

INVESTIGATION 2: MIDPOINTS AND DIAGONALS OF QUADRILATERALS

Conclusion 3

What do you observe about the four side lengths?

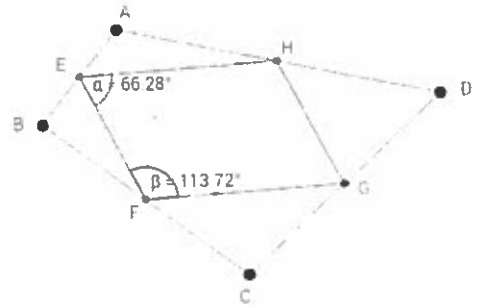
Opposite sides are parallel
and equal length

Move the vertices A, B, C and D around. Does the relationship still hold?

Yes.

What kind of quadrilateral is EFGH? (You could measure a pair of adjacent interior angles to confirm your conclusion.)

parallelogram



Conclusion 4

What do you observe about those measurements?

They are equal.

Move the vertices A, B, C and D around. Does the relationship still hold?

Yes.

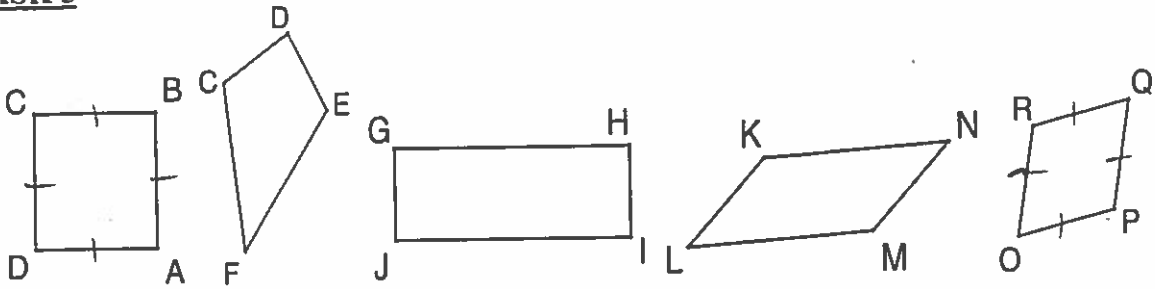
In Task 3, you should have observed that quadrilateral EFGH was a parallelogram. What can you conclude about the diagonals of a parallelogram?

The diagonals of a parallelogram bisect each other.

Are the diagonals of the parallelogram perpendicular (i.e. intersect at 90°)?

No.

TASK 5



square kite rectangle parallelogram rhombus

Name the quadrilaterals above.

Using the diagrams (and geogebra if needed) explore the answers to the following questions:

- Which of the quadrilaterals above would have diagonals that bisect each other?

- square
- rectangle
- parallelogram
- rhombus

- Which of the quadrilaterals above would have diagonals that are perpendicular?

- square
- kite
- rhombus

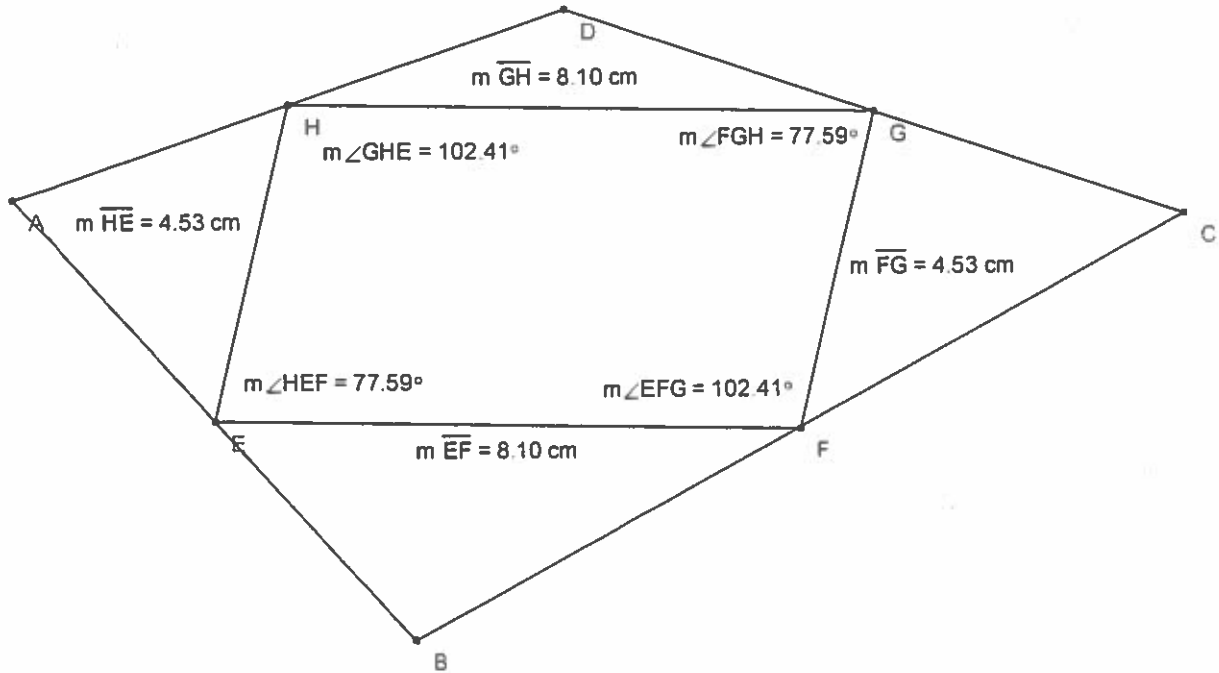
- Therefore, which quadrilaterals would have diagonals that are considered perpendicular bisectors (both bisect each other and intersect at 90° angles)?

- square
- rhombus

7.5 Midpoints and Diagonals in Quadrilaterals

SUMMARY:

1. Joining the midpoints of the sides of any quadrilateral produces a parallelogram.



2. The diagonals of a parallelogram bisect each other.

$$\begin{aligned} EA &= 5.40 \text{ cm} \\ EC &= 5.40 \text{ cm} \end{aligned}$$

$$\begin{aligned} ED &= 2.81 \text{ cm} \\ EB &= 2.81 \text{ cm} \end{aligned}$$

