Using Tinkercad

Developing Level Guide

A classroom-friendly guide for students and educators ready to move beyond the basics of drag-and-drop design.

Skill level	Estimated time	Best for	Main focus
Developing	45 to 75 minutes	Upper primary to secondary	Accurate modelling and simple STL export

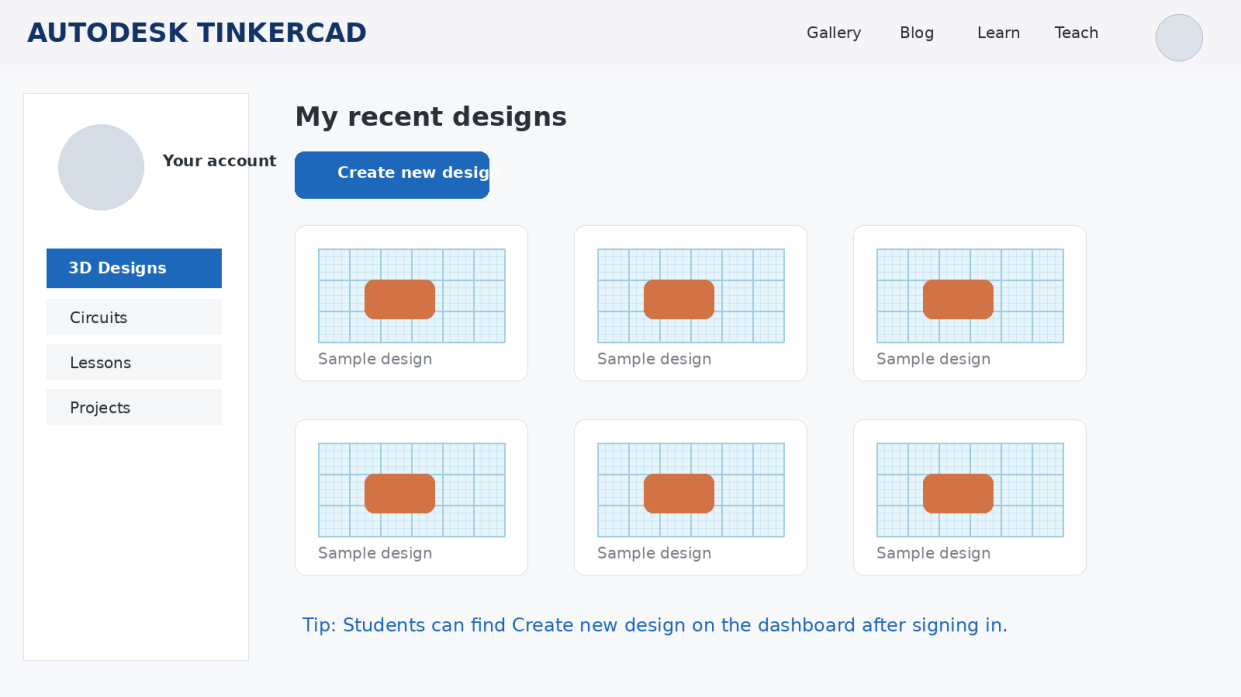
Overview

This guide is designed for learners who already know how to drag shapes onto the workplane and now want to design with more control. The focus is on accuracy, alignment, simple cut-outs, clean grouping, and exporting a model that is ready for printing.

Tinkercad describes itself as a free web app for 3D design, electronics and coding, and its 3D Design area highlights tools such as Align and simple shape-based modelling.

1. Starting a new design

After signing in, students usually begin from the dashboard by choosing Create new design. Encourage learners to rename the file straight away so their work is easy to find later.



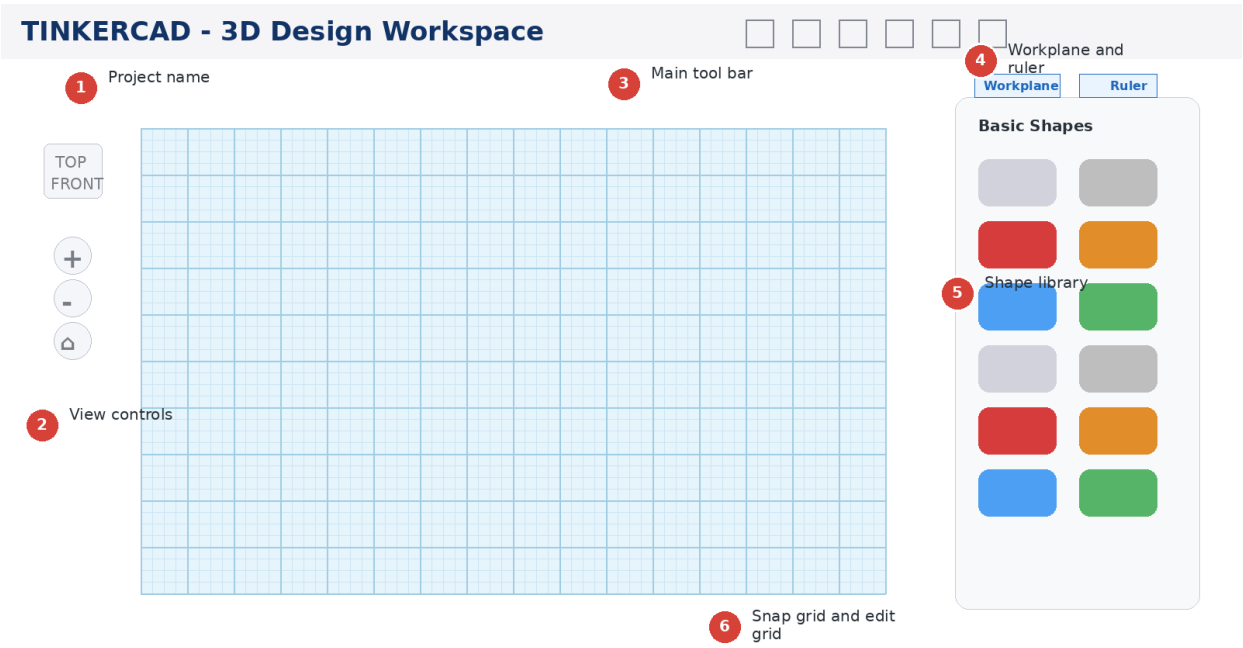
Dashboard-style view showing where students start a new design.

