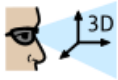
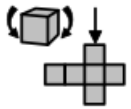
Year 6 Computing – 3D modelling

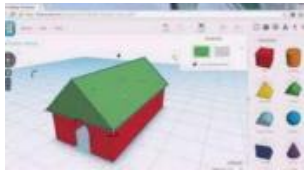
Vocabulary

3D	An object with height, width and depth	
Resize	To change the size of a 3D object	
Duplicate	To make a copy of an existing object	
Modify	To change the properties of an object e.g. shape, size, colour	
Elevate	To raise part of or the whole 3D object in space	
Placeholder	A temporary object used while planning in a model	
Workplane	Where the shapes and 3D models will be placed	
Grouping	To combine 3D objects so they can be moved as one	
Net	A 2D pattern that can be made into a 3D object	
Evaluate	To judge the quality and value of a created object	

Knowledge

3D modelling:

A 3D shape has three dimensions, this means it has width, length and height (depth)
The world is three-dimensional **(3D)** and we move around in three dimensions.
3D modelling helps us visualise designs from different angles.
3D modelling involves using computer software to create 3D shapes, in order to produce models of real-world objects.
3D modelling is used in many different industries like interior design and architecture.



Tinkercad:

We can use the **workplane** to display our 3D object. The ViewCube allows us to switch the view of the model from the different angles to see the whole shape.
The square panes help us to use distances and dimensions accurately.
3D objects can be dragged into the workspace and remodelled.

There are 3 key areas on the Tinkercad interface:

- View tools – these enable us to change the way you view the object
- The workplane – this is where learners will place shapes and see the 3D models they have created.
- Shapes – these are the predefined shapes which learners can add to their workplane. Once shapes have been added, there are many ways we can edit and manipulate them.

3D shapes can be locked together by clicking the padlock.

A computer model can be created by a **3D** printer. This works by heating plastic filament and then feeds it through a nozzle to create think layers of plastic which are built by the printer.

To make a good 3D model, we need to use specific techniques like moving, resizing, lifting, **duplicating** and **grouping**.
The final picture on a 3D model is called a render. This is **evaluated** at the end before making the final product.
We need to evaluate completed 3D models based on the given criteria and know how it has been met.
This will help us decided what needs to be improved in our own 3D model.

Quizzing

Ask your partner the questions below. Can they find the correct answer on the right-hand side?

What do we call the flat surfaces on a 3D object?	TinkerCAD
What do we call a temporary shape used during planning?	To make a copy of
What is the word for the final picture made from a 3D model?	resize
Which software is used to create 3D objects?	Vertex
What do we call the 2D pattern that can be made into a 3D object?	Ungroup
What action can be used to change an object's height, width or depth?	Net
What does it mean to **duplicate** an object?	Faces
What word means splitting grouped objects back into single parts?	Render
What do we call the point where two edges meet?	Placeholder

Quiz at home

Ask your adult to look at the KO.

Quiz them using the vocabulary and knowledge section or the quiz questions.

- Can they beat your score?
- Can they score more than 5? 10?
- Compete with your adult in the elimination quiz. Take it in turn to ask each other questions. The first person to get a question wrong is out.

BIG Questions

1. How is making a 3D model on a computer different to making one in real life?
2. Why is it important to plan a 3D model before it is built in the software?
3. In the future, where do you think 3D modelling might be useful outside the classroom?
4. How do placeholders help when making 3D designs? What might happen if we didn't use them?

Beat the adult

Your teacher can give **10 facts** in **1 minute** about this topic.

How many can you give to your partner?

Word scramble

Unscramble the key vocabulary from this topic below. You can create your own at the bottom

zeseir	
plicteuda	
iydomf	
ltaevee	
nte	
caprdlohele	
uaaltvee	
hpesas	

Fill in the gaps

1. A shape that has height, width and depth is called a _____
2. A flat surface on a 3D object is called a _____
3. Making a copy of an object is called _____
4. The final picture of a 3D model is called a _____

Render

Duplicate

3D object

Face

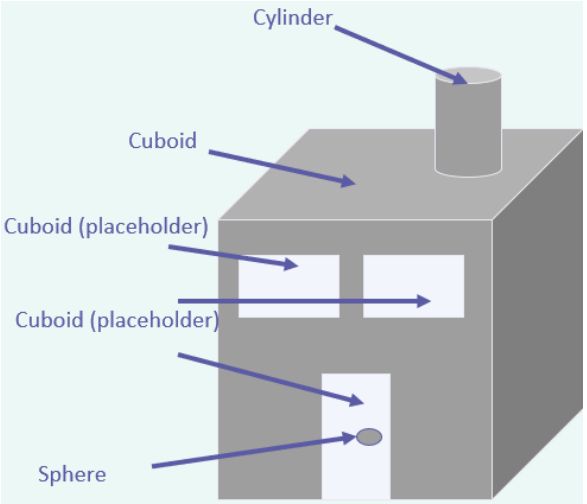
Skills

Creative tasks

Design a simple object (desk tidy, name badge, toy).

Include: shapes to use, where to group, where to place placeholders.

Example



Enquiry

Explore the different 3D models.

Which features make a model look realistic or useful?

What shapes are used most often?

How are colours and sizes used?