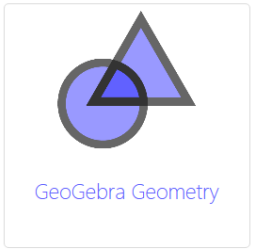
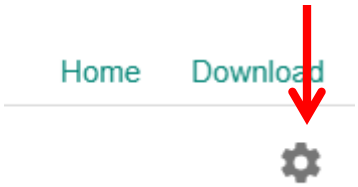
INVESTIGATION 2: DIAGONALS AND MIDPOINTS OF QUADRILATERALS

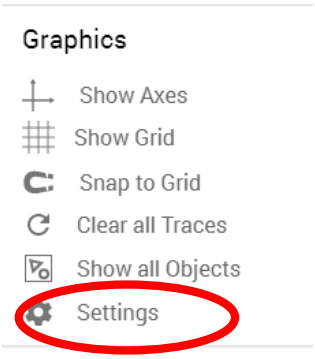
SET UP

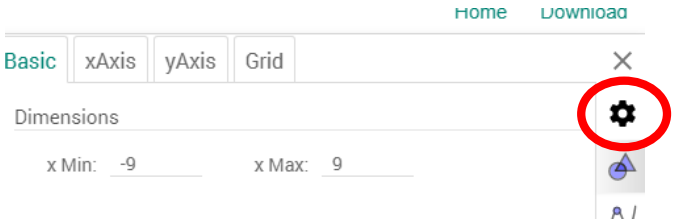
Go to Geogebra.org
Select Geogebra Geometry

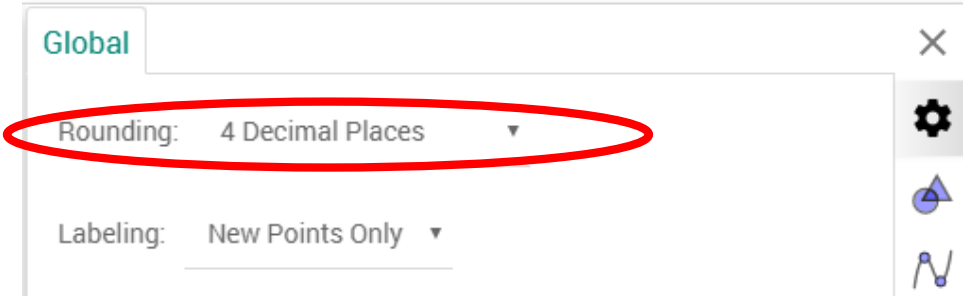


Change the setting so that values are rounded to 4 decimal places. From the right hand side click on the settings tool





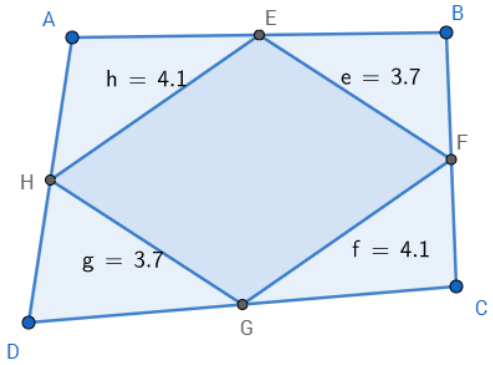




TASK 3

Use the  to construct quadrilateral ABCD.
Remember to click somewhere for A, then B, C and D, then click A again to complete the quadrilateral.

Recall you can remove or change labels by using the label tool under the Edit menu.



Then use the  icon and select "midpoint or center" to construct the midpoint of each side of the quadrilateral.
Then using the polygon tool, construct a quadrilateral that joins the four midpoints EFGH.

Click and drag each of the four side lengths of the new quadrilateral from the steps menu  on the left onto the screen so you can see them better.

