



**Home learning** April-May 2020

# OBHS D&T

## Year 10

This booklet covers the first half of the summer term. It is designed to develop your knowledge and how you apply this to NEA style task. Please email me if you need help or feedback. Any extra drawing or modelling practice (you may wish to make a model of your chair design) will prove valuable as preparation for year 11.

Lesson	What you need to do	tick
Lesson 1	Complete the tasks on ergonomics and anthropometrics- you may need to borrow a smaller foot for this.	
Lesson 2	Complete the tasks on the page on environmental impact.	
Lesson 3	Drawing Skills- you will need a sharp pencil and coloured pencils. This is an chance to improve your drawing skills. try drawing bottles you have at home.	
Lesson 4	Drinks Bottle project. Research existing bottles and complete the design brief.	
Lesson 5	Complete the initial design ideas, use annotation.	
Lesson 6	Complete the final design and evaluation task.	
Lesson 7	Drinks bottle design:	
Lesson 8	Complete a range of drawings and sketches that are inspired by your chosen image.	
Lesson 9	Draw your final chair design, annotate this to show materials, dimensions, ergonomics and construction details.	
Lesson 10	Research Biomimicry. What does it mean? Find examples of products designed using this. There should be at least one in your home.	
+1 Challenge	Make a scale model of your chair design from cardboard and anything you may find at home.	
Just for fun!	Complete the robot, it will glue easier made from paper but you may wish to glue it on to thin card. You will need sharp scissors and a glue stick, do not use a craft knife without an adult present.	

# Ergonomics & Anthropometric Data

**Ergonomics defined.....** Ergonomics is the science of refining the design of products to optimise them for human use. Human characteristics, such as height, weight, and proportions are considered, as well as information about human hearing, sight, temperature preferences, and so on...

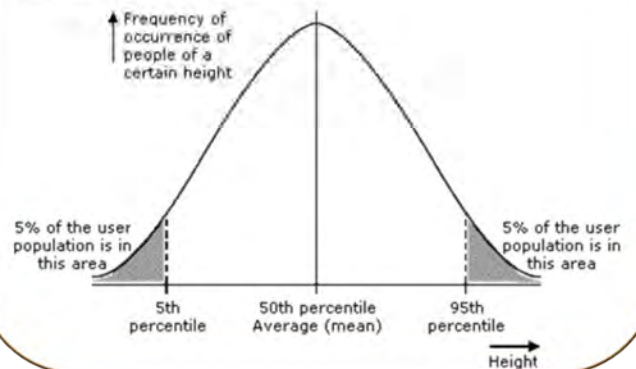
Write this in your own words:

