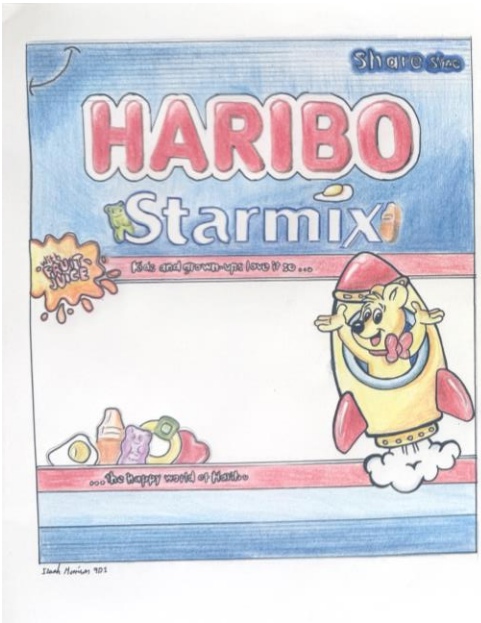
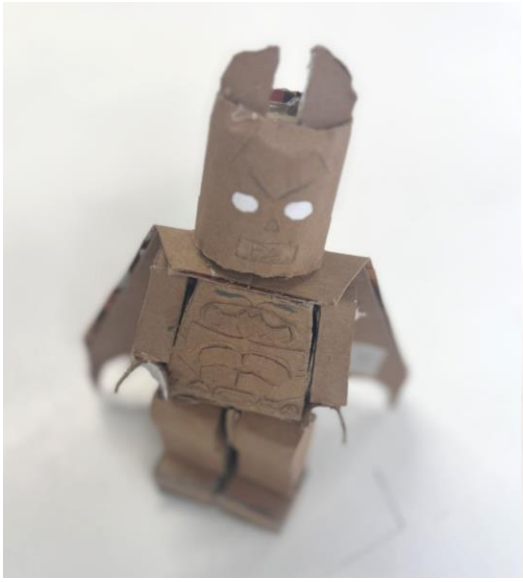
Students research Japanesse cardboard designer Monami Ohno and choose a product to accurately draw and model.



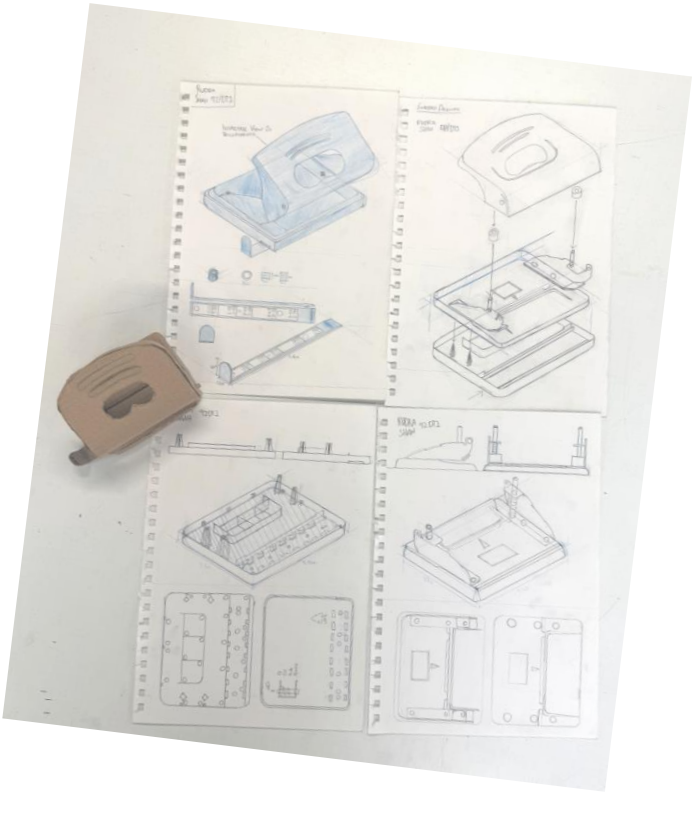


Cardboard modelling assessed for complexity and accuracy, using appropriate tools and equipment.

