

Mathematical 3D Printed Exhibits

DIY Creation Kit



Build your City

Learning Objectives:

- Know how to manipulate simple shapes using tinkercad.com
- Understand how 3D printers work and the limitations of 3D printing

Level of Difficulty: Level 1

List of Materials Required:

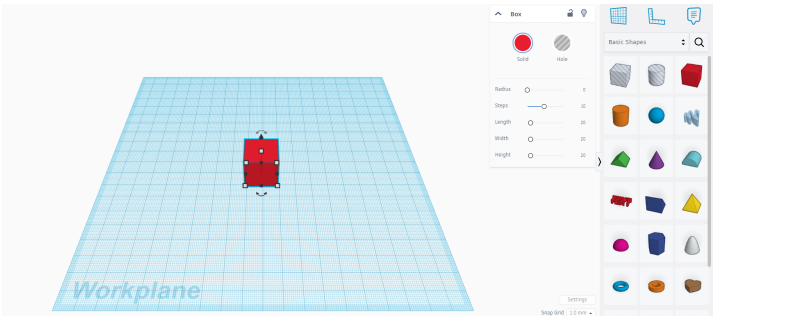
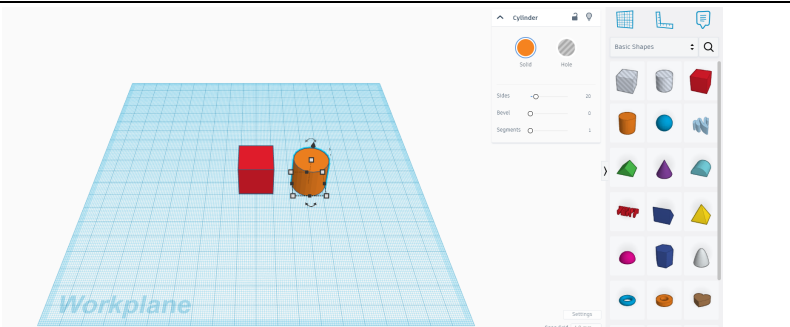
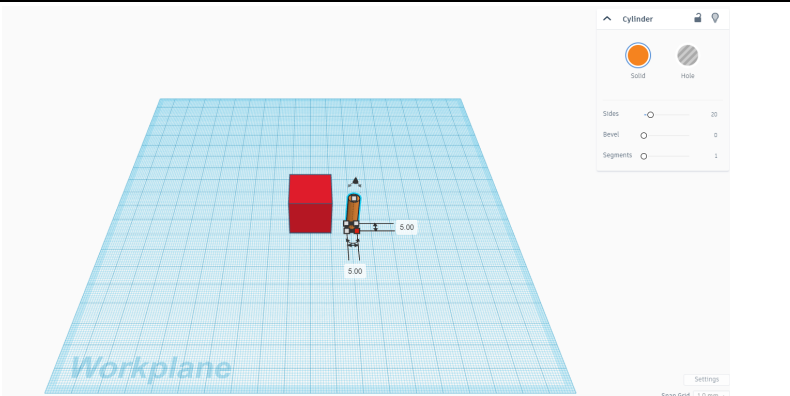
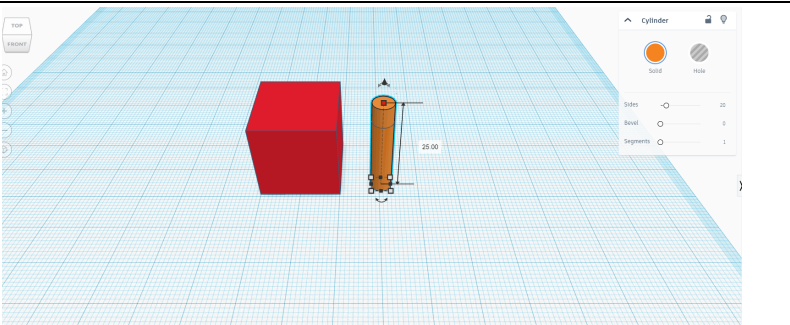
- A 3D printer
- 2 or 4 colours of filament for the 3D printer
- A cutter to make the hole

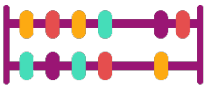
3D Modelling Skills Needed:

