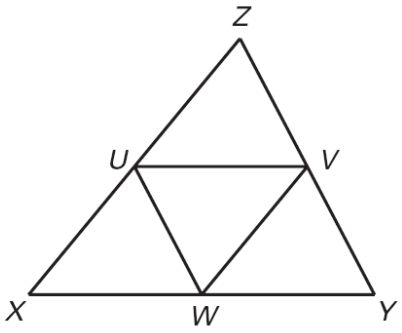
Name: _____

Mid–Segment Theorem

Exercise 1: Refer to the figure to write a two-column proof for parts 1 and 2

1) **Given:** *U*, *V*, and *W* are the midpoints of $\overline{XZ}, \overline{YZ}, and\ \overline{XY}$ respectively.

   Prove: $\angle Z \cong \angle UWV$



2) **Given:** $\overline{UV} \parallel \overline{XY}$
   U is the midpoint of $\overline{XZ}$
   W is the midpoint of $\overline{XY}$

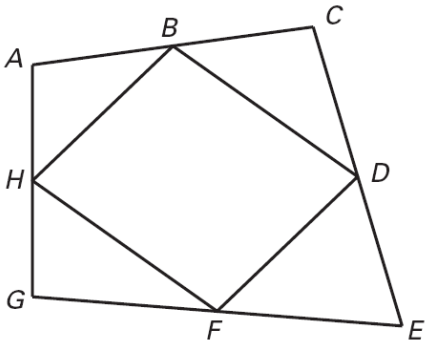
   Prove: *V* is the midpoint of $\overline{ZY}$

Exercise 2: **B, D, F, and H are the midpoints of** $\overline{AC}, \overline{CE}, \overline{EG}, and\ \overline{GA}$, respectively, as shown in the diagram. Write a two – column proof for each part (1 – 3).

1) **Prove:** $\overline{BD} \parallel \overline{HF}$ (Hint: Draw an additional segment)

2) Prove: $\overline{BH} \parallel \overline{DF}$

3) Prove: $\angle HBD \cong \angle DFH$



Exercise 3: Points A, B, E and F are the midpoints of $\overline{XC}, \overline{XD}, \overline{YC}, and \overline{YD}$.

1. If CD = 24 then AB = ? and EF = ?
2. If AB = 5x -8 and EF = 3x, then x = ?