## Task:

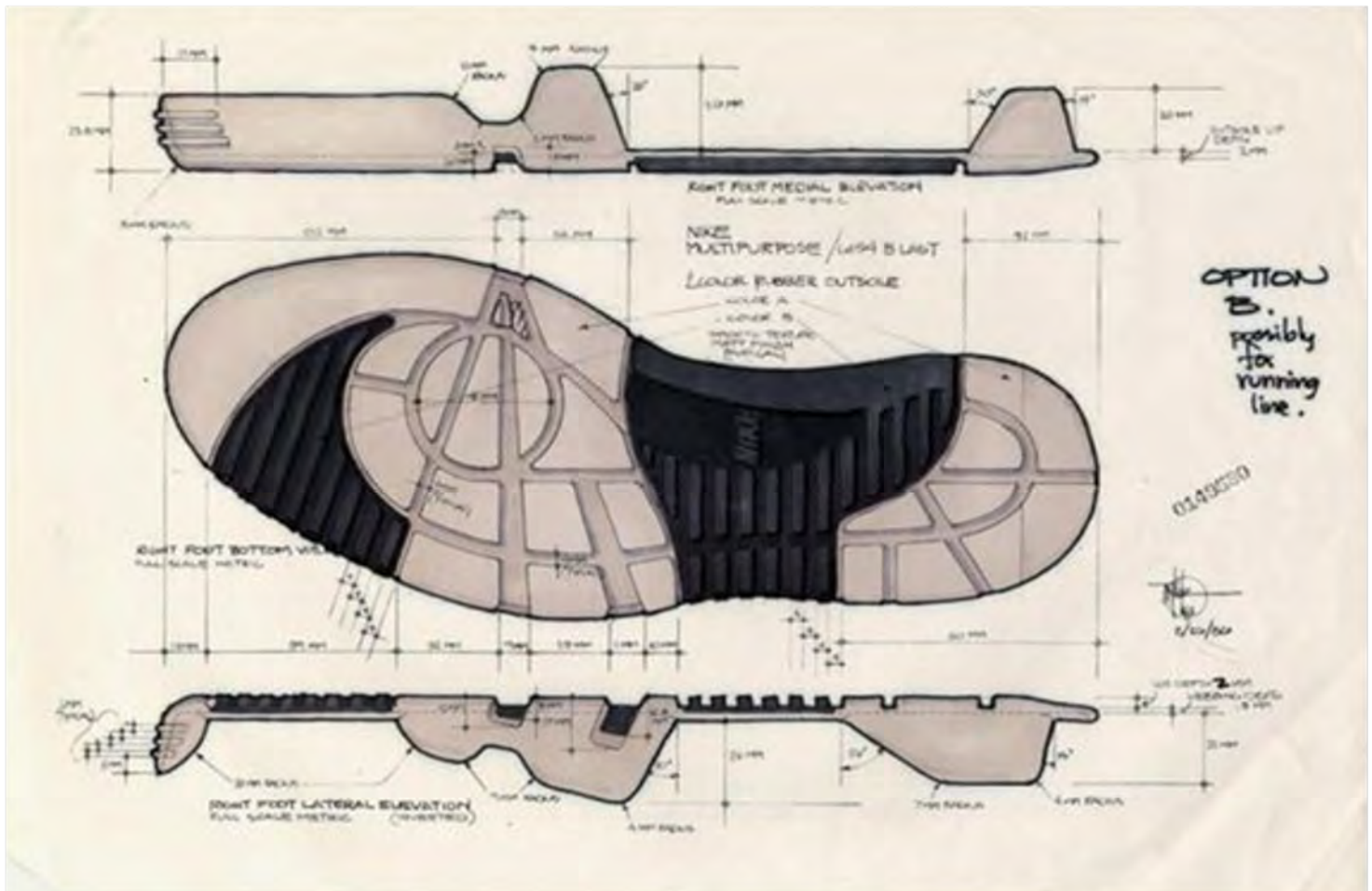
1. Remove your shoe (or borrow a smaller foot if yours doesn't fit in the box)
2. Draw around your foot in in the box below (imagine this as an inner-sole)
3. Dimension and label the innersole
4. Add the following features

- Flexible sections
- Sections that grip
- Sections that cushion

**Anthropometrics** is the study of the sizes of people. Designers use this information to make products that are of a suitable size. Most people fall into the 90% in the centre of this graph and designers aim to make products that can be used by this 90%.



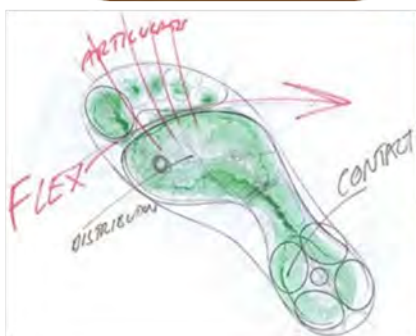
Annotation example- for a running shoe sole rather than an inner-sole



## Inner-sole Design

### Inclusive Design

Research what is meant by inclusive design. Write a description and find examples of three products that fit into this category.





# Wider issues- Impact on the Environment

Single use products are devastating for the environment, We are shifting towards removing them from our society, but it won't be a quick fix.

## Quick sketches

Draw 5 to 10 products that you consider to be a single use product. (maybe consider food packaging, medicines and home cleaning)

## Top tips for a better future

- Use materials that are locally sourced
- Design products to be easily disassembled
- Make products easy to repair
- Select materials from non-finite sources
- Make products as inclusive as possible
- Go biodegradable
- Avoid single use



As consumers, we need to be aware of our impact on the environment.

