

## 3D Representation

This resource was developed as part of a Graphics CPD 2018/2019 workshop which took place during the 2018/2019 school year. All materials used during this workshop can be viewed in the Technologies section of [www.jct.ie](http://www.jct.ie) within the CPD Workshops tile.

CPD Workshop Link:

[https://www.jct.ie/technologies/cpd\\_supports\\_graphics\\_cpd\\_workshops\\_2018\\_2019](https://www.jct.ie/technologies/cpd_supports_graphics_cpd_workshops_2018_2019)

This unit was showcased during this workshop and focused on how a teacher developed a unit of learning with their students and school context in mind. This sample resource may assist you in planning and developing materials suitable for your student's context. The main focus of this unit of learning was developing understanding around 3D representation and working from 3D to 2D within the Graphics specification. This engagement can be found on slides 59 - 71 of the Graphics CPD 2018/2019 PowerPoint.

### What is included in this PDF?

#### 1. Sample unit of Learning

Included is the sample unit of learning developed by the Jct4 Graphics team. Highlighted in the plan is what learning outcomes are being activated by the worksheet. A red box will highlight the learning outcomes, key learning, evidence of learning and the learner experience sections within the plan to emphasise where the resource fits within the context of the unit.

#### 2. Merge cube handout

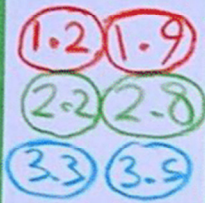
As part of the unit of learning a handout was developed to activate the learning outcomes within the unit. This handout was specifically designed for the CPD 2018/2019 workshop and it is recommended that this resource be tailored to suit your own specific class group and context.

This activity links to another resource developed by the Jct4 Graphics team which outlines how to convert and upload files to display on the Merge Cube. That resource can be found by clicking [here](#).



**Note:** It is recommended that you view the CPD workshop materials in conjunction with using this resource to contextualise the resource and develop a better understanding of how the unit of learning was developed.

Consider the age, stage and prior learning of the students.  
 What learning do we want to focus on?  
 Explore both the strands and elements when choosing learning outcomes.



Identify the learning outcomes for your unit of learning.  
 Identify the key learning for students using action verbs to support your thinking.  
 Consider how we will assess and report evidence of learning

Develop ideas for how students could experience this learning.  
 How will I know they are learning?

Using your own classroom context, what methodologies and resources will support students in experiencing the learning outcomes.  
 Ensure assessment aligns with the learning outcomes and their action verbs

- RESOURCES**
- MERGE CUBES
  - WOODEN ORTHOGRAPHIC MODELS
  - MAGNETIC MODELLING SET
  - PLANES OF REFERENCE MODELS
  - PADLET
  - MERGE CUBE VIEWER APP
  - A3 HANDOUT

**AGE AND STAGE**

1<sup>ST</sup> YEAR STUDENTS  
 TERM 2 JAN/FEB

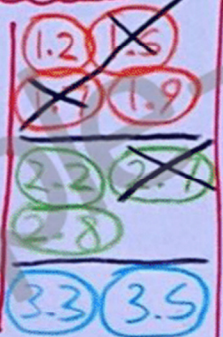
**PRIOR LEARNING**

- SKETCHING USING GRID PAPER [SQUARE + ISOMETRIC]
- MODELLING WITH CARD AND MAGNETS
- BASICS OF SHAPES 2D+3D
- WORK COMPLETE ON 3D REPRESENTATIONS - OBSCURE - ISOMETRIC