Dynamic modelling and reverse engineering:

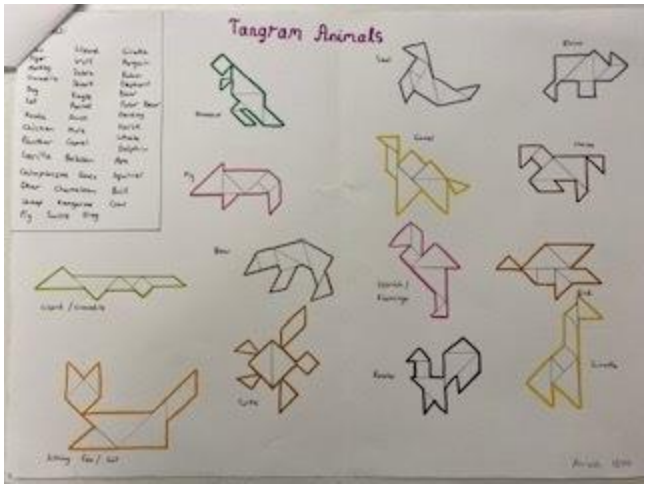
For this task students were told to disassemble either a hole punch or stapler to accurately draw and model its components.

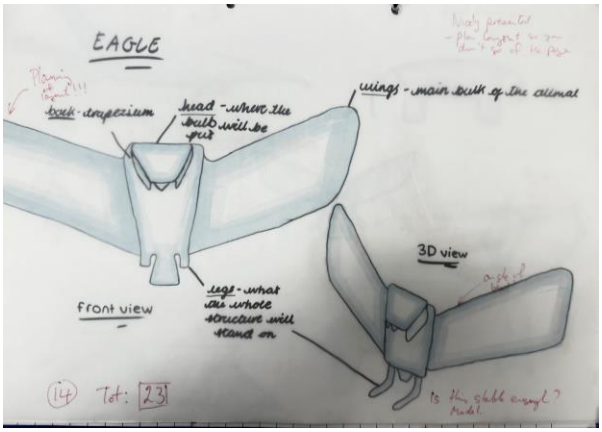
Technical drawings produced are exploded isometric views and orthographic projections.

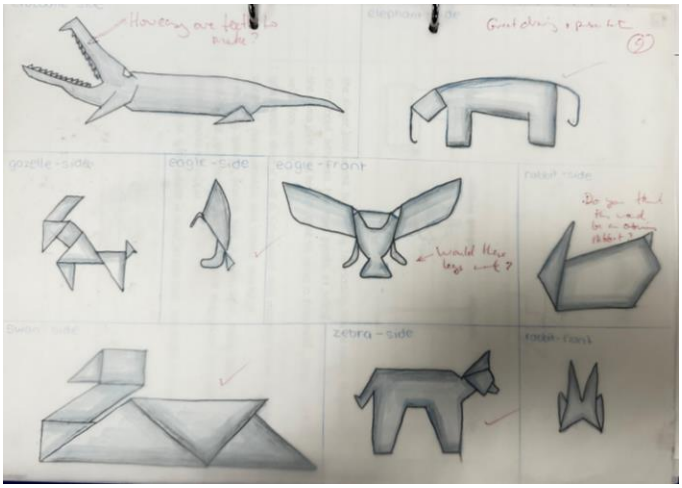


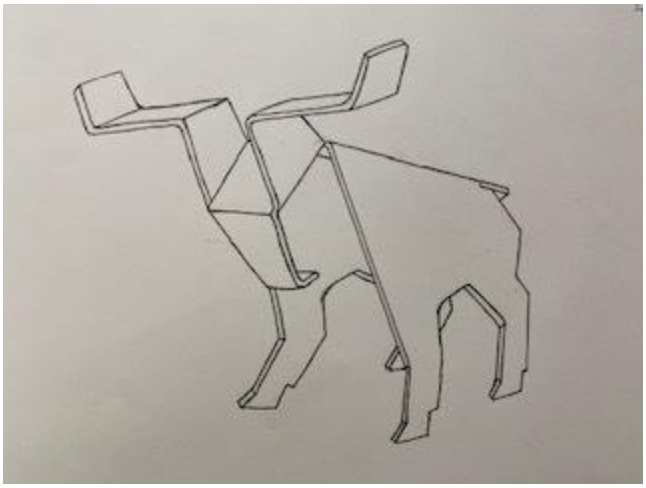
Y10 “Alimals” Project
Students are asked to design a nightlight to be manufactured from a single sheet of aluminium.

