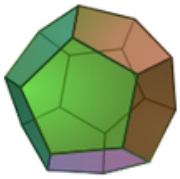
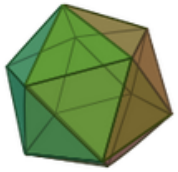
Something to make

Platonic Solids

Explore the platonic solids by making your own octahedron and dodecahedron

You will need: Nets, scissors, glue, coloured pencils or crayons

Tetrahedron	Cube	Octahedron	Dodecahedron	Icosahedron
Four faces	Six faces	Eight faces	Twelve faces	Twenty faces
				

The **prefixes** come from the Greek words for the numbers: **Tetra = 4, Octa = 8** and so on. **A cube** could also be called a **hexahedron!**

A **Platonic** solid is a **3-D shape** where:

- each face is the **same regular polygon;**
- the same number of polygons meet at each **vertex (corner)** of the shape.

Only the five shapes shown in the illustration are possible!

You can read more about the Platonic solids HERE:

Or watch these short videos on YouTube:

- BBC
- Fantastikos Mathematikos

Making platonic solids

We are going to use the nets on the next pages to make our own **octahedron** and **dodecahedron**!

Construction Tips

If possible, print these templates on card or thick paper. They can also be printed on normal paper, they just may be a bit 'floppy'.

Print them twice – it usually takes two tries to get the folding and gluing right!

After cutting out the shapes, you need to fold neatly along the dashed lines.

To make folding easier with card, you can *score* along the lines before folding.

After folding, carefully glue the tabs one at a time.

Octahedron challenge

Colour each of the triangles before folding: Use one colour for each triangle, so that when you fold up the **octahedron** alternate faces are always a different colour.

What is the **minimum** number of colours you need?