**Focus**

3D OBJECTS TO 2D CONVENTIONS  
 SPATIAL REASONING AND VISUALISATION OF OBJECTS  
 GROUP WORK

**EXPLORE**

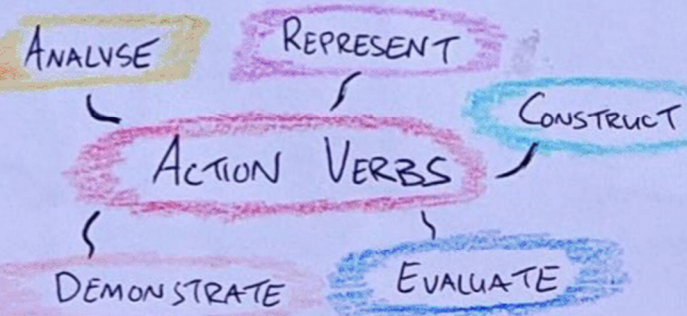


1.2, 1.9  
 ANALYSE VIRTUAL MODELS FOR THE CREATION OF 2D SOLUTIONS USING ORTHOGRAPHIC PROJECTION

2.2, 2.8  
 CREATING 3D REPRESENTATIONS THROUGH SKETCHING GIVEN A 2D SOLUTION

2.2, 3.3  
 DEMONSTRATE SPATIAL REASONING SKILLS BY CREATING A MODEL GIVEN A 2D SOLUTION

3.5  
 ANALYSE THEIR WORK AND THE WORK OF OTHERS BY COMPARISON TO GIVEN SOLUTIONS



3.3, 1.9  
 TEACHER DISCUSSION AND CREATING A MODEL OF THE PLANES OF REFERENCE

1.2, 1.9  
 CREATING 2D SKETCHES ON GRAPH PAPER OF THE VIRTUAL MODELS. [ORTHOGRAPHIC VIEWS]

3.3  
 CONSTRUCT A MODEL GIVEN THE ORTHOGRAPHIC VIEWS

2.2, 2.8  
 CREATING 3D REPRESENTATIONS GIVEN 2D SOLUTIONS.

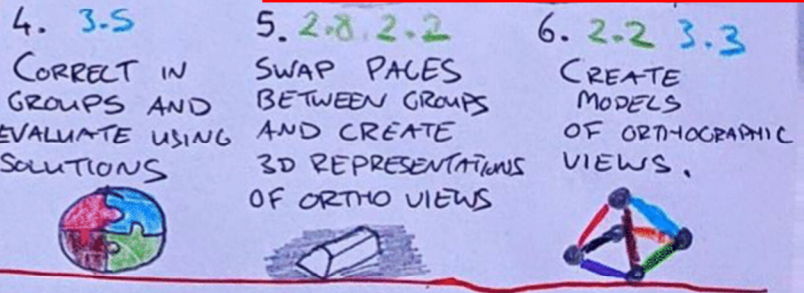
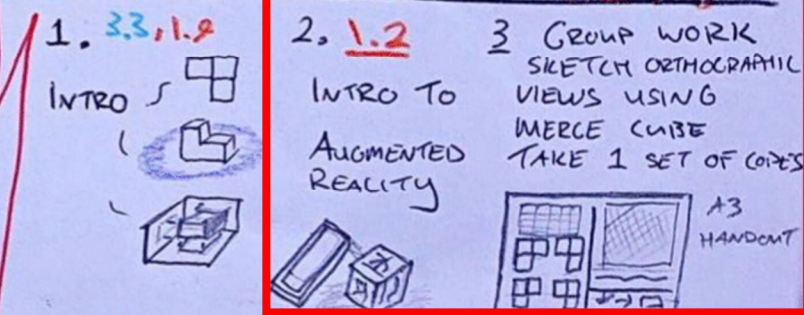
3.5  
 TEACHER OBSERVATION AND FEEDBACK ON STUDENT DISCUSSIONS, SKETCHES AND INTERACTIONS THROUGHOUT

**REFLECTION**

- STUDENTS WILL BE USING SHADING, SKETCHING IN GRID PAPER AND 3D REPRESENTATIONS [PICTORIAL] FROM PREVIOUS UNITS.
- CHANGE "INTRO TO AR" TO DISCOVERY LEARNING WHEN DOING AGAIN. [EBI - EVEN BETTER IF]
- [WWW - WHAT WORKED WELL]
- GROUP WORK IN ANALYSING AND CORRECTING 2D SOLUTIONS.

**METHODOLOGIES**

- WHOLE CLASS TEACHING - USING PHYSICAL AIDS
- TEACHER DEMO - AUGMENTED REALITY
- CREATING SKETCHES - GROUP WORK
- SELF-PEER ASSESSMENT - PAIR WORK
- MODEL MAKING - USING DEVICES
- DISCOVERY LEARNING - PADLET OR SCANNER

