

TECHNOLOGY |

YEAR 8 Independent Learning Booklet 2021-2022



NAME:

FORM:

OVERVIEW

Welcome to your Design & Technology Independent Learning Booklet for 2021/2022









We have compiled a range of tasks and activities that relate to all three specialist areas (Food, Product Design and Textiles) that you will complete this year. We expect you to use this booklet to revise key topics, develop your practical skills and use it as guide to extend your theoretical knowledge of Design & Technology.

Please note:

- Students are expected to take ownership of their Independent Learning Booklet and therefore look after it. If the booklet is mislaid students will need to pay to have another one printed or alternatively download and print their own via the copy available on Google Classroom.
- All the tasks in the booklet correlate to the three specialist areas that you will complete on a carousel rotation this year.
- Tasks vary in style but it is expected that students spend between 30-60 minutes on each task and complete a minimum of one task each week.
- Design/drawing tasks are to be completed using a pencil.
- Students may visit/email the VA department to have work printed as and when necessary if they are unable to receive help with this at home.
- No graffiti should be visible in the booklet.
- You will be expected to bring your ILB to lessons and to discuss as well as share your progress with your teacher(s) and peers.
- A copy of this booklet can be found on Google Classroom.

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Curriculum Content: Food technology

A. EQUIPMENT AND SKILLS		
Pasta machine		Used for rolling out fresh pasta to an even thickness and cutting into strips.
Rolling pin		For rolling out dough or pastry to an even thickness and larger surface area. Also used for crushing ingredients or tenderising meat.
Boiling		Cooking in liquid at boiling point (100 degrees C) until the surface is covered with vigorous bubbles.
Simmering		Cooking at below boiling point until small bubbles are covering the surface.
Dicing		Chopping into small cubes in preparation for cooking.
Top and tailing		Removing the tip and the base of the stalk of a vegetable eg. beans, carrots in order to square it off.
Finely chopping		Peeling, slicing and chopping a food into fine pieces for blending with other ingredients.
Seasoning		Adding spices, herbs or other flavourings to food to create a balance of flavours that brings out the best of the ingredients in a dish to make it taste better.



B. KEY WORDS
<ul style="list-style-type: none"> • Food provenance: knowing the source of the food and it's journey from farm to plate • Preference test: A test used to find out if a food product is acceptable to the customer • Grading test: A test used to place foods in a specific order such as most sweet to least sweet. • Food choice: factors influencing what we choose to eat such as cost, religion, culture, lifestyle, healthy eating, seasonality and occasion. • Macronutrients: Nutrients that are needed in large amounts by the body. They are proteins, fats(lipids) and carbohydrates. • Micronutrients: Nutrients that are needed in small amounts by the body. They are called vitamins and minerals. • Proteins: a nutrient essential for growth, repair, maintenance and energy. • Carbohydrates: a nutrient essential for energy found in sugar, starch and dietary fibre • Fats: a nutrient essential to provide warmth, energy, protection and fat soluble vitamins • Vitamins and Minerals: micronutrients essential for many chemical functions in the body such as iron for blood and vitamin c for repair and immunity • Taste buds: nerve endings on the tongue that tell the brain if a food is sweet, sour, bitter, salty or other taste. • Umami: a savoury taste • Traffic light food label: a colour coded food label which helps you to choose healthy foods

Curriculum Content: Food technology

C. KNIFE AWARENESS

1. All knives must be counted out and counted in each lesson. You are responsible for the knife you use and you personally hand it back to the teacher.
2. Always walk with your knife pointing down by your side.
3. Place knives away from the edge of the worktop, handle closest to the edge.
4. Wash knives separately, do not leave them in the sink where they might become covered with other items. Wash and rinse the handle and blade, checking for fragments of food. Dry up thoroughly straight away to avoid rusting and put back in the knife safe, ensuring your name is crossed off the list.
5. Keep your eyes on the blade when you are chopping and use bridge and claw method to keep fingertips safe.
6. When passing the knife to someone else, put it down on the worktop and let them pick it up for themselves.
7. If your knife is blunt, tell the teacher. They will sharpen it, sharp knives are safer than blunt ones!

D. COMMODITIES

Learning to recognise and handle different kinds of commodities is one of the themes of the Year 8 course. High risk foods such as meat, dairy, eggs and fish require additional safety precautions such as temperature control.

