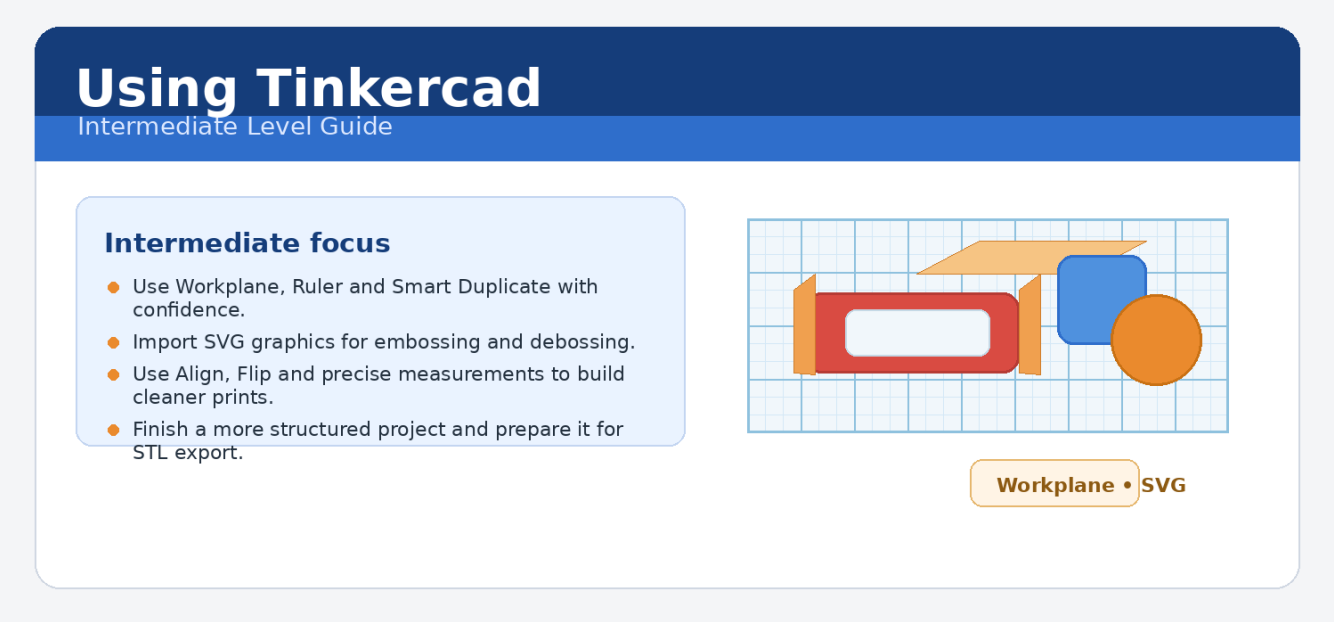


Using Tinkercad

Intermediate Level Guide

A classroom-friendly guide for learners who are ready to move beyond the basics and create more deliberate, more accurate, and more reusable 3D designs.

Skill level	Estimated time	Best for	Main focus
Intermediate	60 to 90 minutes	Upper primary to secondary	Workplane, ruler, duplicate, SVG import, clean print prep

Overview

This guide is designed for learners who already know how to create, move, resize and group simple shapes in Tinkercad. At intermediate level, the goal shifts from “can I make it?” to “can I make it cleanly, accurately and in a way that can be repeated?” Students begin using more deliberate measurements, cleaner alignment, imported graphics, repeated features and more reliable print preparation.