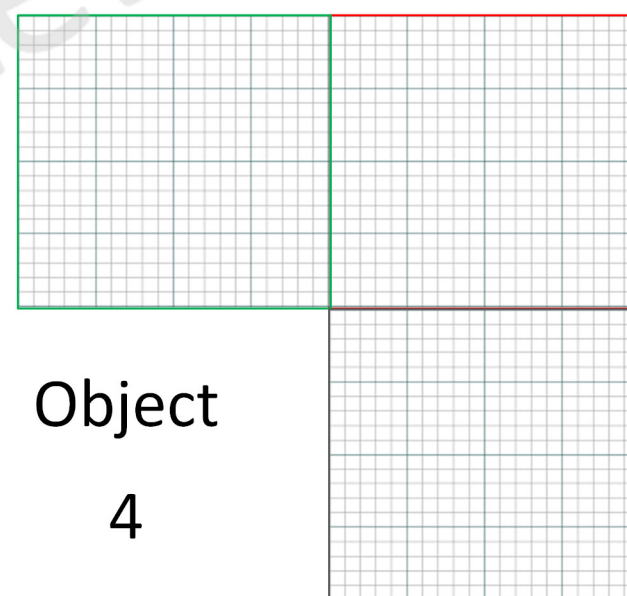
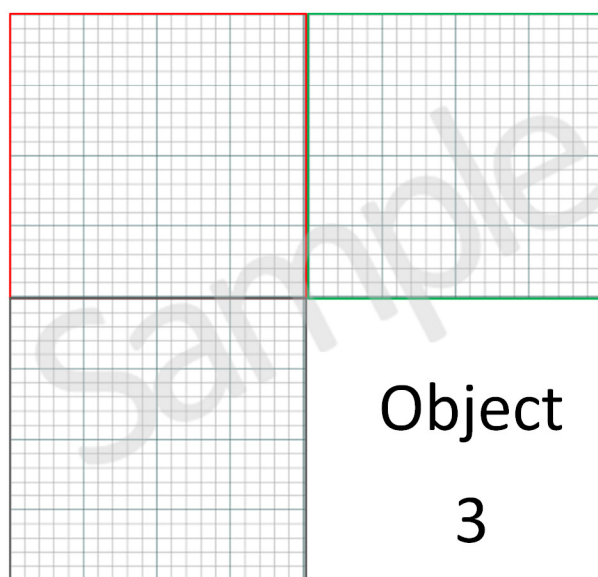
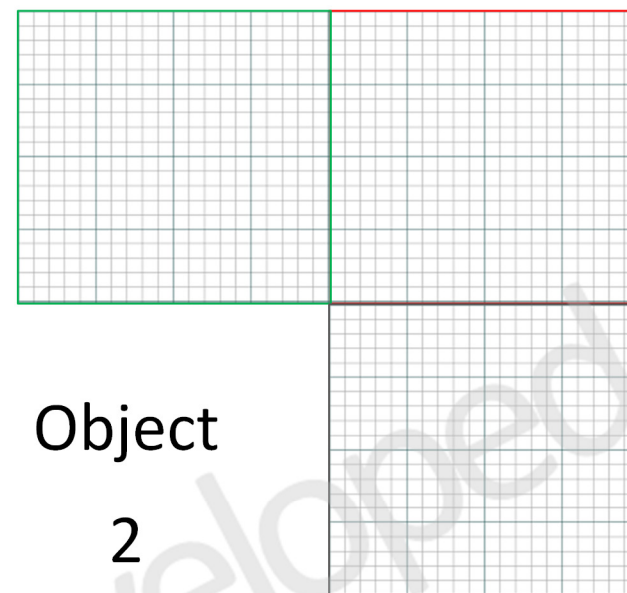
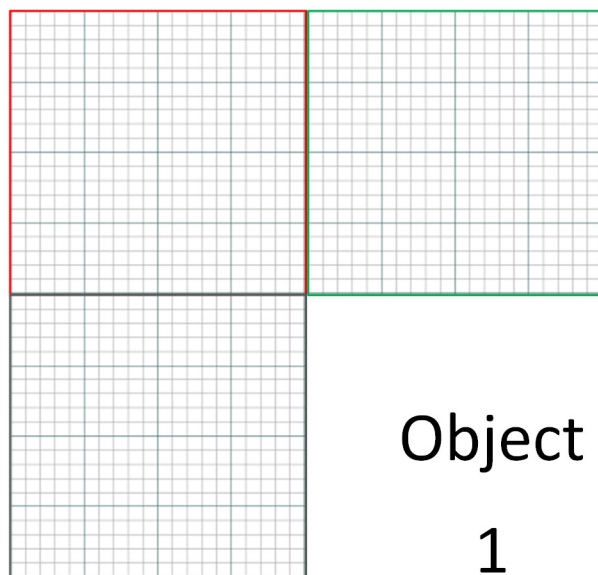


Group	A	B	C	D
Object 1	2VX X51	YVB BYG	WKP PXM	BL5 5YX
Object 2	JYJ JM5	EX6 Q2M	92 <u>0</u> EB <u>0</u>	55M LPB
Object 3	R64 DQ5	P4P 1G2	EXR 6XY	<u>0</u> VX PVK
Object 4	NVP YVM	P4P 1W8	MY8 8WM	1YQ Q <u>0</u> B

