

# 3D Maker

## Worksheet

### Learning outcomes

You'll develop skills in 3D modelling by designing a range of objects using Tinkercad, a professional Computer Aided Drawing (CAD) software.

### Introduction

What do you know about 3D printing?

How many things can you think of that can be 3D printed?

In what jobs do they use 3D printing?

This activity is going to answer these questions and give you the opportunity to design your very own 3D model using an online design software. You will learn how 3D printing is changing workplaces and what careers use this amazing technology!

It is always good to do some background research, to gather ideas and a basic understanding of 3D printing and how it works. To learn how 3D printing is changing the world, watch this [video](#) (1).

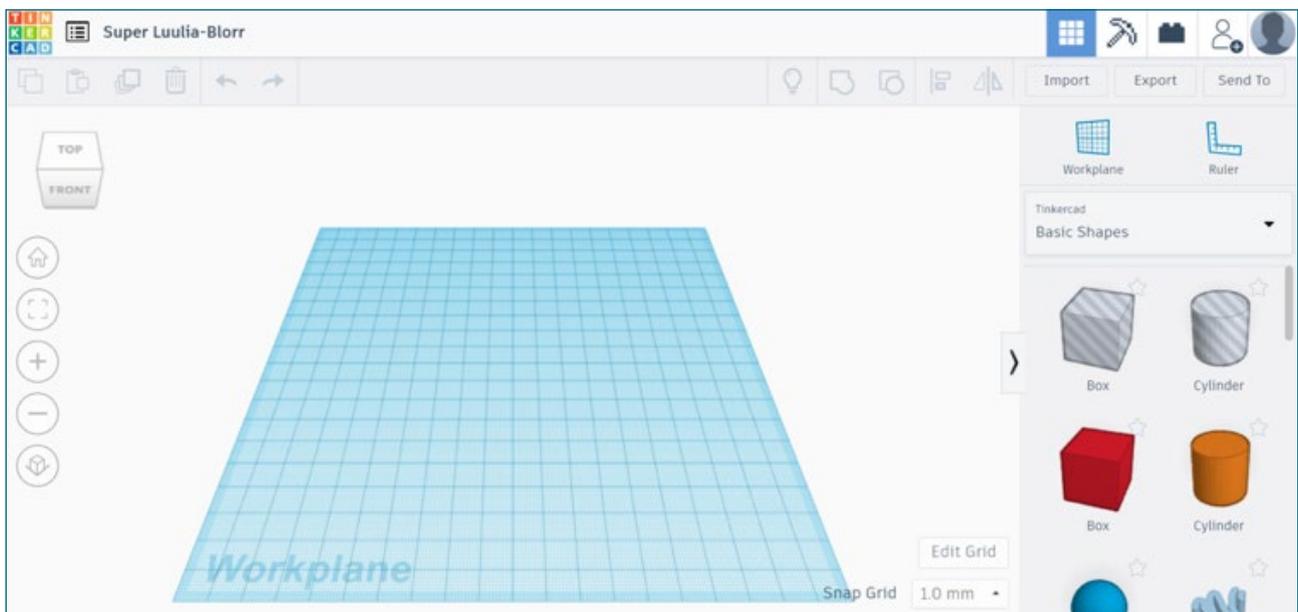
Activity on next page...

## Activity

Now it's time to design your very own 3D model. While you won't be able to print it off, you can design it just like the professionals do! It can be something related to one of the videos above or of your own invention. Get creative! We've produced a video guide to help with this activity – you can see it [here](#) (2)