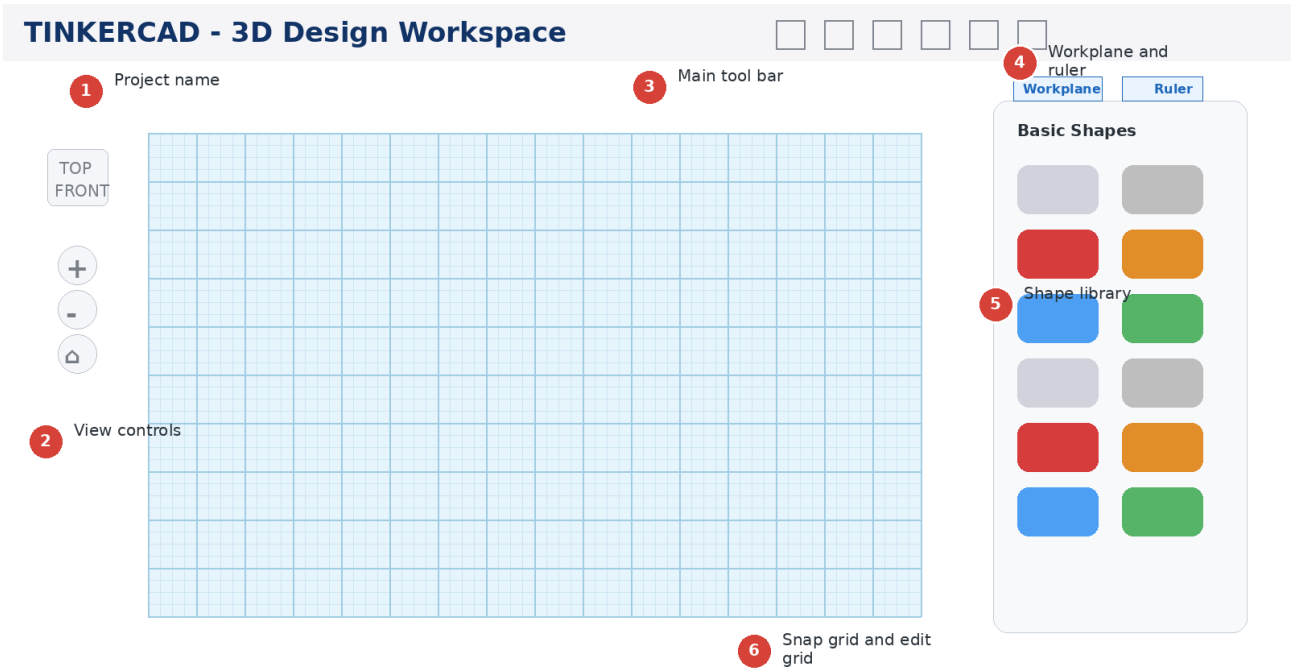
1. What “intermediate” means in Tinkercad

At this stage, students should be able to navigate the workspace comfortably and build basic parts without guessing every move. Intermediate work adds precision and intent. Learners begin using Workplane for building on surfaces, Ruler for accurate spacing, Duplicate for repeated features, and imported SVG graphics for cleaner labels or icons. Tinkercad’s glossary also notes that STL is commonly used for 3D printing, while SVG is the standard vector format for laser cutting and flat graphics workflows.

- Uses the camera and workspace confidently
- Measures and aligns instead of eyeballing
- Builds repeated features with Duplicate
- Imports or places graphics with a clear purpose
- Checks a model before exporting for print

2. Start with stronger setup habits

A simple setup routine saves time later. Rename the design immediately, leave the work in millimetres unless a project requires inches, and zoom/pan before placing shapes so the first object is built deliberately rather than dropped at random. When learners need more exact placement, it is worth switching views and checking the work from top, front and side rather than relying on perspective view alone.

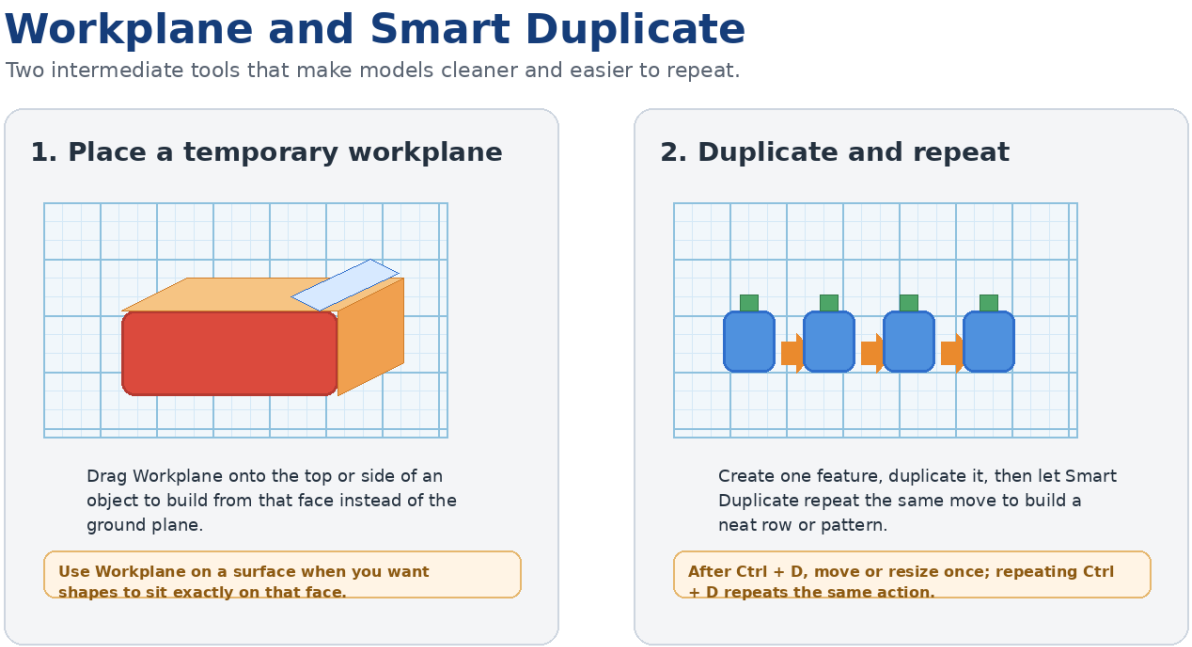


Illustrated workspace tour showing the key areas learners should recognise before moving into intermediate skills.

