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# Designing with Tinkercad



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# Designing with Tinkercad: Create Simple 3D Models

Tinkercad is an intuitive and user-friendly 3D design platform. It's perfect for beginners, hobbyists, and students.

The platform enables the creation of 3D models, from simple shapes to complex designs.



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# What is Tinkercad?

Tinkercad is a free and easy-to-use 3D design and modelling software. It is an intuitive tool for beginners, offering a user-friendly interface and a wide range of features. It provides a browser-based platform, eliminating the need for software downloads and installations.

This software allows you to create various 3D models, including simple objects, complex designs, and even electronics circuits. It is used by hobbyists, educators, and professionals alike to create prototypes, visualisations, and even functional objects.



# Why use Tinkercad for 3D Modelling?

## User-Friendly Interface

Tinkercad's intuitive drag-and-drop interface makes it easy for beginners to learn.

## Wide Range of Tools

It offers a comprehensive set of tools for creating, modifying, and combining shapes.

## Beginner-Friendly

Tinkercad is ideal for learning the basics of 3D design without complex software.

## Free to Use

Tinkercad offers a free version with access to essential tools.



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# Signing up and Navigating Tinkercad

1

## Create an Account

Start by creating a free account on the Tinkercad website.

2

## Explore the Interface

Familiarize yourself with Tinkercad's intuitive interface. You'll find various tools and features for 3D modelling.

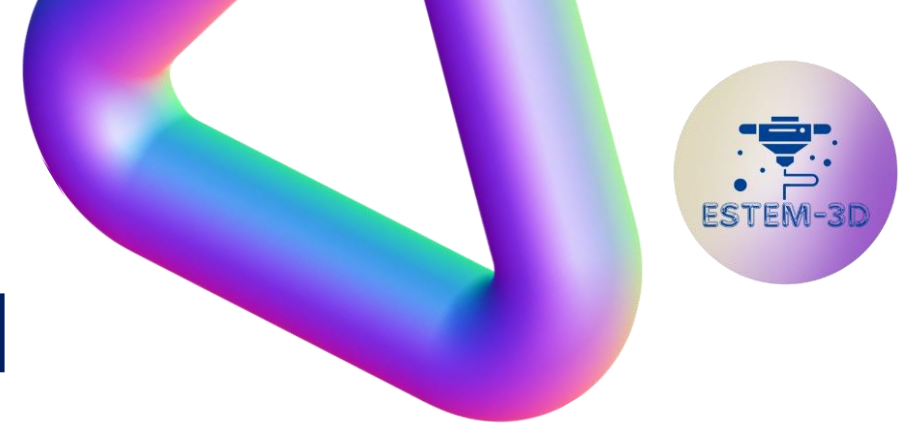
3

## Navigate the Workspace

The workspace provides a 3D grid where you'll create and manipulate your models.



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# Basic Tinkercad Tools and Shapes

## 1 Basic Shapes

Tinkercad offers a range of pre-made shapes including cubes, spheres, cylinders, cones and pyramids.

## 2 Tools

Tinkercad provides tools for adjusting, grouping, and manipulating shapes to create more complex objects.

## 3 Workplane

The workplane is the surface where users can place and manipulate shapes and objects.

