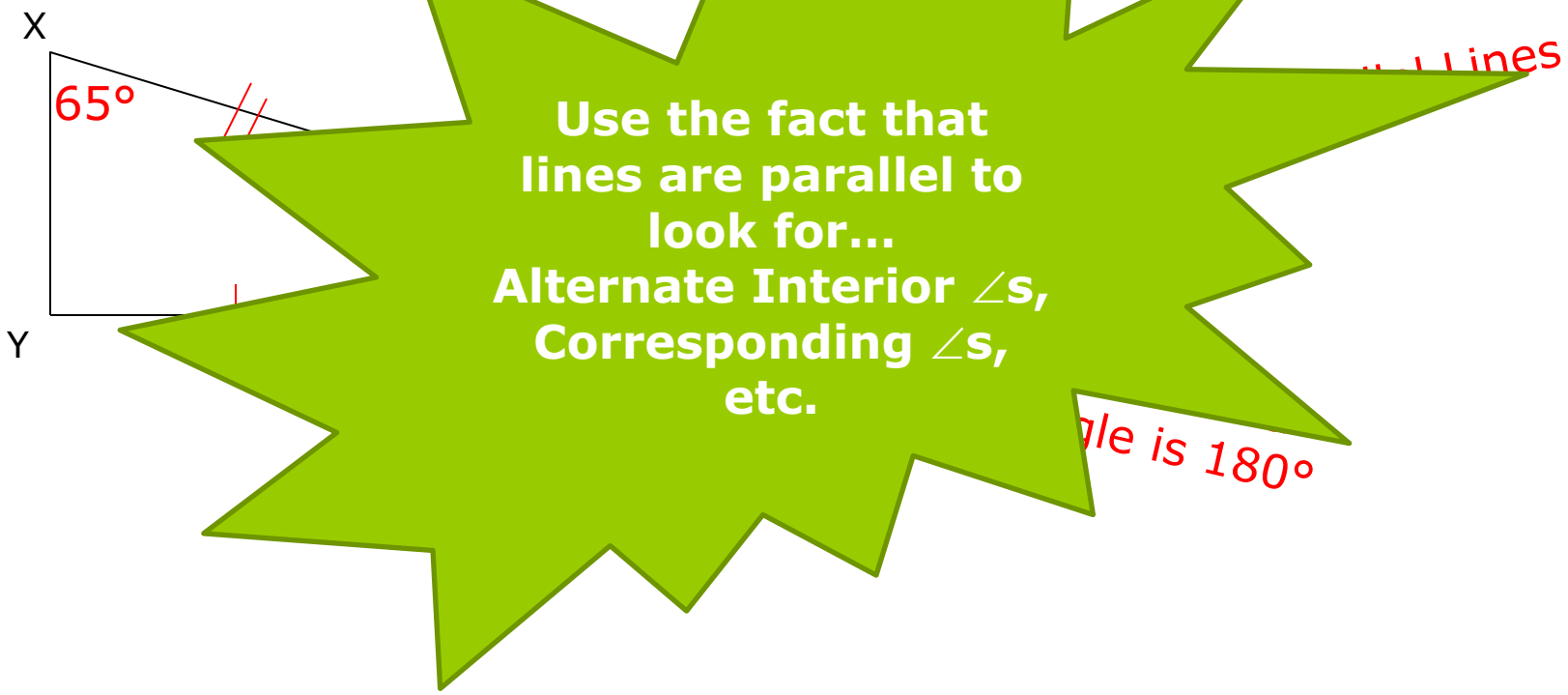
$\overline{AB} \parallel \overline{DF}$

$\overline{BC} \parallel \overline{ED}$

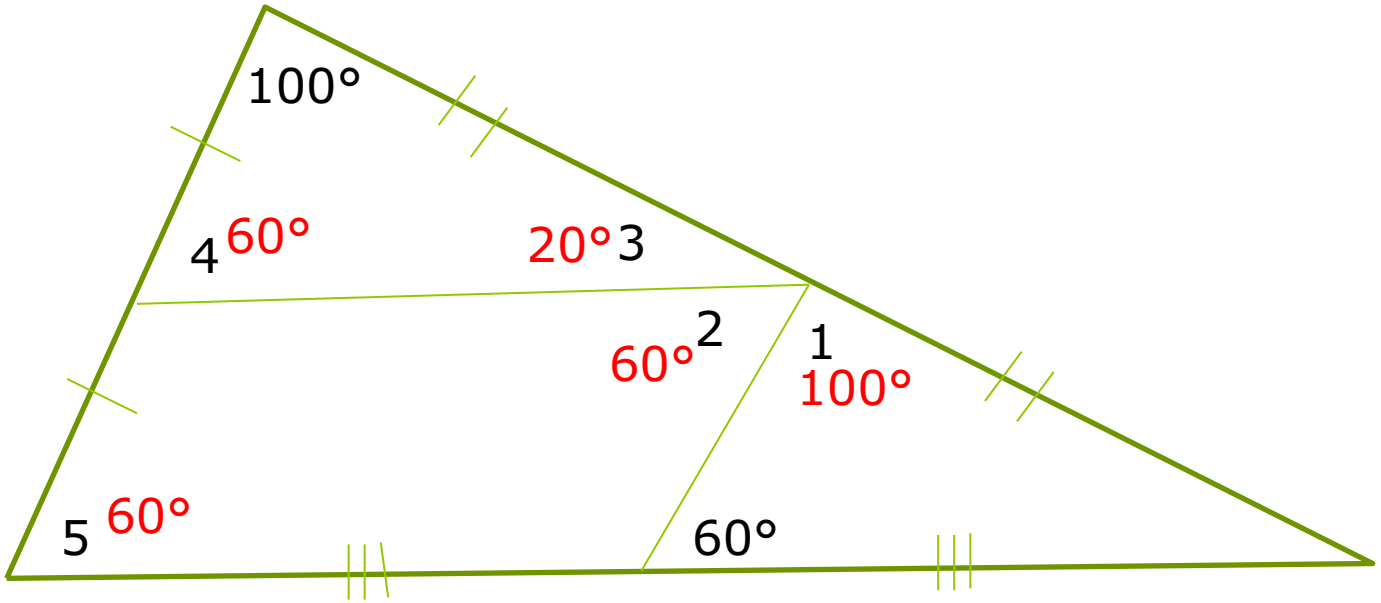
$\overline{AC} \parallel \overline{EF}$

5.1 Midsegments

Find $m\angle VUZ$ & $m\angle Z$. Justify your answer.



You Try!
Find m∠1, 2, 3, 4, & 5



∠1 is Corresponding with the 100°∠.

∠2 is Alternate Interior with the 60°∠.

∠'s 1, 2 & 3 form a straight angle.

The ∠ sum of a triangle is 180°

∠5 is Corresponding with the 60°∠.