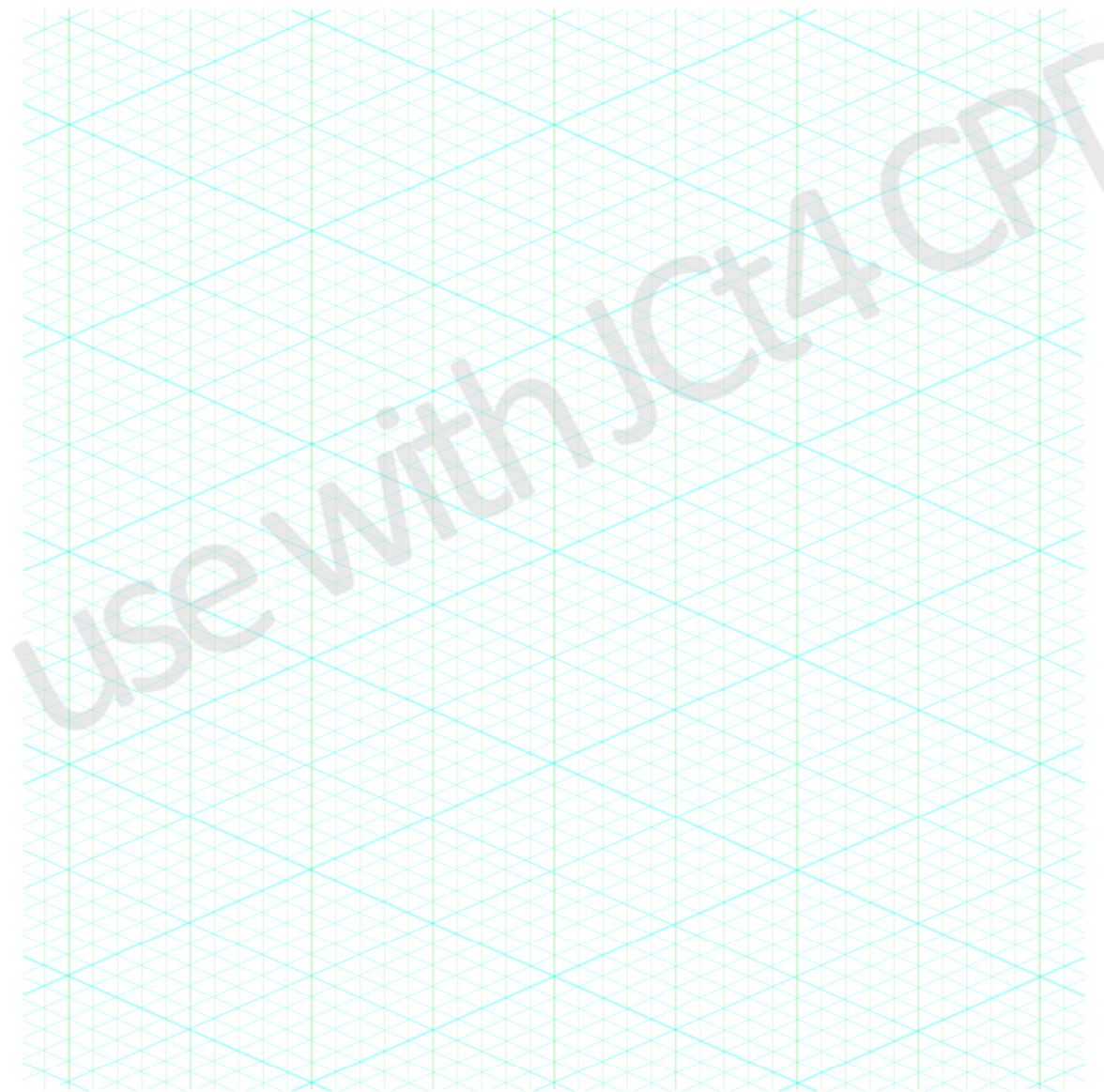
0 = This represents the number zero and shows up as 0 in the app screen

**Activity 1** – Using your device, merge cube and table of codes;

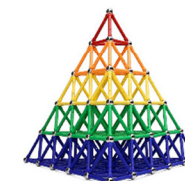
Sketch the orthographic views of the objects in the colour coded boxes.



**Activity 2** – Sketch a 3D representation of the objects from activity 1.



**Activity 3** – As a group construct a 3D model of object 1.



QR code for Padlet



Password  
Graphics (Capital G)