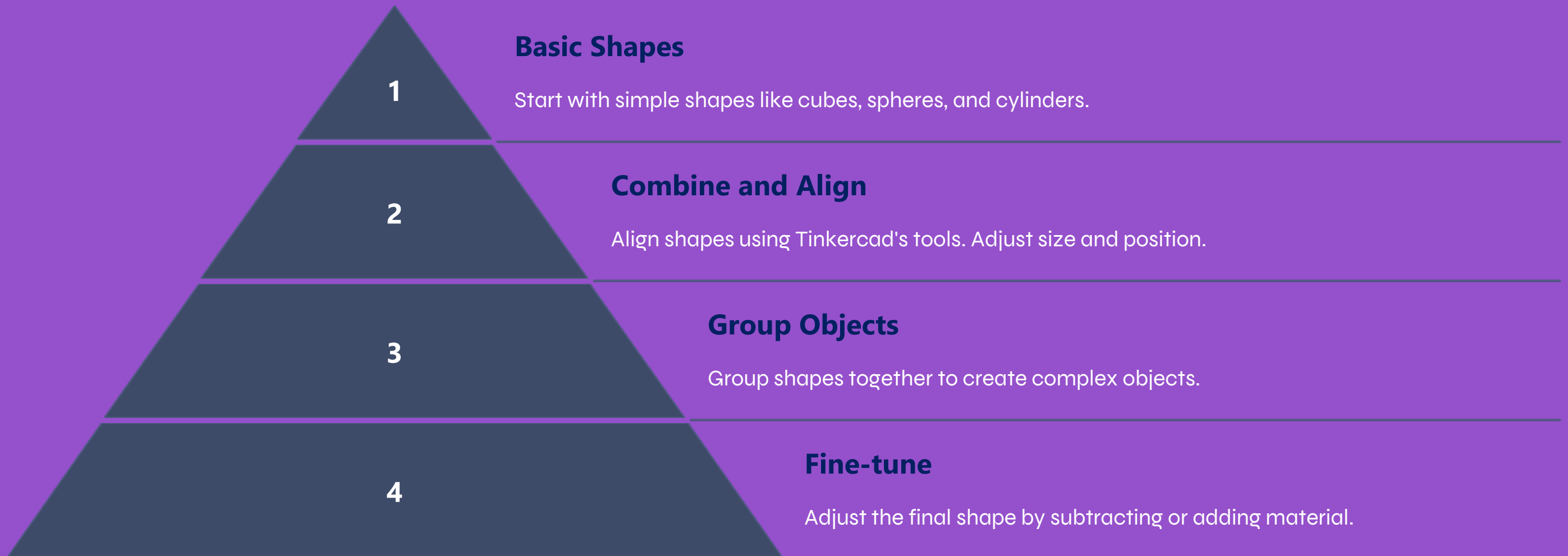
## 4 Hole Tool

The hole tool lets users create cutouts and create hollow objects.



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# Combining Shapes to Create Objects



Once you have created a few basic shapes, you can start combining them to create more complex objects. Tinkercad offers a variety of tools to help you align and group shapes, making it easy to create more detailed models.



# Aligning and Grouping Objects



1

## Align Objects

Use Tinkercad's alignment tools to perfectly position objects. These tools ensure that your objects are aligned correctly and evenly spaced.

2

## Group Objects

Group multiple objects together to treat them as a single unit. This is useful for moving, rotating, or scaling multiple objects at once.

3

## Combine Objects

Combine objects to merge them into a single object. This removes any unnecessary gaps or overlaps between the objects.



# Adjusting Size, Rotation and Position

1

## Size

Change object dimensions.

---

2

## Rotation

Spin objects around axes.

---

3

## Position

Move objects in 3D space.



These tools provide control over object scale, orientation and location.



Tinkercad allows for precise manipulation of objects.

# Adding Text and Images



## Adding Text

Tinkercad allows you to add text to your 3D designs. You can adjust the font, size, and colour of the text. This is useful for adding labels, branding, or any other kind of textual information to your models.



## Adding Images

You can import images to enhance your 3D models. Images can be used as textures or placed on a flat plane as a backdrop. This allows for a more immersive experience.

# Colouring and Texturing Objects



## Adding Colour

Use the Colour Palette in Tinkercad to apply a single colour to a whole object or to select specific faces.



## Applying Textures

Tinkercad offers a library of pre-made textures or you can upload your own images to use.



## Material Effects

Simulate materials like metal, plastic, wood or fabric to create more realistic objects.



# Importing and Customising 3D Models



1

## Importing 3D Models

Tinkercad allows you to import 3D models from external sources, such as online repositories or software like Blender or Maya. Importing models can save time and effort, as you don't have to create them from scratch.

2

## File Formats

Tinkercad supports a range of file formats, including STL, OBJ, and 3MF. Ensure your imported model is in a compatible format.

3

## Customisation

Once imported, you can manipulate the model's size, position, rotation, and even combine it with other objects. This allows for flexibility in designing with pre-made components.

4

## Exploring Options

Consider exploring online resources for free and paid 3D models. Websites like Thingiverse and TurboSquid offer a vast library of designs.



# Tips for Efficient 3D Modelling

## Simplify Geometry

Reduce the complexity of your 3D models by using simple shapes.

Avoid overly detailed models, as they can lead to slow performance.

## Utilise Keyboard Shortcuts

Learn and use keyboard shortcuts to speed up your workflow.

This helps streamline your design process and reduces the need for repetitive mouse clicks.

## Plan Ahead

Before you begin modelling, sketch out your design and plan the workflow.

This will help you stay organised and avoid unnecessary steps.



# Exporting your Tinkercad Designs



1

## File Formats

Tinkercad offers a variety of export formats, including STL, OBJ, and SVG.

- STL is suitable for 3D printing.
- OBJ is a common format for 3D modelling software.
- SVG is a vector graphics format used for 2D designs.

2

## Export Settings

You can adjust the export settings, such as resolution and scale, to suit your specific needs.