**Complete the WWF survey.** How did you compare to the average?- use the tips to improve your carbon footprint further!



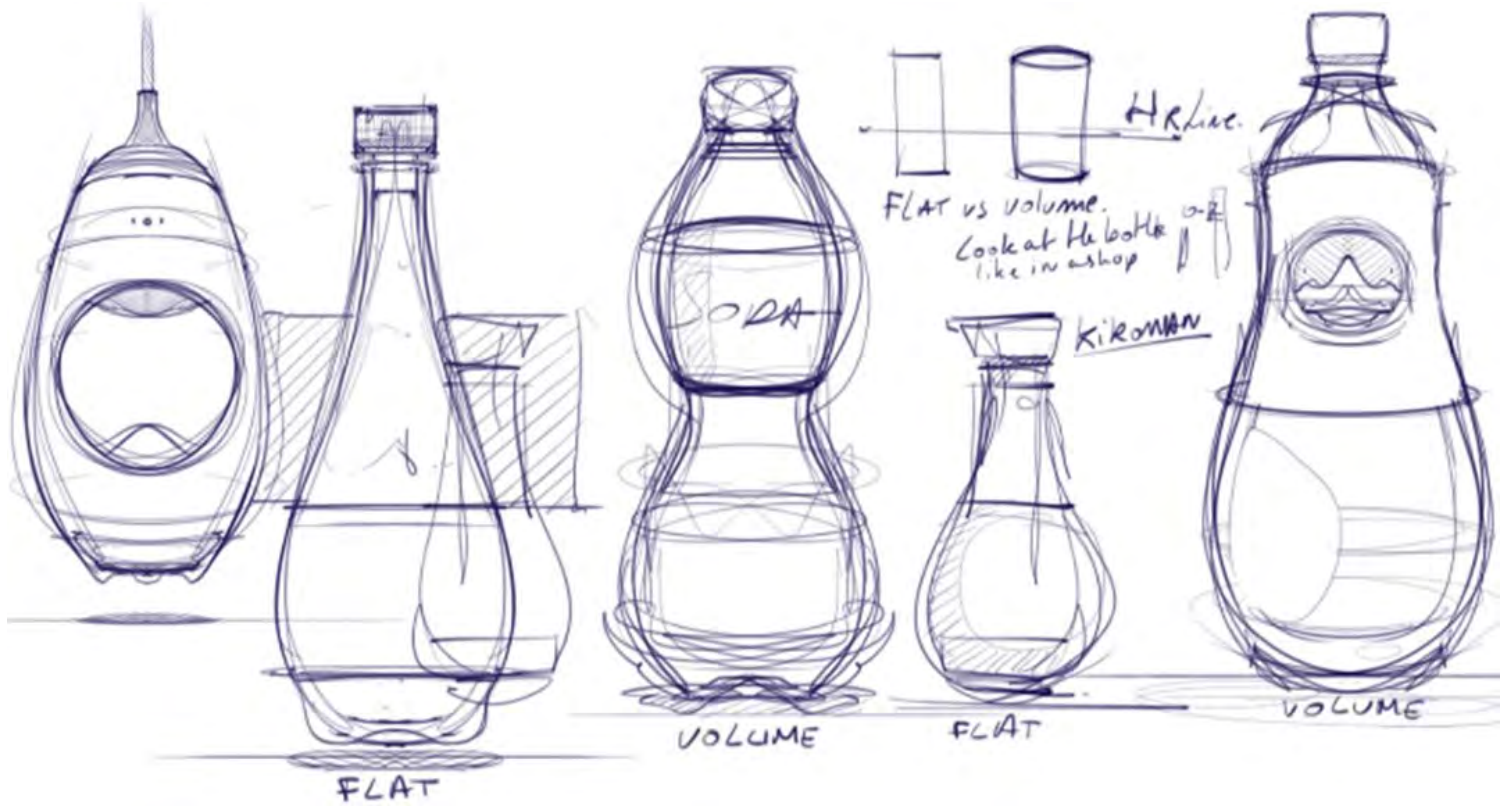
Label the diagram below (you may need to do a quick internet search if you are unsure of the 6 R's).



If you were to **redesign** the common biro to be more environmentally friendly, what changes would you make (label/sketch your changes)



**Drawing Skills revision** Sketch out these drawings, then try your own. Fill the page and use coloured pencils.  
A chance to improve your skills!