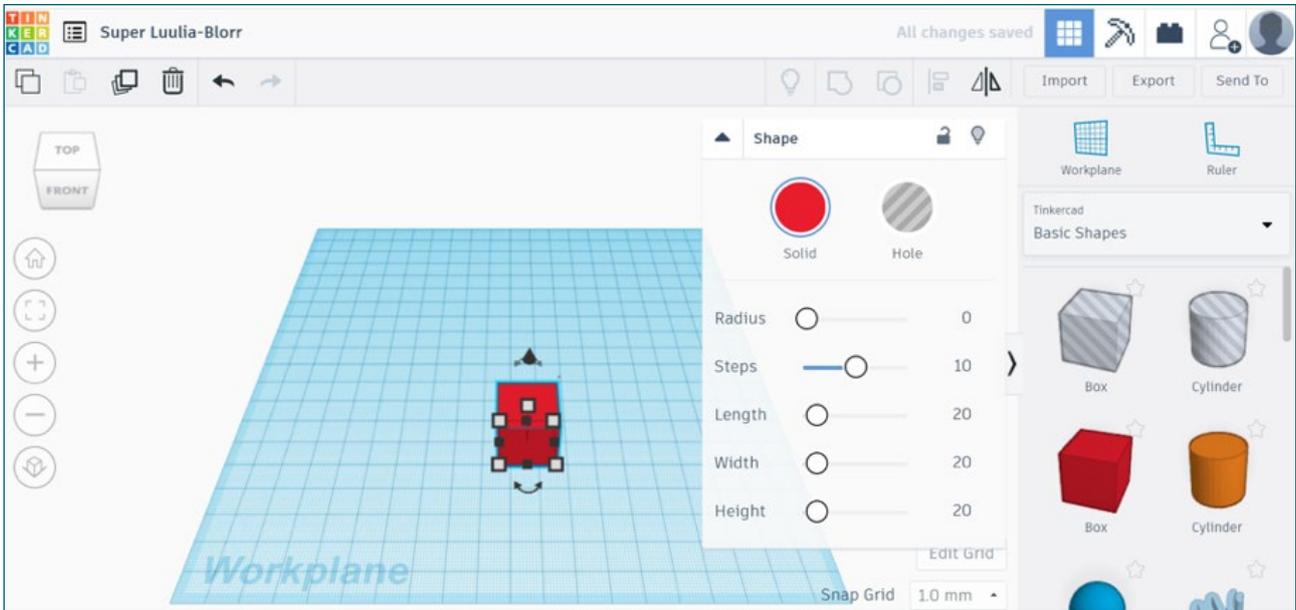
**Before you begin you can draw up a draft on paper if you wish.**

1. The CAD software you will be using to design your models is called [Tinkercad](#) (3). You will need to create a free account using an email address. Select “Create new design” once logged in.
2. Let's learn the basic tools of Tinkercad. Your screen should look like this:

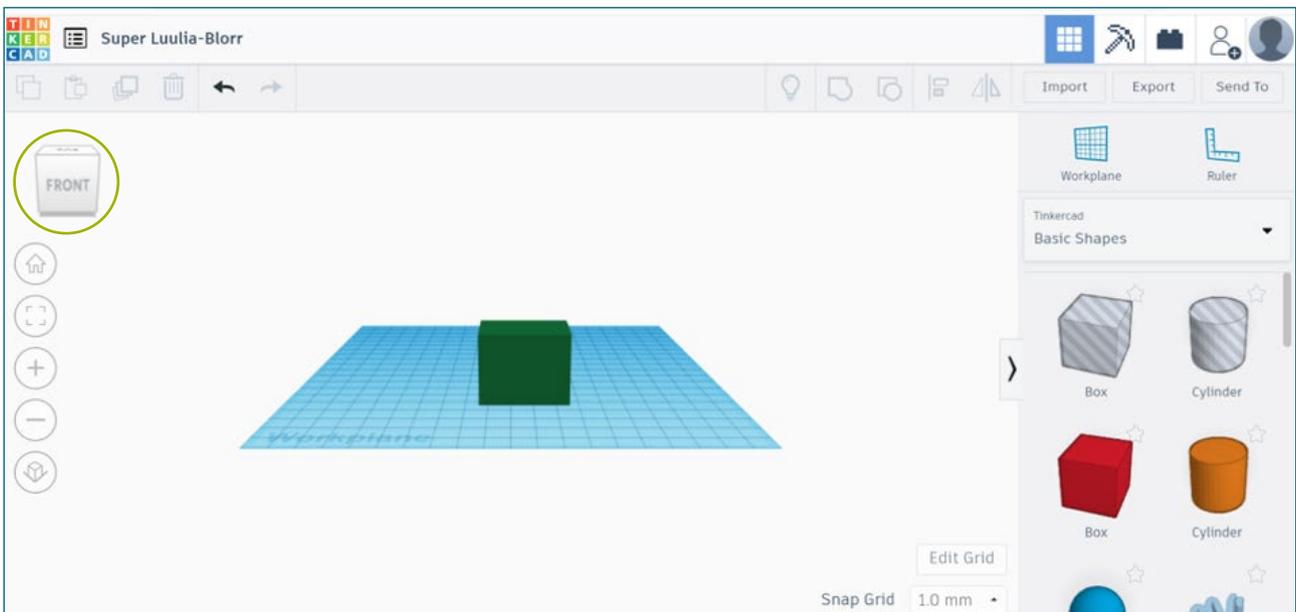


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3. Let's start with designing a very basic house to begin with. Using the "basic shapes" on the right-hand side of the screen, click on the box and drag it onto the blue gridded workplane.

