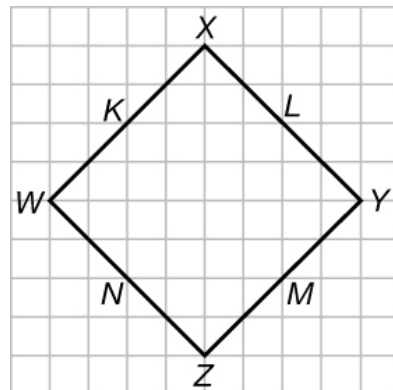


Paper Cutouts

You can make paper snowflakes. You can also make paper cutouts that have geometric properties.

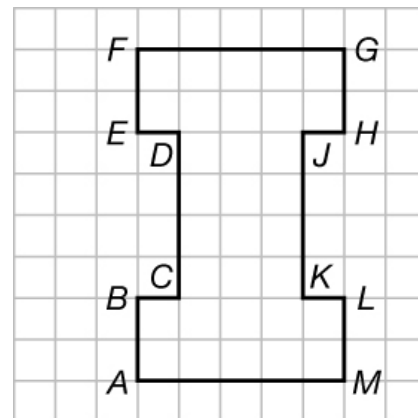
1. This diagram shows two sketches of plane figures on a grid. The coordinates of W are $(0, 0)$ in a coordinate plane with horizontal and vertical axes. Each block is 1 unit long.



- a. The midpoint of \overline{WX} is K . The midpoint of \overline{XY} is L . The midpoint of \overline{YZ} is M . The midpoint of \overline{ZW} is N . Find the coordinates of each midpoint.

- b. Classify polygon $KLMN$. Explain.

2. The diagram shows a polygon on the grid.



- a. Classify the polygon in as many ways as you can. Justify your response.

- b. Using the grid lines, explain why \overline{FG} and \overline{AM} are parallel.

- c. What information would be needed to show that \overline{KL} and \overline{AM} are parallel by using \overline{AL} as a transversal? Explain your reasoning.

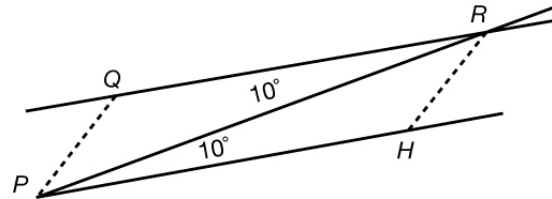
3. Jason claims that every paper cutout of a triangle must have at least two sides with the same length or at least two angles with the same measure.

- On this grid, sketch a triangle in which no two sides have the same length.
- On this grid, sketch a triangle in which no two angles have the same measure.
- Is Jason's claim true or false? Explain your reasoning.



4. George wants to make a paper cutout for polygon $PQRH$.

- What do the measures of angles $\angle RPH$ and $\angle PRQ$ say about the relationship between \overline{QR} and \overline{PH} ? Explain.

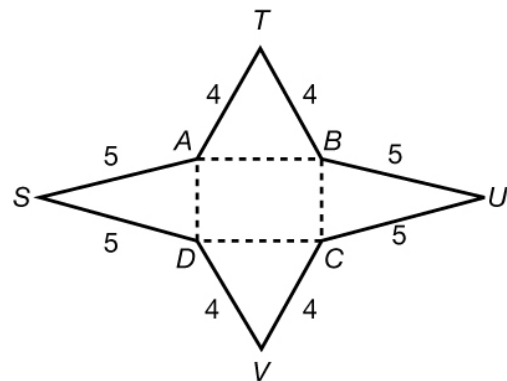


- What information in addition to the measure of $\angle PHR$ would be needed to show that \overline{QR} and \overline{PH} are parallel? Justify your reasoning.

5. This diagram shows a paper cutout.

- Classify all the triangles in the diagram in as many ways as you can.

- Classify polygon $ATBUCVDS$ in as many ways as you can.



- Based on appearance, classify polygon $ABCD$ in as many ways as you can.
