

**Cambridge Public Library**  
**Learning Circle: Introduction to 3D Printing**  
**Week 1**

If you have not signed up for Lynda yet:

- Go to **[camb.ma/lyndacpl](http://camb.ma/lyndacpl)**
- Enter your library card number and PIN, then your name and email address.

If you have not signed up for Tinkercad yet:

- Go to **[www.tinkercad.com](http://www.tinkercad.com)**
- Click **Sign Up** and follow the steps to create an account.

**Introduction** (6:00 - 6:20)

**Coursework** (6:20 - 7:40)

- Go to **[camb.ma/lyndacpl](http://camb.ma/lyndacpl)**
- Enter your library card number and PIN.
- Search for the course titled “Learning Tinkercad.”
- Watch the following chapters.

**Introduction**

- **Welcome**
- **Using the exercise files**

**1. Tinkercad Overview**

- **Introducing Tinkercad**
- **Learning the interface**
- **Navigating in Tinkercad**
  - Add 3 objects to your workplane.
  - Fit each object into view (select object and press “F” key).
  - Orbit around your objects (using right mouse button).
  - Pan across your workplane (ctrl + shift + drag).
- **Understanding orthographic perspective**
  - Switch your workplane to orthographic mode.
  - Switch your workplane back to perspective mode.
  - Delete all of your objects.
- **Setting up the grid**
  - Place an object in the workplane.
  - Change the snap grid to 5.0 mm.
  - Change the snap grid back to 1.0 mm.

## 2. Adding and Modifying Shapes

- **Adding and moving 3D shapes**
  - Move your object around the workplane using the arrow keys.
  - Move your object around the workplane by a x10 increment. (shift + arrow keys)
  - Move your object up in space (using the black cone).
  - Move your object up and down in space (using ctrl + ↑/↓).
  - Drop your object to the workplane (press “d” key).
- **Scaling and changing dimensions**
  - Change the width, length, and height of your object using the grips.
  - Resize your object while keeping the center of the object stationary (alt + drag).
  - Change the dimensions of your object back to 20 x 20 x 20.
  - Scale your object uniformly (shift + drag).
- **Using shape controls**
  - Change the dimensions and radius of your object using the shape controls.
  - Add another object to your workplane.
  - Lock your object (ctrl + l).
  - Hide your object (ctrl + h).
  - Unhide your objects (ctrl + shift + h).
- **Rotating 3D shapes**
  - Rotate one of your objects (using the curvy arrows).
  - Rotate one of your objects in 45° increments (shift + drag with curvy arrows).
  - Practice rotating your object on the other 2 axes.
- **Selecting strategies**
  - Add a third object to your workplane.
  - Select all the objects (using ctrl + a).
  - Select all the objects (using a bounding box).
  - Select 2 of the objects, one at a time (hold down shift + click).

## 3. Using 3D Tools

- **Using the workplane**
  - Open the workplane tool (press “w” key) and place it on top of one of your objects.
  - Drop another object on top of the first object.
  - Reset the workplane (drag + drop the workplane anywhere, or press “w” and click anywhere).
- **Measuring with the ruler**
  - Place a ruler on the workplane (press “r” key).
  - Set the midpoints of two objects 40 mm apart.
- **Grouping and ungrouping**
  - Place 3 objects onto your workplane and arrange them as the video shows.
  - Select all 3 objects. Copy and paste them and move them apart.
  - Group both sets of objects using the 2 methods shown.
- **Using hole shapes**
  - Create a cylinder with a hole in its center.
  - Create a crescent-shaped object.

**Group Expectations (7:40 - 7:50)**

- Do you want to work through activities as a group, with a partner, or on your own?
- Do you want to commit to doing work outside of the Learning Circle?

**Plus/Delta (7:50 - 8:00)**

- What is one thing that went well for you today?
- What is one thing that you would like to change for next week?