# Drinks bottle design

## Context

People taking part in a variety of sporting activities need to take water with them without relying on one use plastic..

### 1 Research:

Use the internet to see what is already out there. Look into materials and safety features. Look for bottles at home, why are they designed in the way they are? How easy are they to drink from when on the move? What is preventing leaks? How has the designer used ergonomics and anthropometric data? Summarise your findings in this box:



## Design Brief

I am going to design a solution to the problem of.....

It will be designed for (target market).....

who have the issue of (specific things to solve).....

The product must be...

because....

It must also be...

because...

It has to be...

because

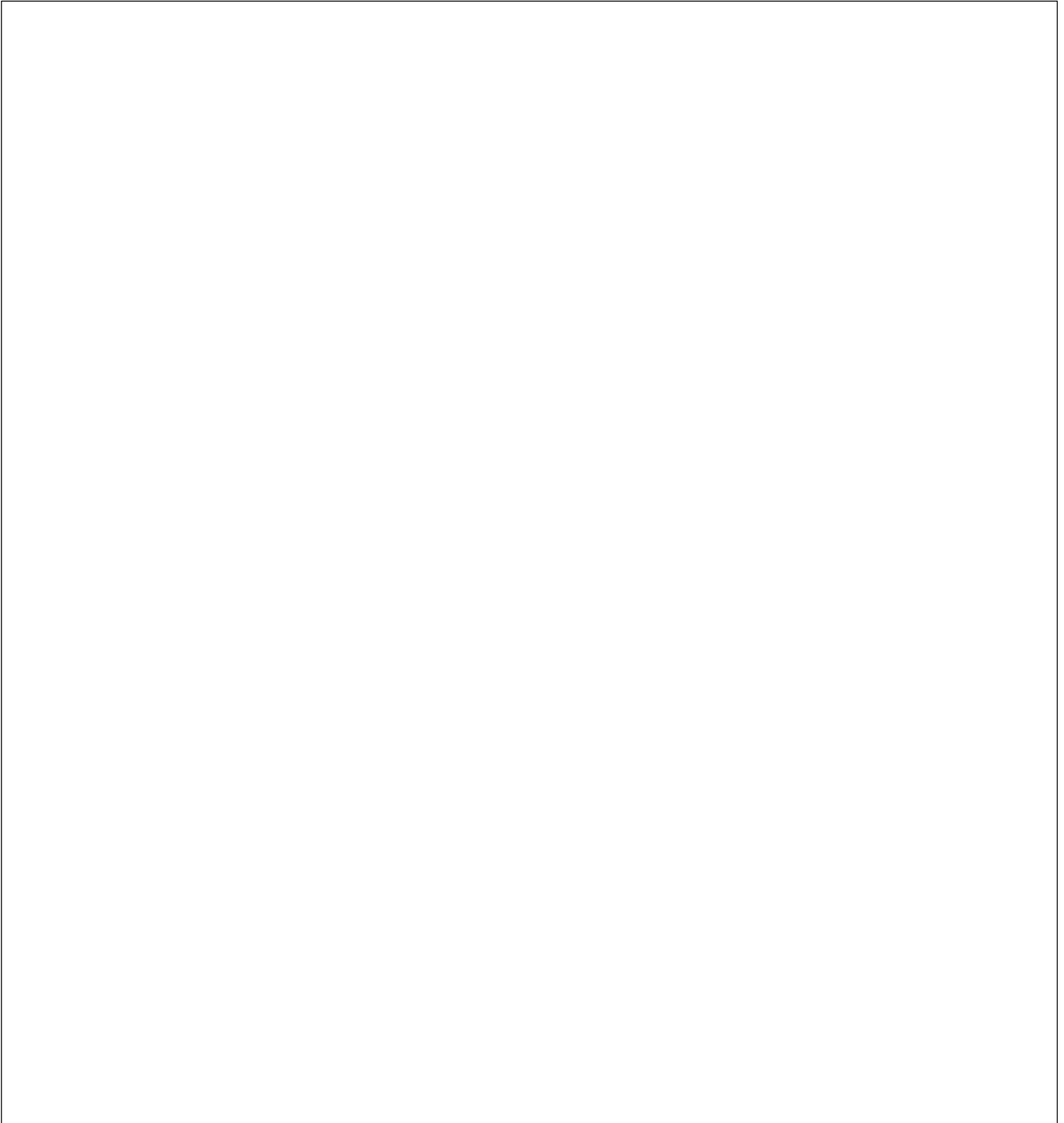
## **2 Initial Designs:**

Use your research to sketch 3 different design ideas. Use pencil, colour and annotation to explain your ideas, refer to your research and ergonomics.