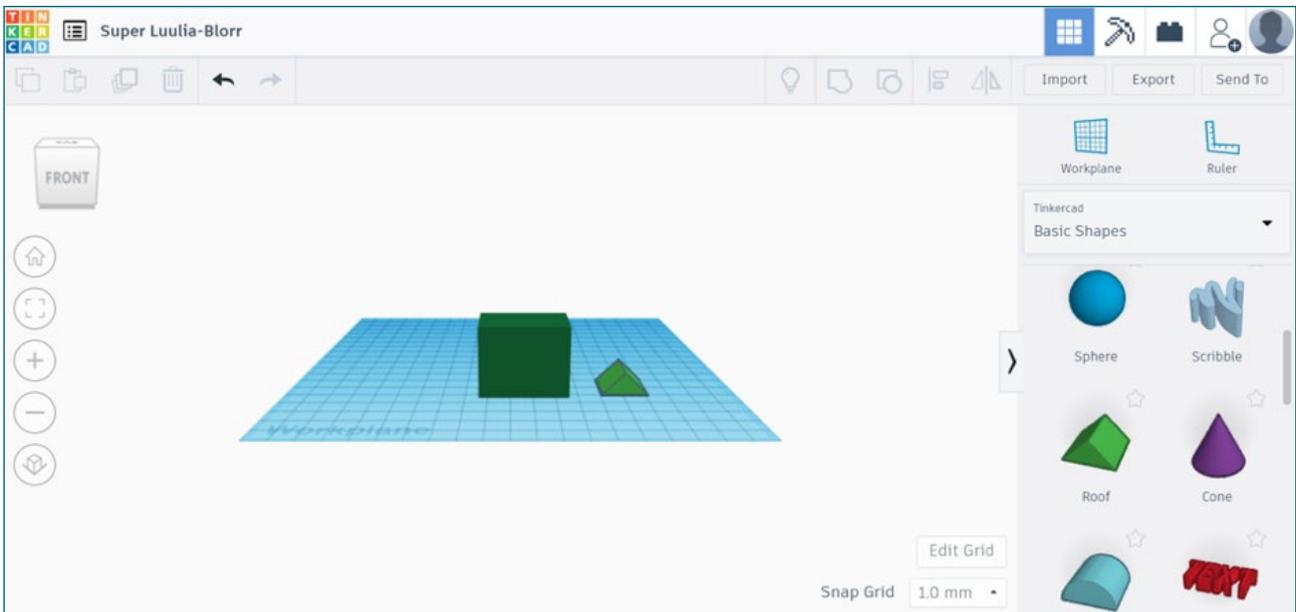


4. From here, we can change the colour, shape and size of the box. Let's change it up! To alter your view of the workplane use the small cube on the top left of the screen circled in green.