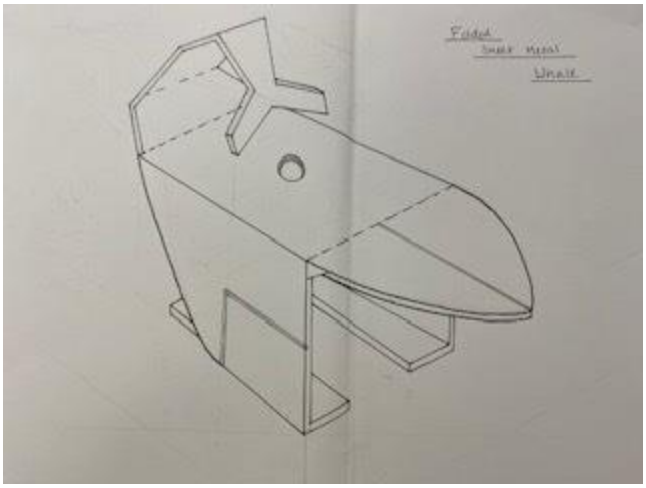
Feedback from teachers can be given on tracing paper to avoid marking drawings with red pen..
Theory on metal manufacturing is taught along side this.

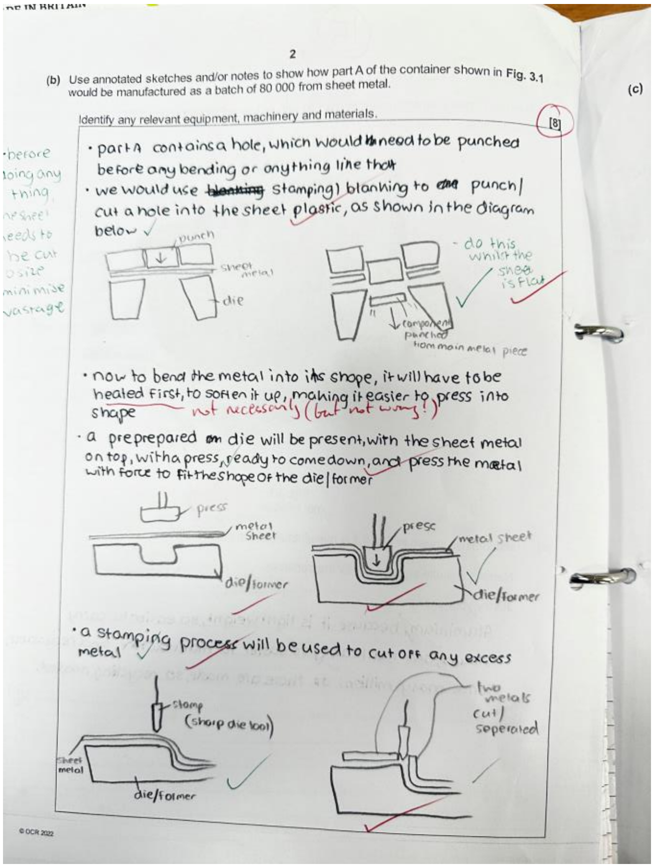






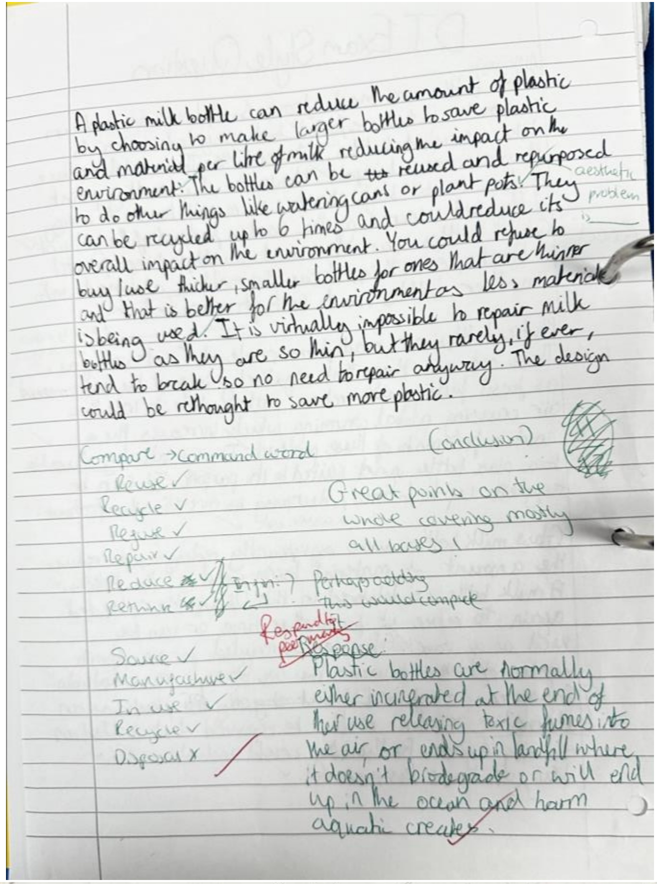





(b) Use annotated sketches and/or notes to show how part A of the container shown in Fig. 3.1 would be manufactured as a batch of 80 000 from sheet metal.

Identify any relevant equipment, machinery and materials. [8]

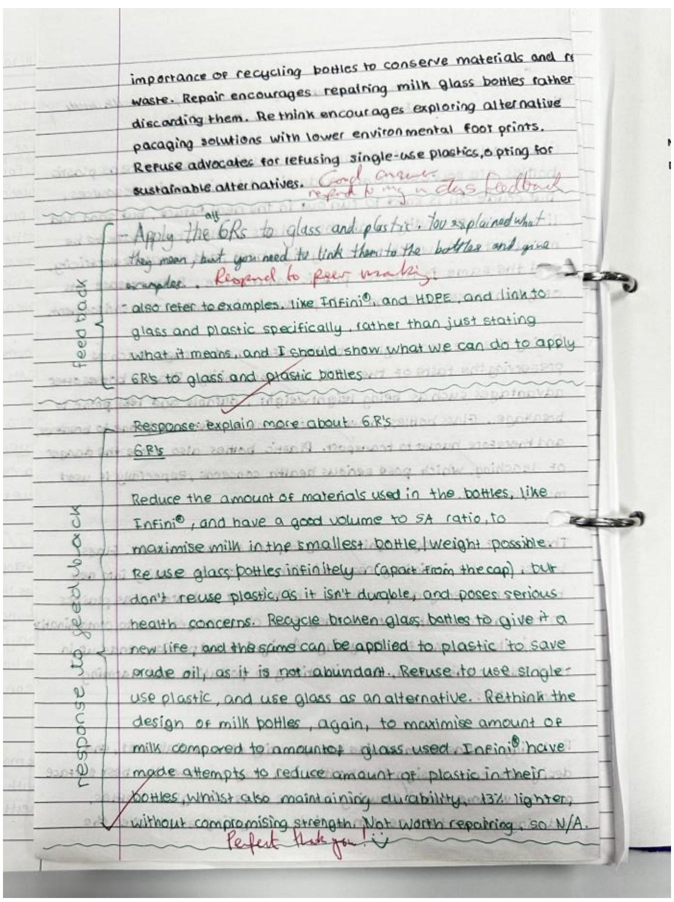
- part A contains a hole, which would need to be punched before any bending or anything like that
- we would use stamping/blanking to punch/cut a hole into the sheet plastic, as shown in the diagram below
- now to bend the metal into its shape, it will have to be heated first, to soften it up, making it easier to press into shape — not necessarily (but not wrong!)
- a preprepared die will be present, with the sheet metal on top, with a press, ready to come down, and press the metal with force to fit the shape of the die/former
- a stamping process will be used to cut off any excess metal


A plastic milk bottle can reduce the amount of plastic by choosing to make larger bottles to save plastic and material per litre of milk reducing the impact on the environment. The bottles can be reused and repurposed to do other things like watering cans or plant pots. They can be recycled up to 6 times and could reduce its overall impact on the environment. You could refuse to buy/use thicker, smaller bottles for ones that are thinner and that is better for the environment as less material is being used. It is virtually impossible to repair milk bottles as they are so thin, but they rarely, if ever, tend to break so no need to repair anyway. The design could be rethought to save more plastic.

Compare → command word. Conclusion. Reuse ✓ Recycle ✓ Reduce ✓ Repair ✓ Rethink ✓ Refuse ✓

Great points on the whole covering mostly all bases!

