

maths-net-tool

A simple, dyslexia-friendly guide to help learners explore, fold, and understand 3D shapes and 2D nets.

1. How to Open maths-net-tool

- 1 **Open the file:** Double-click `maths-net-tool.html` or `index.html` in your web browser.
- 2 **No internet needed:** `maths-net-tool` runs completely offline on your computer, tablet, or interactive school whiteboard.

2. Moving & Folding in 3D

You can look at any shape from any angle using your mouse or fingers:

Rotate View

Click and drag (or 1 finger)

Move / Pan

Right-click and drag (or 2 fingers)

Zoom In / Out

Mouse scroll wheel (or pinch)

Fold the Net

Drag the Fold Progress slider

Animate Folding

Click ▶ Play or ⏸ Pause

Automatic Pause

Pauses when you switch tabs

3. The Three Workspaces in maths-net-tool

Use the buttons at the top to choose what you want to do:

Mode 1: Explore Shapes

Look at 15 different 3D shapes and nets to see how they fold.

- **Pick a shape** from the list on the left (Cubes, Prisms, Pyramids, or Invalid nets).
- **Fold it:** Move the slider or click ► **Play** to watch the 2D net wrap into a 3D solid.
- **Check properties:** Read the count of faces, edges, and vertices.
- **Error check:** If a net is invalid, overlapping faces turn bright red so you can clearly see the mistake.

Mode 2: Draw a Net

Design your own net on a grid and test if it makes a cube.

- **Click squares** on the 7×7 grid board to place exactly 6 squares.
- Click **Test Fold into 3D Cube** to see your net in 3D.
- **Check your net:** If valid, it folds into a cube. If invalid, the colliding faces turn red!

Mode 3: Shape Matcher

A puzzle game where you build a net for a target solid.

- **Choose a shape** using the < and > arrows.
- **Add faces:** Click faces in the tray or drag them onto the workbench.
- **Snap edges:** Drag faces close together and they snap together along matching edges.
- **Need help?** Click  **Clue** to see valid net layouts.
- **Fold:** Switch to **3D Fold View** and press ► **Play!**

4. Helpful Exam Tools in maths-net-tool



Opposite Faces Quiz: Practice working out which face is opposite another without folding. This is a common Functional Skills exam question.



Surface Area Calculator: Type in your measurements (length, width, height) to see how the area of each face adds up to the total surface area.



Print Net Templates: Create clean A4 printouts (1 or 2 nets per page) with no black borders, ready to cut out and fold in class.

5. Four Key Rules for Maths Exams

Remember these rules when deciding if a net will fold into a shape:

Rule 1: Count the Faces

A cube must have 6 faces. A triangular prism has 5 faces. A square-based pyramid has 5 faces. A tetrahedron has 4 faces.

Rule 2: No 2×2 Blocks

If you see 4 squares forming a 2×2 square, they will always overlap and can never fold into a cube.

Rule 3: Opposite Faces Never Touch

Faces that are opposite each other in 3D never share an edge on the flat net. There is always at least one face between them.

Rule 4: The 1-4-1 Cross Pattern

A row of 4 faces with 1 face on each side will always fold into a valid cube or cuboid.