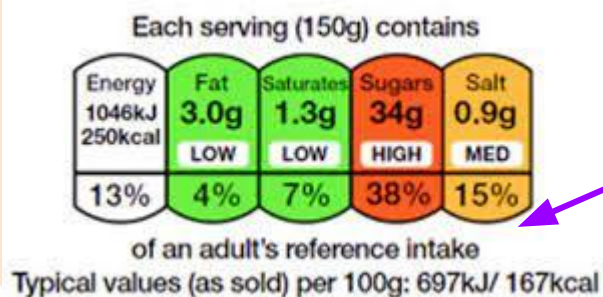
The main commodities are:

Cereals	Meat
Potatoes and vegetables	Poultry
Fruit	Fish
Cheese, yoghurt, milk	Soya, tofus, beans, nuts and seeds

E. TRAFFIC LIGHT FOOD LABELLING

The Traffic light label provides a quick guide to the fat, saturated fat, sugar and salt content in processed food.

On this traffic light label, the food is low in Fat and Saturated Fat so is labelled green. It is very high in sugars and would amount to 38% of the daily recommended amount so is labelled red.









The reference intake is the daily recommended amount that an adult should have of each nutrient. For example, the daily recommended amount of salt for an adult is 5 grams.

Those with specific dietary requirements need to calculate their percentage daily intake of these ingredients in order to stay in good health.

Too much Fat, Saturates, Sugars and Salt in your diet can contribute to health issues later on in life such as high blood pressure, heart disease and diabetes.

Curriculum Content: Product Design

A. KEY EQUIPMENT		
Tenon Saw		A hand saw with a stiff back that is used to cut straight lines in wood. These saws are particularly good for cutting joints such as finger joints or mortise and tenon joints.
Coping Saw		A hand saw that is used to cut curves and complex shapes in wood and plastic. Coping saw blades are much thinner than tenon saw blades which helps them to cut intricate designs.
File		Files are used to shape and smooth wood, metal or plastic. These can be used after cutting materials to ensure a smooth and accurate finish, and ensure joints fit with precision.
Try Square		A try square is used for marking out pieces of wood and for checking that 90 degree angles are accurate. They are very useful when marking out joints.
Belt Sander		A machine used to smooth the edges of materials. Belt sanders still give a rough finish due to the abrasive paper having a high grit, but can prepare work ready for finer sanding with hand tools.
Disc Sander		A machine used to smooth the edges of materials. Unlike the belt sander, the disc sander moves in a circular motion and is better for smaller work or rounding corners.

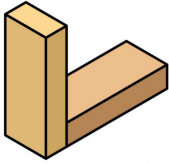
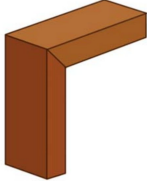
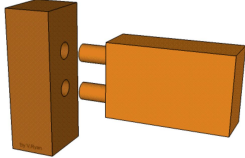
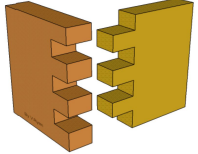
B. KEY WORDS
<ul style="list-style-type: none"> • Iterative Design: A cyclical design approach where designs are tested, evaluated and refined a number of times. 'Iterative' simply means the repetition of a process. • Design Brief: A design brief is the statement a client gives to a designer outlining what they want their product to be like, eg 'Design, make and finish a box made from pine and acrylic'. • Specification: A design specification is a list of criteria a product needs to address. Using the brief as a starting point for research, a specification can be written when more facts are known. Information needs to be found through research to help produce early design solutions and improvements. • Modelling/Prototyping: Making a physical example of a product that has been designed in order to test its suitability and success. This often happens multiple times. • Renewable Materials: Materials which can be replaced and will not run out e.g. trees to make wood and paper. • Non-Renewable Materials: Materials which cannot be replaced e.g. oil to make plastics. • Sustainability: Trying to control the reduction in the number of natural resources used in products in order for nature to remain unchanged. • Evaluate: Assessing the strengths and weaknesses of something. • Testing: Checking the suitability of a design product in use.

Curriculum Content: Product Design

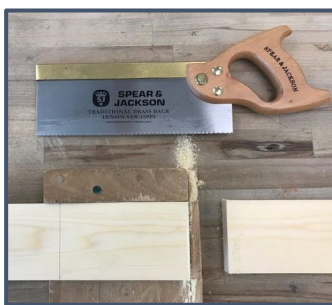
C. HEALTH AND SAFETY

1. Always remove your blazer & tie long hair back when completing practical activities, as well as removing dangly jewellery and tucking ties into shirts.
2. Wear an apron.
3. Ensure all stools are put away and there are no trip hazards in the room.
4. Do not distract others when they are using tools or machinery.
5. Do not use tools and equipment without permission.
6. Do not use machinery without supervision, and ensure you are wearing goggles at all times.
7. Switch off machinery as soon as you have finished.
8. Be respectful of all tools and equipment.
9. Be tidy and put everything back in the correct place when you have finished.
10. Do not play with the vice when seated at the workbench.