Teacher note: Intermediate learners still benefit from short reminders such as rename first, save often, and check the design from more than one angle before grouping.

3. Intermediate tools that matter most

Tools for precision and placement	Tools for detail and repetition
• Align to centre objects on the X, Y or Z axes • Ruler to enter exact size, position and spacing values • Workplane to build on a top, side or angled face • Edit Grid / snap settings for coarse or fine movement	• Duplicate and Smart Duplicate to repeat features quickly • Flip to create symmetry before grouping • Group and Ungroup to test clean cut-outs and fit • Shape Generators for more adjustable curves and profiles

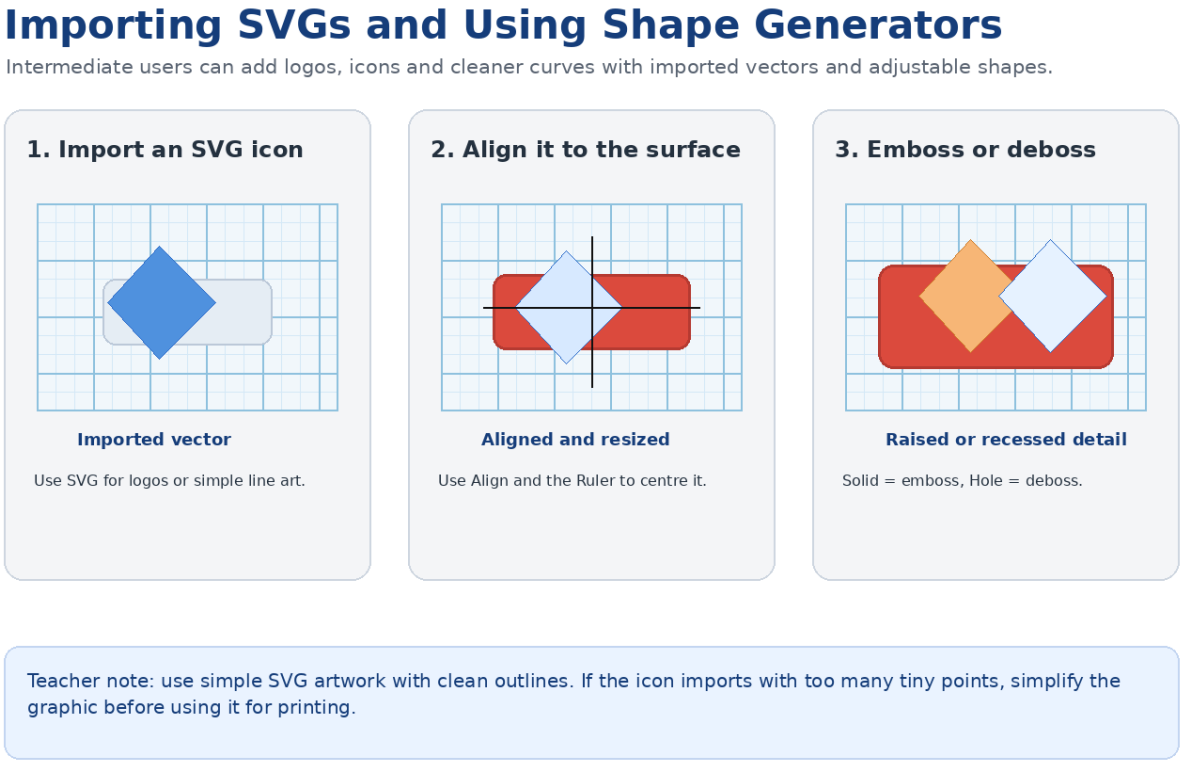


Using Workplane to create from a surface and Smart Duplicate to repeat a feature are two of the biggest jumps from basic to intermediate modelling.

Tinkercad's official tips page describes Workplane as a way to define a new work surface on any face, and the glossary describes Duplicate as a shortcut-driven copy action. In practice, these two tools reduce the amount of rebuilding a learner has to do. They are especially useful for trays, labels, classroom organisers, badges, simple mechanical parts and any design that uses repeated holes or repeated supports.

4. Importing SVG graphics and using Shape Generators

Intermediate learners can start adding cleaner visual details by importing SVG graphics or by using Shape Generators with more adjustable handles than the basic shapes. SVGs are useful for initials, school symbols, icons and simple logos. Keep the artwork simple, align it carefully, then decide whether it should sit proud of the surface (emboss) or be pushed into the surface as a Hole (deboss).