Good classroom habit

- Rename the design before building anything.
- Use a simple naming pattern such as class-task-student.
- Save progress regularly and keep projects small for the first print.

2. Knowing the workspace

The 3D Design workspace is built around a large workplane, a view cube for changing camera angle, a top toolbar, and a shape library on the right. These parts matter because developing-level modelling depends on moving around the scene confidently and using the correct tool at the right time.



Illustrated workspace tour showing the main areas students should learn first.

3. Developing-level tools that matter most

Tools for placement and measurement

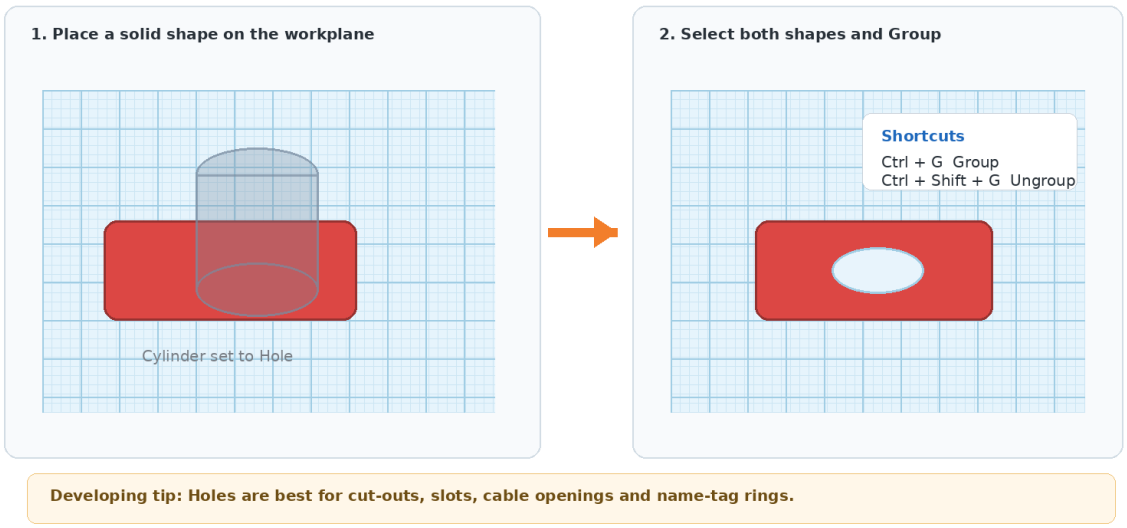
- Align - centres or lines up two or more shapes quickly.
- Ruler - shows dimensions and spacing; Tinkercad's ruler tip says pressing R places it on the workplane.
- Duplicate - repeats a part so learners do not rebuild the same feature.

Tools for editing shapes

- Hole - turns a shape into a subtractive cutter.
- Group / Ungroup - combines solids and holes into a finished model, or reopens them for changes.
- Workplane - helps build on the top or side of another object more neatly.

4. Holes, grouping and clean cut-outs

A common move at this level is to place a second shape as a Hole and then group it with the main solid. This is how students make cable openings, label slots, hanging loops and simple mechanical clearances.