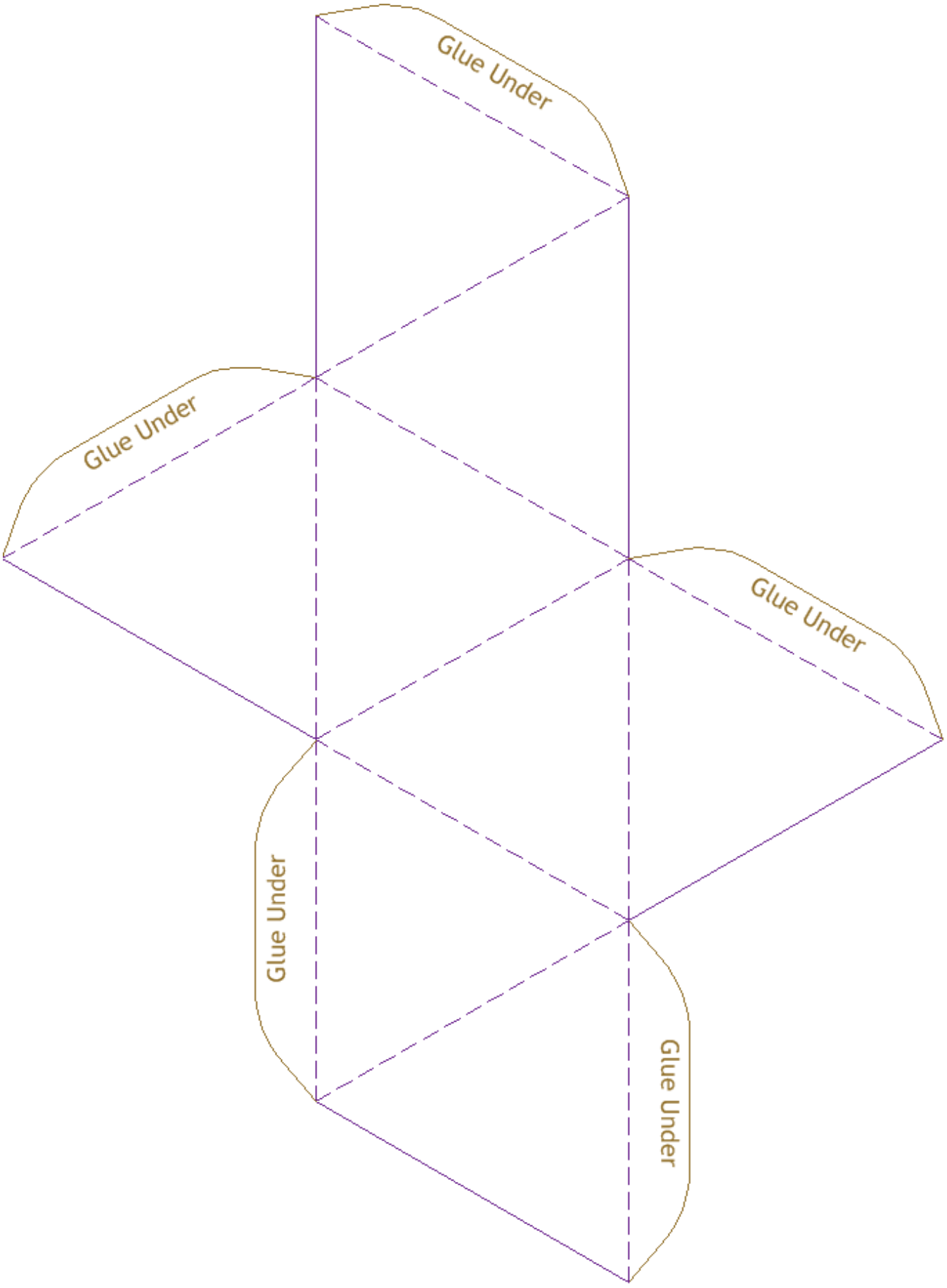
Dodecahedron challenge

Colour each of the pentagons before folding.

What is the **minimum** number of colours you will need so that, when folded up, no two adjacent faces are the same colour?

If you get stuck with these puzzles, you can read about them and find solutions from nrich.maths.org HERE.

Octahedron net



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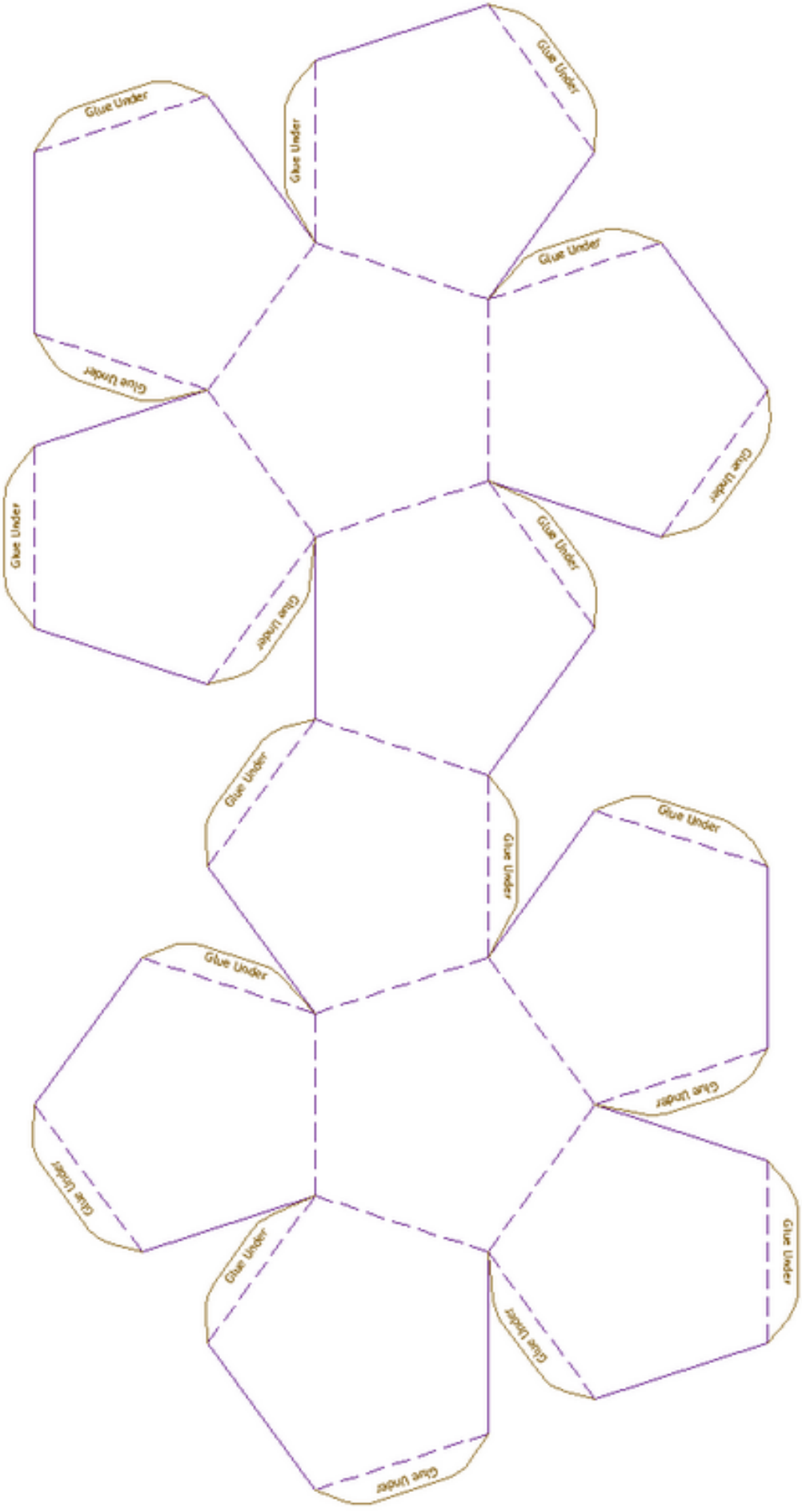
Dodecahedron net



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