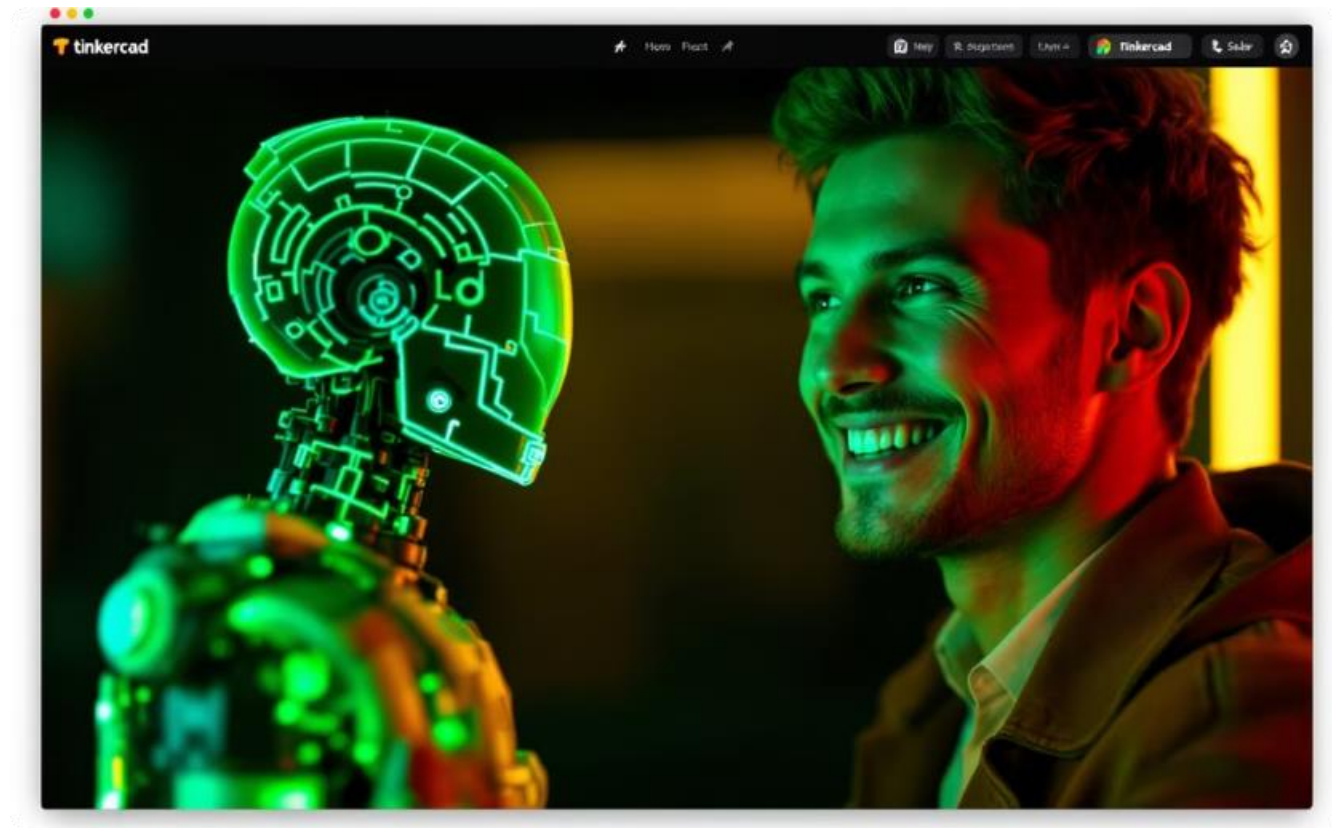
3

## Download and Use

Once you've exported your design, you can download it and use it in other software or for 3D printing.



# Learning Outcomes



## Develop Modelling Skills

Understand and apply fundamental Tinkercad tools for creating simple 3D models.



## Build 3D Objects

Combine basic shapes and tools to construct 3D models from scratch.



# Key Takeaways

## **Tinkercad is user-friendly.**

It is an intuitive platform that makes 3D modelling approachable for beginners.

## **Easy to learn.**

It has a simple interface and provides clear instructions, making it easy to pick up the basics of 3D modelling.

## **Versatile tool.**

Tinkercad can be used to create a wide range of 3D models, from simple designs to complex creations.

## **Free and accessible.**

Tinkercad offers a free version with a wide range of features, making it accessible to anyone.



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# Assessment Test:



Instructions: This assessment test is designed to evaluate your understanding and skills in using Tinkercad to create simple 3D models. Please answer all questions to the best of your ability.

## Section 1: Multiple Choice Questions

What is Tinkercad?

- A) A paid software for professional designers
- B) A free and user-friendly 3D design platform
- C) A complex programming language
- D) A video editing tool

Which of the following is NOT a basic shape available in Tinkercad?

- A) Cube
- B) Sphere
- C) Pyramid
- D) Cylinder Head

What tool would you use to create cutouts in your 3D model

- A) Align Tool
- B) Hole Tool
- C) Group Tool
- D) Resize Tool

Which file format is commonly used for 3D printing?

- A) SVG
- B) OBJ
- C) STL
- D) JPEG







## Section 2: True or False

5. Tinkercad allows users to import 3D models from external sources.

True / False

6. The workplane in Tinkercad is where you can manipulate shapes and objects.

True / False

7. You cannot add text to your 3D designs in Tinkercad.

True / False



## Section 3: Short Answer Questions



8. Describe how you would combine two shapes in Tinkercad to create a more complex object.

9. What are some tips for efficient 3D modeling in Tinkercad? List at least two.



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## Section 4: Practical Task

10. Create a simple 3D model using Tinkercad that includes at least three different basic shapes. Provide a screenshot of your final design and briefly explain the steps you took to create it.

## Grading Criteria

- Multiple Choice Questions: 1 point each (Total: 4 points)
- True or False: 1 point each (Total: 3 points)
- Short Answer Questions: Up to 2 points each based on clarity and completeness (Total: 4 points)
- Practical Task: Up to 5 points based on creativity, complexity, and explanation (Total: 5 points)



**THANK YOU FOR  
YOUR TIME**