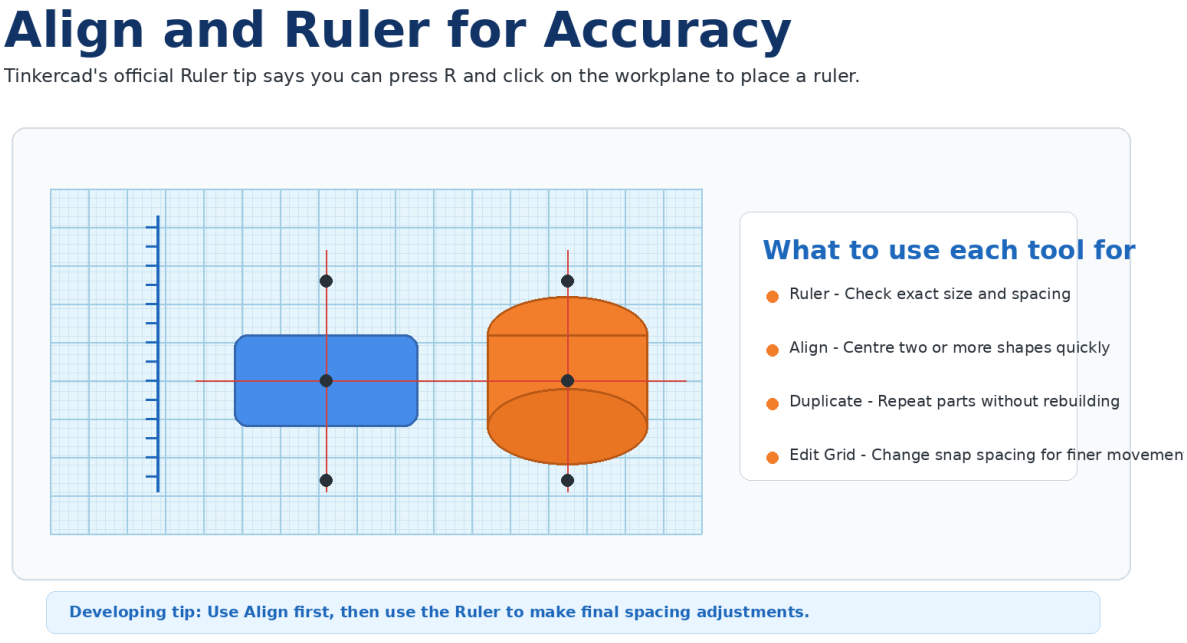
Illustrated example of using a hole shape and then grouping to create a clean cut-out.

Teacher note

If the result looks wrong, ask students to ungroup and inspect the shapes again. In many cases the hole is either not fully overlapping the solid, or the wrong objects were grouped together.

5. Align and ruler for more accurate models

Developing-level learners should begin moving away from 'eyeballing' placement. Align is ideal for centring objects. The Ruler helps with exact size, distance and spacing. Using the two together gives cleaner results and far fewer failed prints.



Illustrated example showing how align points and a ruler improve accuracy.

6. Guided mini project - personalised desk tag

This short project is useful in classrooms because it prints quickly, combines several tools, and gives a clear finished result. Students can create a name tag, tray label, table number or equipment tag using the same method.

Four-step mini project that uses box, text, hole and export skills.

Step 1 - Make the base

Drag in a Box shape and size it to roughly 80 mm x 30 mm x 4 mm. Smaller tags print faster and are easier for first tests.

Step 2 - Add text

Drag in a Text shape, type a name or code, and raise it about 1.5 mm to 2 mm above the base. Use Align so the text sits neatly in the centre.

Step 3 - Add a simple hole if needed

Place a Cylinder, switch it to Hole, move it to one end of the tag, and group. This creates a ring hole for hanging or key tags.

Step 4 - Check the design

Rotate the model, zoom in, and look underneath. Make sure no letters are floating and the hole cuts all the way through.

Step 5 - Export

When the model is correct, select the finished shape and export it as STL for slicing and printing.

7. Quality checklist before exporting

Check the model	Check the workspace
□ All parts touch and form one printable object	□ Design has a clear file name
□ Any hole goes fully through the solid	□ Important sizes were checked with Ruler
	□ Objects were centred with Align

□ Text is thick enough to print clearly □ Nothing is floating above the base	□ The final object was selected before export

8. Common mistakes and easy fixes

Problem	What it usually means	Quick fix
Text is not visible on the final print	The text is too thin, too shallow, or grouped incorrectly	Increase text height, re-align it, and check it overlaps the base before grouping.
Hole did not cut through	The hole shape was not deep enough or was not grouped with the solid	Make the hole taller, select both shapes, then group again.
Parts are slightly off-centre	Objects were moved by eye instead of aligned	Select both shapes and use Align first, then fine tune with Ruler.

9. Extension challenge

After the desk tag works, challenge students to improve it. They might duplicate small shapes to make a repeating border, add a recess using a Hole, or create a matching tag in a second size. This turns a simple task into a short design iteration cycle.

10. References used to check current interface details

Tinkercad official site and public learning pages were checked for current descriptions of the platform and 3D Design features. Public tutorials and reference pages were also used to cross-check workspace layout, hole/group behaviour, and the align tool.

- Tinkercad: official home page and Learn / 3D Design pages.
- Tinkertip: R is for Ruler - notes that pressing R places a ruler on the workplane.
- Micromelon Robotics guide to making attachments in Tinkercad - used to cross-check workspace and tool explanations.
- Maker Pro Introduction to Tinkercad - used to cross-check interface layout, holes, grouping and align behaviour.