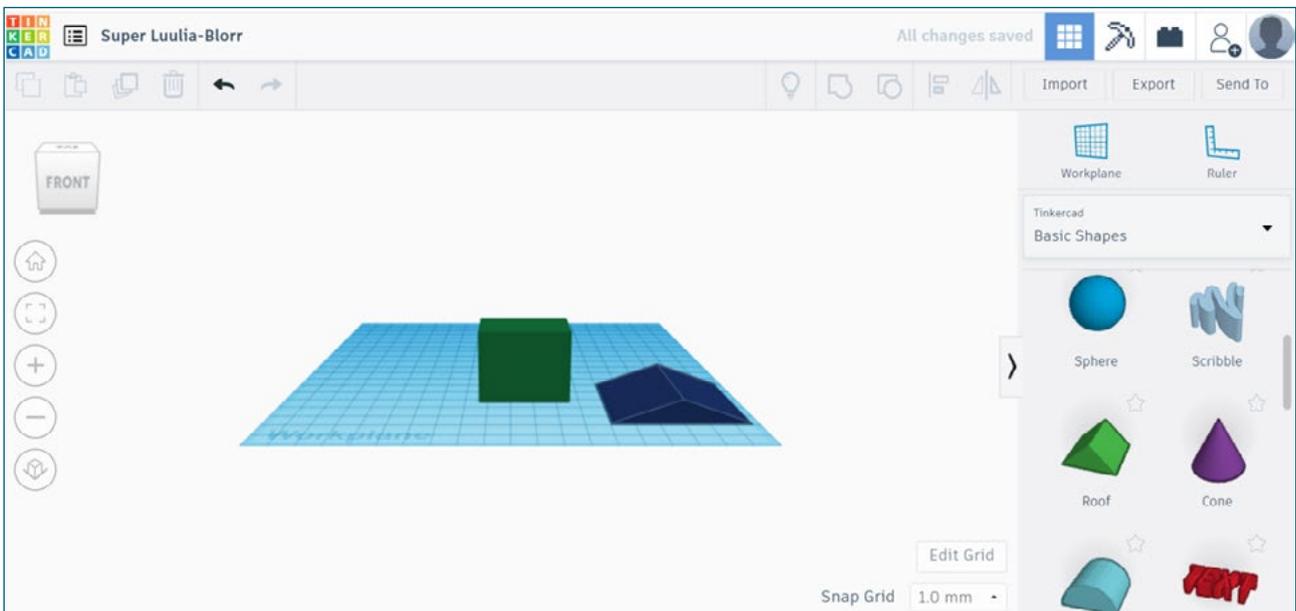


Now the box is bigger, green and the viewpoint has changed.

5. Now it's time to add a roof! Scroll down the basic shapes until you find "roof". Drag it onto the workplane.



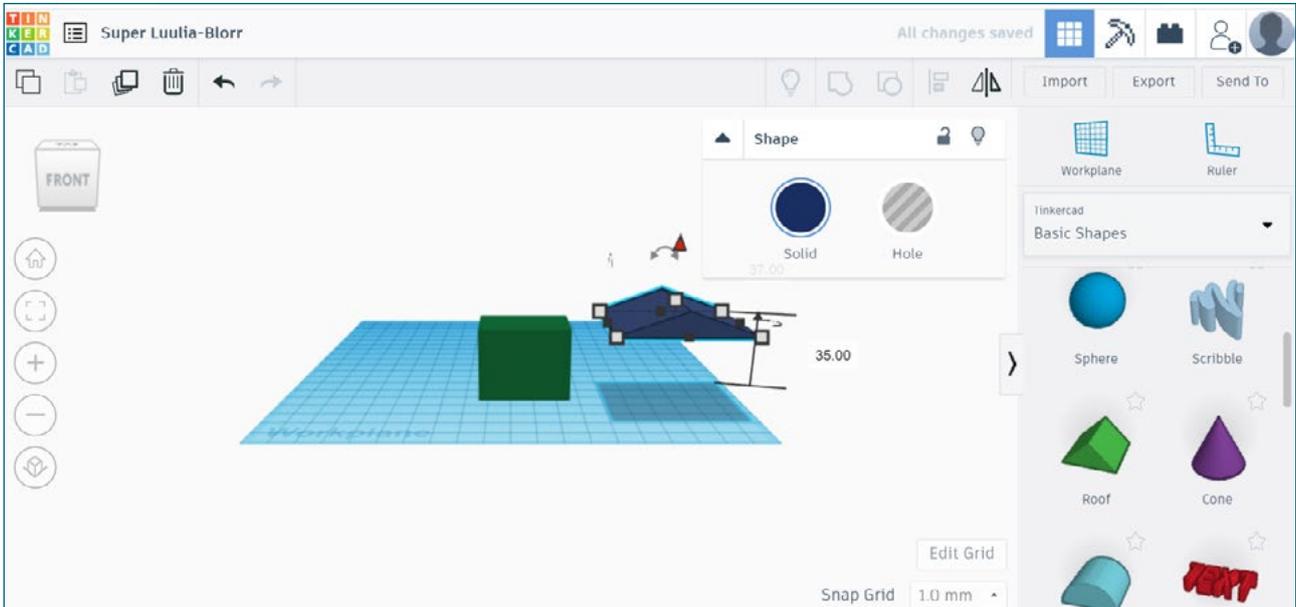
6. That roof is far too small! Let's change the size and colour like we did before.



