



Explore the Midpoint
Quadrilateral of a Kite

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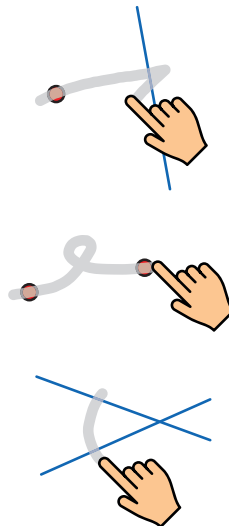
Prerequisites and Objectives

- ▶ Students already know the kite and its sketchometry construction.
- ▶ Students construct the midpoints of the sides of the kite and investigate the new quadrilateral.
- ▶ Students explain why this quadrilateral is a rectangle.

sketchometry Instructions

Students should know

- ▶ how to reflect a point through a line,
- ▶ how to construct the midpoint of a line segment,
- ▶ how to tag angles,
- ▶ how to measure line segments.



 *Measure* > tap line segment > tap the screen at a free spot to place the measurement

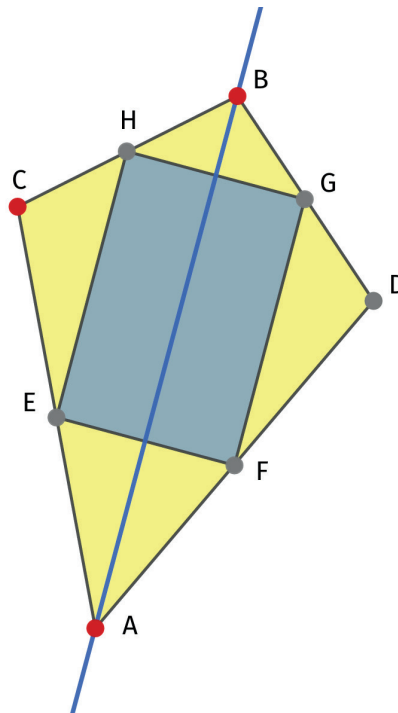
Further Exploration and Tasks

- ▶ Do you know other quadrilaterals (besides kites) where the diagonals are perpendicular to one another?
- ▶ Construct the midpoint quadrilateral of these quadrilaterals.
- ▶ Prove: Are the diagonals of a quadrilateral perpendicular to one another then the corresponding midpoint quadrilateral is a rectangle.

Explore the Midpoint Quadrilateral of a Kite

Construction

- ▶ Construct the kite $ADBC$.
- ▶ Construct the midpoints of the sides of the kite $ADBC$.
- ▶ Connect these midpoints to obtain another quadrilateral $EFGH$ (midpoint quadrilateral).



Exploration

- ▶ Drag any of the vertices A , B , C , and D of the kite and observe the midpoint quadrilateral $EFGH$. Describe its shape.
- ▶ Write down your conjecture in your study journal and try to give a proof.
- ▶ Does only the kite have this midpoint property?
Investigate other types of quadrilaterals and make conjectures.
- ▶ Try to explain (prove) your conjectures in your study journal.

