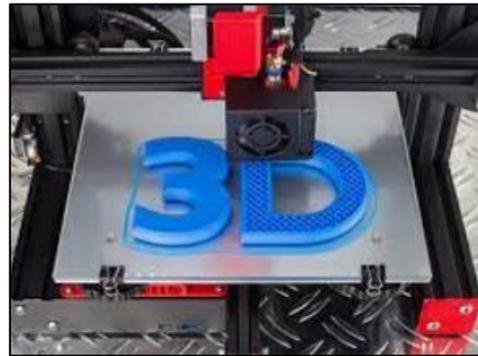


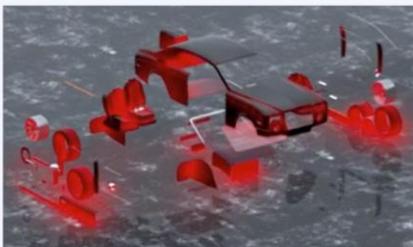


Computers can be used to model real-life items. Complex 3D models such as this are actually many 3D shapes combined.

3D printers can be used

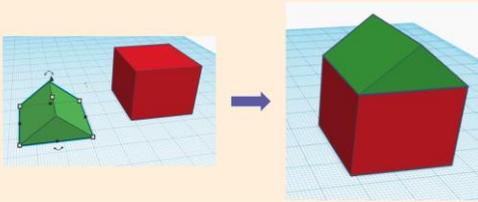


Key vocabulary	Definition
3D image	3D image is a computer-generated graphic that provides the perception of depth similar to a real-world object
perspective	a two-dimensional representation of a three-dimensional space
handles	a token, typically a pointer, that enables the program to access a resource
hollow	Something that is hollow has a space inside it
modify	make partial or minor changes



What are some of the shapes that have been used to make the 3D model of the car?

Placing shapes on top of each other



### Viewing 3D objects on a computer

You click and hold on the cube and move the mouse to change the viewing angle.

View the objects from the:

- Top
- Bottom
- Left
- Right
- Front
- Back



Or you can right-click, hold, and move the mouse on the workplane.



What do you notice?

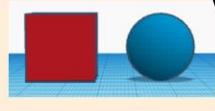
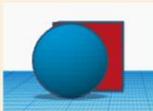
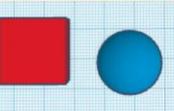


### Viewing angles

Top

Left

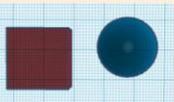
Front



Bottom

Right

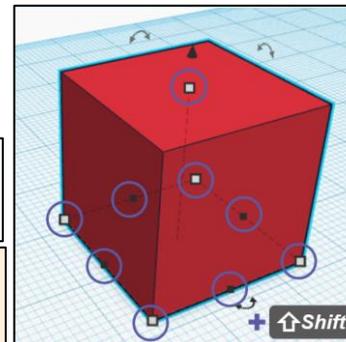
Back



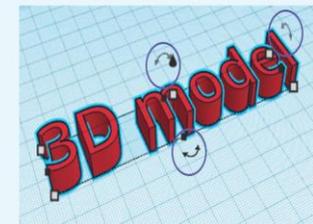
**Handle with care!**  
When you select an object, handles will appear.

Click on a handle to see the size or the distance from the workplane of your object.

The cone shaped handle is used to lift or lower shapes relative to the workplane.



### Rotating shapes

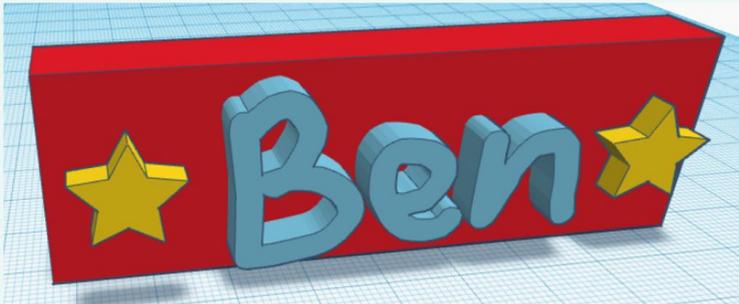


The three curved double-headed arrows enable you to rotate shapes in three dimensions.

Similar to when you viewed the items on your table, you have not moved them, but you have viewed them from different angles.



### Make your own name badge



Create your own name badge and tick off the techniques you have used.

### Could it be printed?

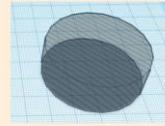
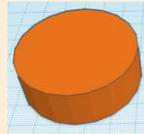
For an object to be successfully printed, each layer needs to print on top of the previous layer.

- Would my model print?
- What about your model?

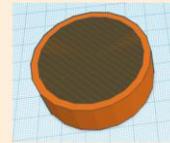
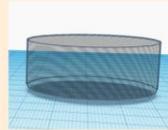


### Make your own cylinder-shaped container

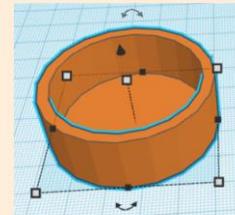
1. Add a solid cylinder to your workplane. Note the dimensions (width, depth, and height).
2. Add a placeholder cylinder to your workplane. Reduce the dimensions to slightly smaller than your solid cylinder.



3. Lift the placeholder off the workplane by about 2mm to create the base of your shape.
4. Move the placeholder on to the cylinder and position it evenly on all sides.



5. Select and group the two objects. You should now see a hollowed out cylinder.



### Making a desk tidy

You will be using 3D objects on-screen to produce your own 3D model of a desk tidy.

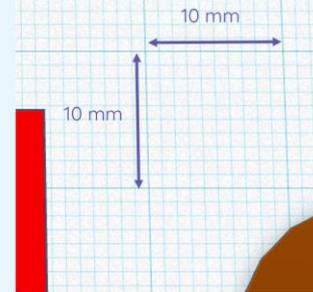


### Measurements in Tinkercad

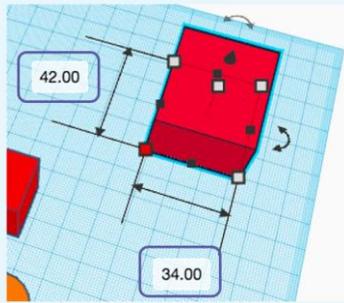
Measurements are displayed in millimetres (mm).

On the workplane:

- One small square measures 1mm x 1mm or 1mm<sup>2</sup>
- One large square measures 10mm x 10mm or 1cm<sup>2</sup>



- You can resize objects using the handles
- You can also resize objects by typing the value you want where the measurement is shown



### Evaluate your model with a partner

- Do the dimensions need modifying?
- Are the parts of your model in proportion to each other?
- What extra detail could you add to your model?
- How else could you improve your model?