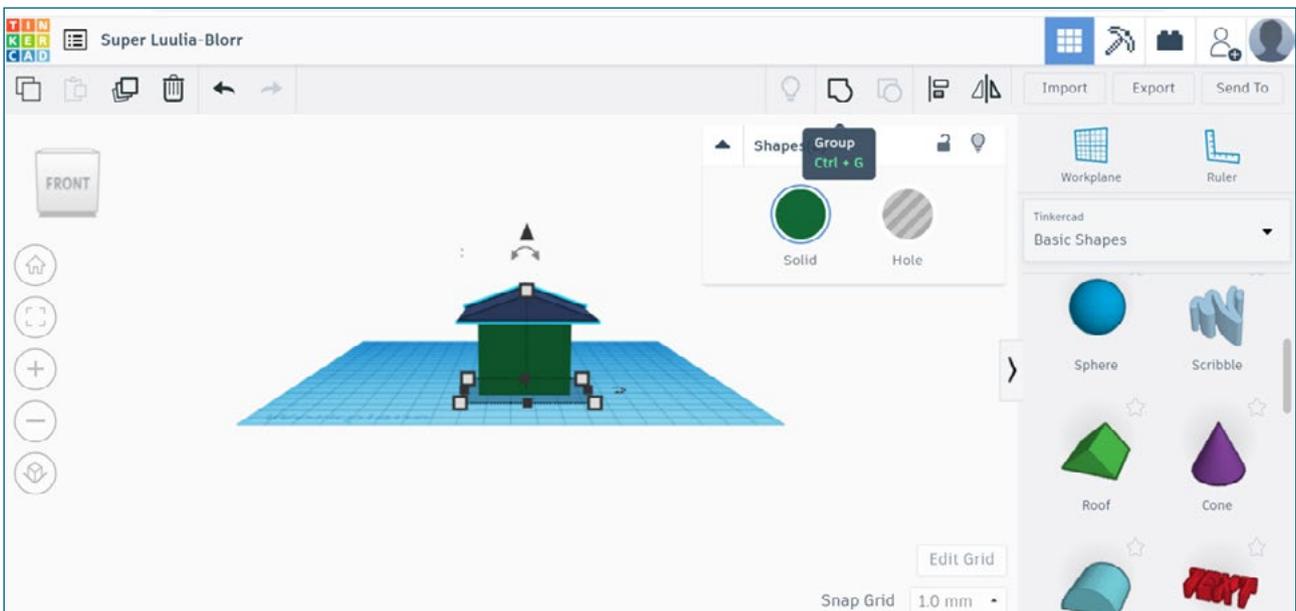
Now the box is bigger, green and the viewpoint has changed.

**Activity on next page...**

7. Now the roof is the right size, how do we move it on top of the house? We need to change the dimensions of the roof, so it hovers on the work plane, to do this select the roof and click on the red arrow pointing up, drag to adjust the height.



8. Once the roof is moved on top of the house, we can attach these shapes together using the “group” tool. Highlight the shapes you want to group and select the tool highlighted.



9. You’ve built a house! Now you know the basics of Tinkercad, explore and play around with different shapes and designs to create your own 3D model.

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## My World of Work

The activity looks at roles in design, engineering and manufacturing:

[Design Engineer](#) (3), [CAD technician](#) (4), [Materials technician](#) (5), [Architect](#) (6)

And many more that you can find out about on the My World of Work [website](#). (7)

## Website references

1. Will 3D printing change everything? <https://bit.ly/2XOidVf>
2. 3D Maker activity guide film <https://bit.ly/2Yc7XYp>
3. Tinkercad <https://www.tinkercad.com/>
4. Design Engineer <https://bit.ly/2ZVPkZN>
5. CAD technician <https://bit.ly/2MgMzKL>
6. Materials technician <https://bit.ly/2ZY0xsM>
7. Architect <https://bit.ly/3gKHt7q>
8. My World of Work <https://www.myworldofwork.co.uk/>