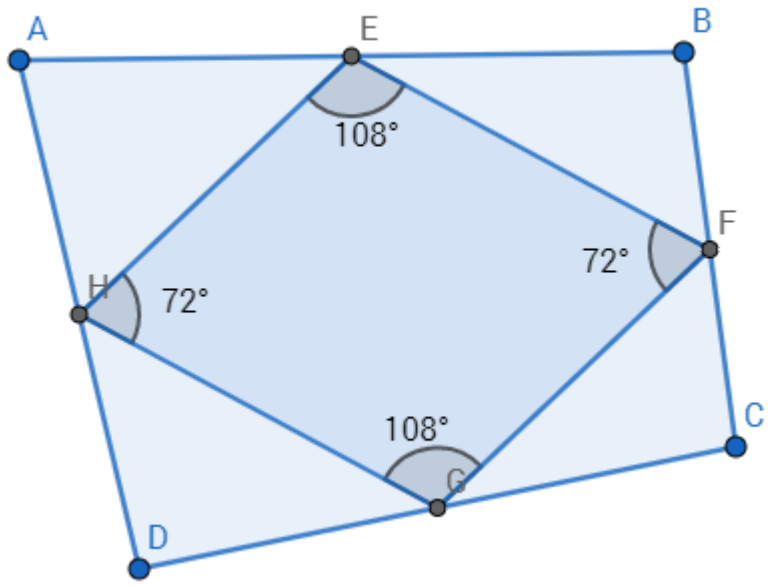
e : Segment (E, F, q2)
→ 3.7

f : Segment (F, G, q2)
→ 4.1

g : Segment (G, H, q2)
→ 3.7

h : Segment (H, E, q2)
→ 4.1

Use the measure tool to measure the interior angles of EFGH



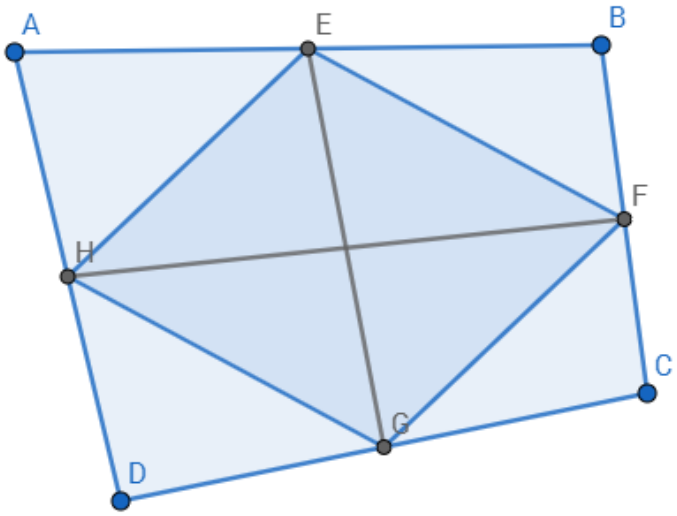
Conclusion 3

Complete the conclusion on the handout

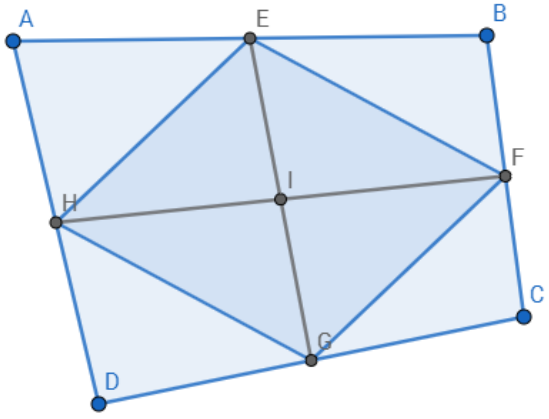
Keep your drawing from Task 3 to complete Task 4.
You may delete the angle measures.

TASK 4

Under the Basic tools select  icon on the toolbar. Construct the diagonals of EFGH, by selecting point E and G, then connecting point F and H with another line segment.

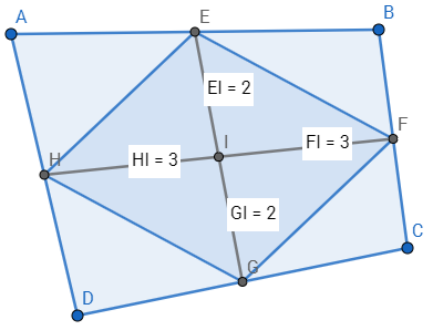


Use the intersection (at the bottom of the tools menu click on MORE, then go to the points menu) tool  to construct a point at the intersection of the two diagonals



Use the "Distance or Length" option 

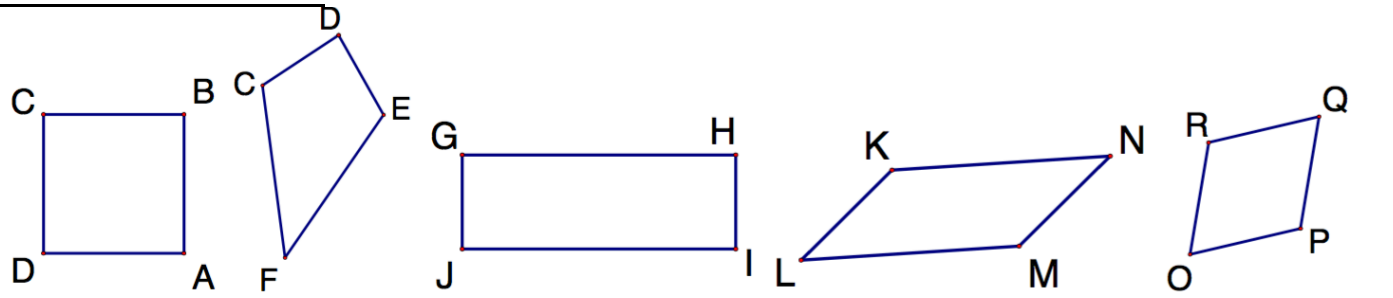
to measure the distance from each of E,F,G, and H to the point in the middle (I). (i.e. length of EI, FI, GI and HI).



Conclusion 4

Complete the conclusions on your handout

TASK 5 – On handout



_____ _____ _____ _____ _____

Name the quadrilaterals above.

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

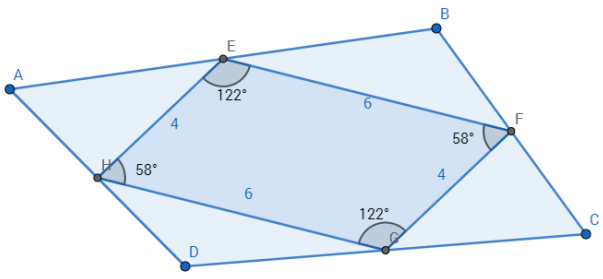
- Which of the quadrilaterals above would have diagonals that bisect each other?

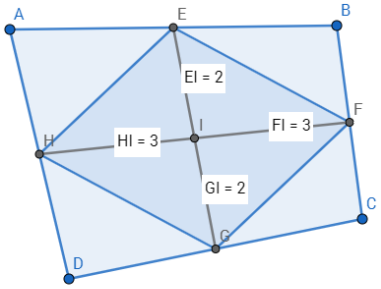
- Which of the quadrilaterals above would have diagonals that are perpendicular?

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

SUMMARY:

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





2. The diagonals of a parallelogram _____ each other.