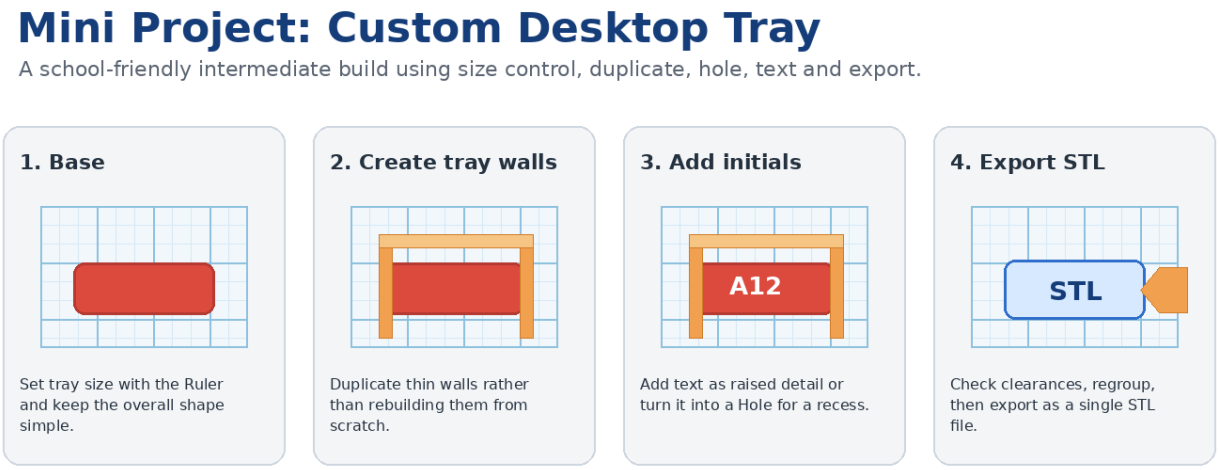
A simple SVG workflow: import the graphic, align and resize it, then choose emboss or deboss depending on the final effect you want.

Useful shortcuts and actions to remember

Action	When to use it
Ctrl + D	Duplicate a part and repeat the last change to create a row or pattern.
Ctrl + G / Ctrl + Shift + G	Group shapes into one part, or ungroup to inspect how a cut-out was built.
W (Workplane)	Place a temporary work surface on a face when you want to build from that surface.
Ruler tool	Drag the ruler onto the workplane to read exact size, spacing and position values.
Export	Send the finished design out as STL for 3D printing, or use other export options when needed.

5. Guided mini project - custom desktop tray

A desktop tray is a good intermediate project because it combines exact dimensions, duplicated walls, internal spacing, optional text, and a final export that produces one printable part. It is practical for school use and easy to scale up or down for different printer bed sizes.



Project storyboard for a simple desktop tray with repeated walls and optional text detail.

Step 1 - Base: Make a box for the floor of the tray and use the Ruler to set the overall length, width and thickness.

Step 2 - Walls: Create one wall, duplicate it for the opposite side, then add the front or internal divider only when the spacing is correct.

Step 3 - Details: Add initials, a simple school icon, or a label. Decide whether the detail should be raised or recessed.

Step 4 - Review: Check the model from top, front and side view. Ungroup if something looks wrong, then regroup only when the model is clean.

Step 5 - Export: Confirm that the design is one printable object and export an STL for slicing.

Teacher note: If students rush ahead, pause and ask them to justify every measurement they entered. Intermediate work is about deliberate choices, not just more features.

6. Exporting and checking before print

Before exporting, students should look for the most common “intermediate-level” problems: tiny decorative details that will not print clearly, walls that are too thin, grouped shapes that hide an error, or repeated parts that are slightly out of alignment. A short checking routine prevents many failed prints.

Quick checklist before exporting

- □ The whole model is on or above the workplane
- □ No shapes are floating in space by accident
- □ Walls, slots and text still look practical for your printer
- □ Repeated parts line up when checked from more than one view
- □ The final export will be one clean STL file

Common mistakes and easy fixes

- Imported icon looks jagged -> simplify the SVG before using it
- Grouped hole did not cut -> ungroup and check overlap
- Repeated row drifts sideways -> reset with Align and Duplicate again
- Design looks correct only in perspective -> check orthographic/top/front views

Reference notes used for this guide

- Tinkercad homepage and 3D printing curriculum pages for general platform purpose and classroom use.
- Tinkercad glossary pages for definitions of Align, Group, Hole, Duplicate, Ruler, Workplane, SVG, STL, Shape Generator and view modes.
- Tinkercad tips and help articles for Workplane, Smart Duplicate and export options.