Respond to peer response: Plastic bottles are normally either incinerated at the end of their use releasing toxic fumes into the air or ends up in landfill where it doesn't biodegrade or will end up in the ocean and harm aquatic creatures.


importance of recycling bottles to conserve materials and [illegible] waste. Repair encourages repairing milk glass bottles rather discarding them. Rethink encourages exploring alternative packaging solutions with lower environmental footprints. Refuse advocates for refusing single-use plastics, opting for sustainable alternatives. — Good answer, respond to peer in class feedback

- Apply the 6Rs to all glass and plastic. You explained what they mean, but you need to link them to the bottles and give examples. Respond to peer marking.
- also refer to examples, like Infini®, and HDPE, and link to glass and plastic specifically, rather than just stating what it means, and I should show what we can do to apply 6Rs to glass and plastic bottles.

Response: explain more about 6R's

6R's

Reduce the amount of materials used in the bottles, like Infini®, and have a good volume to SA ratio, to maximise milk in the smallest bottle/weight possible. Re use glass bottles infinitely (apart from the cap), but don't reuse plastic, as it isn't durable, and poses serious health concerns. Recycle broken glass bottles to give it a new life, and the same can be applied to plastic to save crude oil, as it is not abundant. Refuse to use single-use plastic, and use glass as an alternative. Rethink the design of milk bottles, again, to maximise amount of milk compared to amount of glass used. Infini® have made attempts to reduce amount of plastic in their bottles, whilst also maintaining durability, 13% lighter, without compromising strength. Not worth repairing, so N/A.

Perfect thank you!

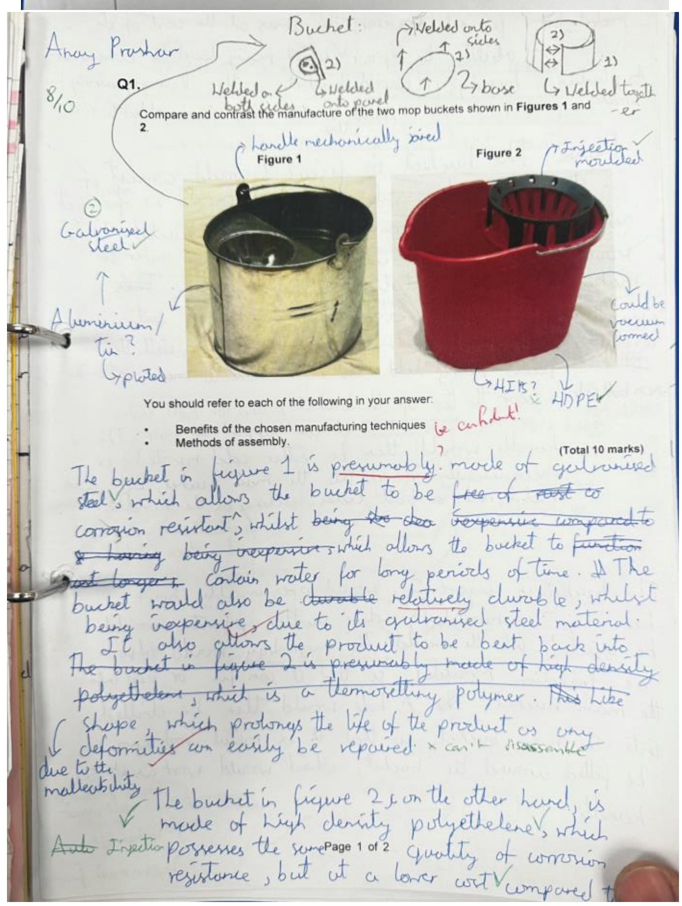

Q1. Compare and contrast the manufacture of the two mop buckets shown in Figures 1 and 2.

Figure 1 Figure 2

You should refer to each of the following in your answer:

- Benefits of the chosen manufacturing techniques
- Methods of assembly.

(Total 10 marks)

The bucket in figure 1 is presumably made of galvanised steel, which allows the bucket to be corrosion resistant, whilst being inexpensive, which allows the bucket to contain water for long periods of time. The bucket would also be relatively durable, whilst being inexpensive, due to its galvanised steel material. It also allows the product to be beat back into shape, which prolongs the life of the product as any deformities can easily be repaired.

The bucket in figure 2, on the other hand, is made of high density polyethelene, which possesses the same quality of corrosion resistance, but at a lower cost compared to

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Y10 Knowledge and understanding are checked with low stakes exam style questions with feedbacking coming from teachier marking, self marking using published mark schemes and peer marking. Students make note in green pen to correct or expand on answers.

This also builds exam technique.