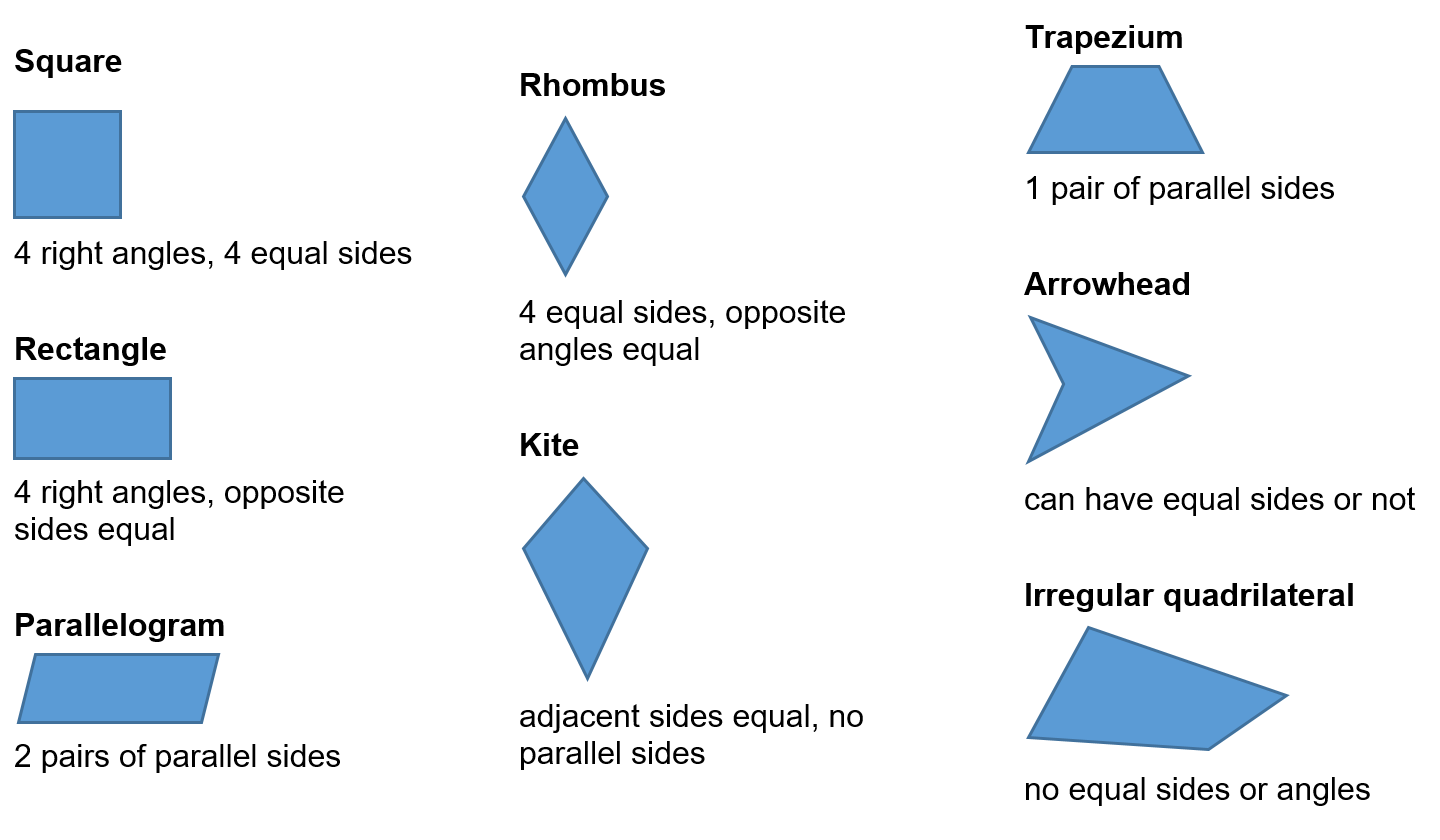
 Do quadrilaterals tessellate?

Your investigation

During this activity, you will investigate whether **all** quadrilaterals tessellate and justify your conclusion.

Part A – Testing quadrilaterals

By drawing at least 9 duplicates for each quadrilateral below, attempt to tessellate the following quadrilaterals.



Clearly show how each shape may tessellate both vertically and horizontally across your page. You may find it easier on square dotted paper.

Part B – Testing regular polygons

Three regular polygons tessellate. On isometric paper, show which three tessellate and why?

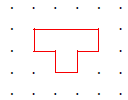
Extension

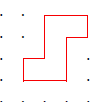
Can you explain why the other regular polygons do not tessellate?

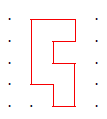
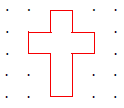
Part C – Testing irregular polygons

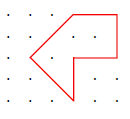
These irregular shapes tessellate. On square or isometric dotted paper, choose at least one of each type and show how they tessellate. Aim to cover half a side with your shape.

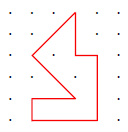
Square dotted paper



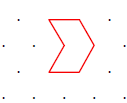


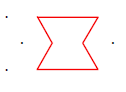




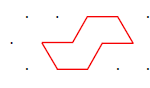


Isometric dotted paper

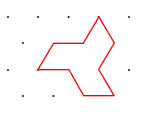












Extension

Some regular polygons do not tessellate perfectly; however, the gaps can be filled by another regular polygon. This is called a semi-regular tessellation.

Which regular polygons create a semi-regular tessellation? Can you create one?

Outcomes

* Classifies, describes and uses the properties of triangles and quadrilaterals, and determines congruent triangles to find unknown side lengths and angles MA4-17MG
* Identifies and uses angle relationships, including those related to transversals on sets of parallel lines MA4-18MG

Appendix 1 – Square dotted paper

You can access square dotty paper at NRich – <https://nrich.maths.org/content/id/8506/dottygrid10mm.pdf>

Appendix 2 – Isometric dotted paper

You can access isometric dotty paper at NRich – <https://nrich.maths.org/content/id/6445/Dotty%20paper.pdf>