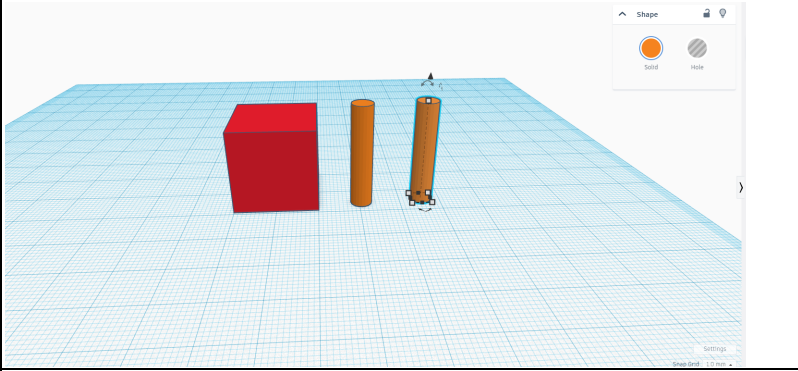
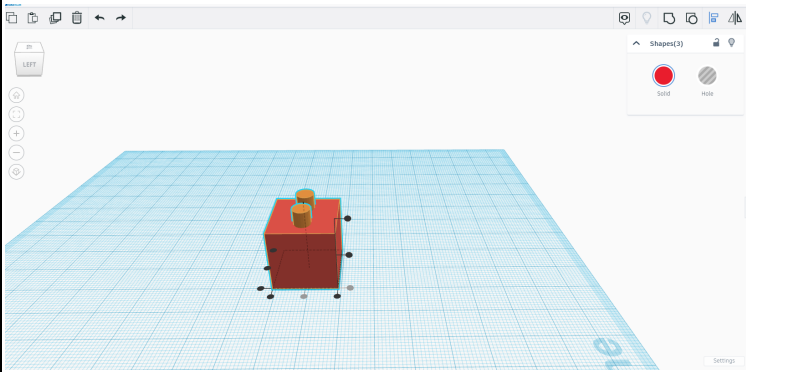
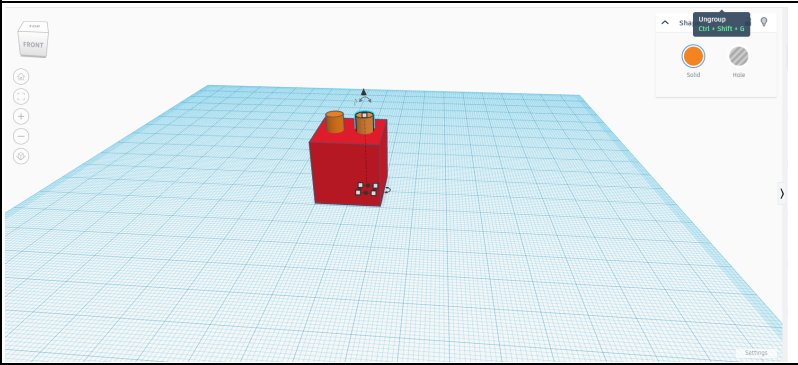
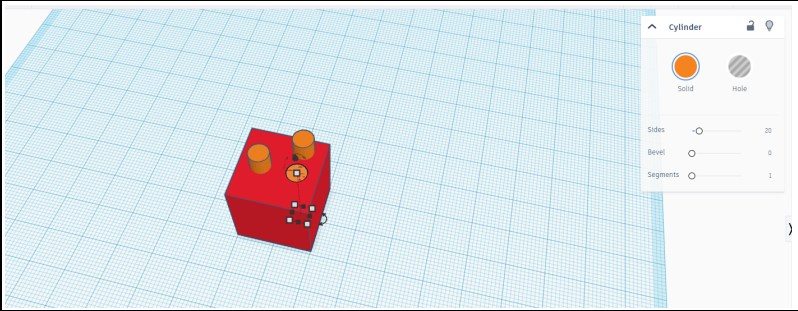
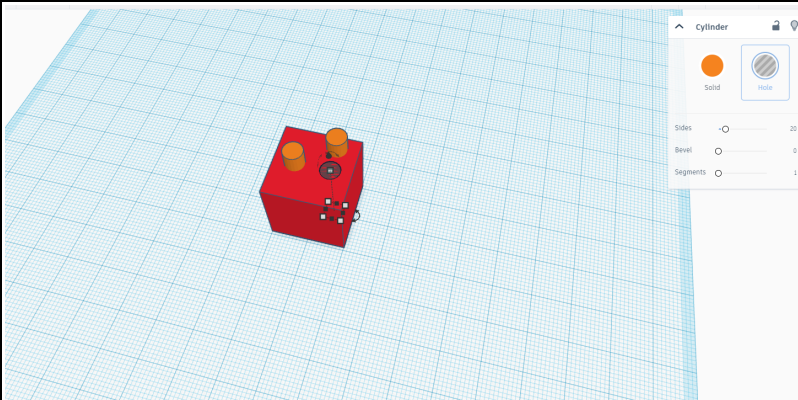
- Know how to move an object in the workplane
- Know how to create a circle
- Know how to create a hole
- Know how to resize an object
- Know how to group objects
- Know how to align objects

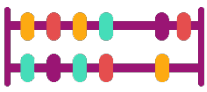


Step-by-step 3D Modelling

<p>Step 1</p>	<p>Select the box shape and put it on the workplane.</p>	
<p>Step 2</p>	<p>Select the cylinder shape and add it to the workplane.</p>	
<p>Step 3</p>	<p>Adjust the dimensions of the cylinder to 5mmx5mm.</p>	
<p>Step 4</p>	<p>Adjust the height of the cylinder to 25mm and group the cylinder.</p>	





Step 5	Copy and paste the cylinder.	
Step 6	Put both cylinders in the box and use the align tool to centre them.	
Step 7	Select each cylinder and ungroup.	
Step 8	Move slightly each cylinder one by one and select the remaining part of the cylinder in the box.	
Step 9	Make the remaining part of the cylinder into the box from solid to hole.	



Step 10	Move the solid cylinders back into their position. Use the align tool to help you with that.	
Step 11	Adjust the size of the top cylinders to be 0.2mm smaller for the assembly to fit.	
Step 12	Select all items and group them.	
Step 13	Change the colour of the box to any colour you would like or keep it the same. You can also print it in a different colour each time.	

Creation of the Exhibit

Assemble/disassemble and store the exhibits, accompanied by the corresponding time-frames

<p>Step 1</p>	<p>Print and laminate the Build Your City Sheet.</p>	 <p>The image shows a template for a 'Build Your City' sheet. It features a grid of six empty boxes at the top. Below the grid, the text 'Build Your City' is printed next to a small city skyline icon. Underneath, there are six purple circles containing the numbers 5, 2, 7, 4, 9, and 3, each corresponding to a box in the grid above.</p>
<p>Step 2</p>	<p>Print the building blocks.</p>	 <p>The image shows the physical building blocks used for the exhibit. At the top, a row of white plastic blocks with numbers 1 through 10 is shown. Below this, two smaller images show individual blocks: one is a 2x2 square block with two studs on top, and the other is a 2x2 square block with two studs on top and a notch on the bottom edge.</p>

Design Map