**3 Final Idea** Review your initial design ideas. Make sure you have annotated (labelled and made notes) to explain how your bottle design is suitable for use when taking exercise. How easy is it to hold? How easy is it to drink from? What ideas did you take from your research? Go back and add to your annotation.

Now draw your best design with improvements below, annotate to show how it will function, sizes and materials (specific materials not 'plastic') chosen. Justify all of your choices.



**4 Feedback** Ask someone in your house to give one idea to improve your final design. Ask them also to write at least one thing that you've done really well or improved doing this project.

Chair design inspired by....

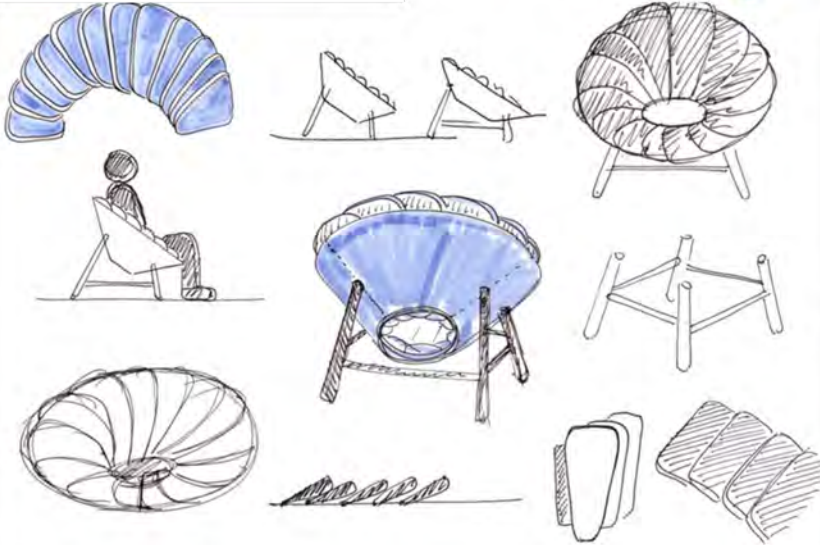
# Using Nature as inspiration

Choose an image from the selection below and produce a design page similar to this one.  
Design a chair inspired by your chosen image.

Marc Venot- Bird Chair



Marc Venot was inspired by the layers of feathers on birds and how they lie together to make different shapes. He has used a mixture of wood, electronics, textiles and plastics to create functional art for the home.

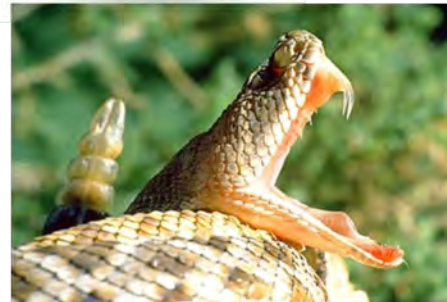


The vivid colour and textures are representative of parrot and peacock feathers and I really like the pop and punch of the bright dye in a monochrome room/ scheme.

The designer has also considered ergonomics and how the product will be used.



Choose just one image, produce a series of sketches based on that image and then develop these into an original chair design. Annotate to explain your process and how you have considered ergonomics, materials and colour.





REMEMBER TO FOLD AND NOT CUT ON THE DOTTED LINES. DON'T USE A CRAFT KNIFE WITHOUT A GROWN UP HELPING

# IDENTITY THEFT BOT



LIGHTBULB

MAKE A CUT FOR ARM

LOWER BODY

FRONT

BACK

MAKE A CUT FOR ARM

HEAD

MAKE A CUT ON TOP OF HEAD FOR LIGHT BULB

ARM

UPPER BODY

FEET

EXTRA FACES

ARM