D. TYPES OF WOOD JOINT

			
Butt Joint: The simplest type of joint, which is often strengthened with pins or nails.	Mitre Joint: Often used on picture frames, 45 degree angles are cut to create an attractive finish.	Dowelled Joint: Wooden dowels add strength and rigidity to this type of joint, which can also be glued.	Finger Joint: A simple joint which involves cutting multiple 'fingers' which are then glued.

E. HOW TO MARK OUT FINGER JOINTS



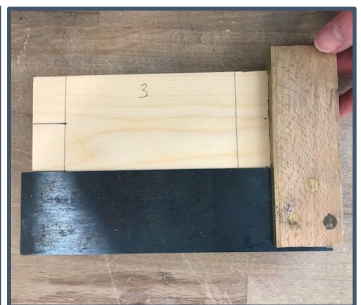
1. Use a tenon saw and bench hook to cut sections of wood. You will need 4 pieces in total to create a square box.



2. Number the sections of wood 1, 2, 3, and 4. This will be useful when cutting the joints and putting your box together later.









3. Stand one of the pieces on it's edge and use a pencil to draw lines the same thickness as the wood down the edges of each piece.



4. Carefully mark the 'fingers' within these pencil lines. Use a try square to keep your marking out at 90 degree angles.

Curriculum Content: Textiles

A. KEY EQUIPMENT & MATERIALS			B. KEY WORDS
Fabric Shears		Fabric shears are specifically used to cut fabric. The blades must be 15-20cm long to give a smooth cutting motion. Cutting paper with them will make the blades blunt.	<ul style="list-style-type: none"> • Analysis: Examine something in detail, in order to explain and interpret it. • Appliqué: One shape of fabric is sewn on top of another piece of fabric, it can be attached using hand embroidery or by using the sewing machine. • Bondaweb: Is an adhesive web that is used to secure fabric for applique. The bondaweb ironed to the applique fabric, cut to shape and then ironed to the base fabric. This ensures that pins do not need to be used when sewing the applique with the sewing machine. It also helps to stop fabric from fraying. • Design Brief: A design brief is the statement a client gives to a designer outlining what they want their product to be like, eg 'Design an environmentally friendly bag, using a nautical theme' • Hand Embroidery: A thread and needle are used to sew shapes and patterns onto fabric by hand • Evaluate: Assessing the strengths and weaknesses of something. • Fabric Painting: Fabric paint is used to paint directly onto fabric. When dry it needs to be heat set with an iron so it does not come off. • Seam: A line where two pieces are sewn together. • Seam Allowance: Is the area between stitching and the raw cut edge of the fabric. It allows a seam to be made and the standard measurement is 1.5cm. • Stenciling: a technique for reproducing designs by passing fabric ink over holes cut in cardboard onto the surface to be decorated.
Needles		Needles come in various sizes. The right size or type is chosen based on the type of thread you want to use. There is a sharp point at one end and the other has an "eye" that the thread is placed through.	
Pins		Dressmakers pins are usually thin, about 2-3cm long, sharp at one end with a "head" at the other. They are used to temporarily hold two or more layers of fabric together when cutting or sewing.	
Machine Thread		Sewing machine thread, is used on the sewing machine. It can be made from cotton or polyester. The yarn is dyed into many different colours, so that you can choose a thread that best matches your fabric.	
Tailors Chalk		Tailors chalk is used to mark out where you want to sew or cut fabric. It is available in different colours and was traditionally used by tailors.	
Bondaweb		Bondaweb is a soft adhesive web attached to transfer paper. Bondaweb is used for bonding two fabrics together quickly & easily.	

Curriculum Content: Textiles

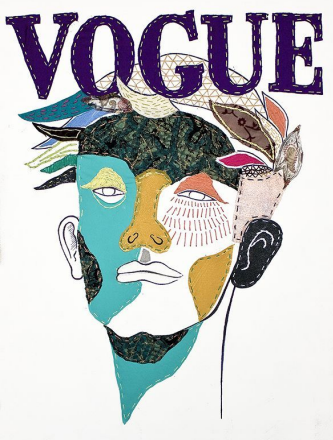
C. HEALTH AND SAFETY

1. Always remove your blazer & tie long hair back when completing practical activities
2. Ensure that you hold fabric shears and scissors by the handle, carrying them down by your side
3. Remove your blazer or wear an apron when you are using fabric paint or dye
4. Do not talk when you are using a sewing machine, you must concentrate
5. Do not distract others when they are using sewing machines.
6. Be careful with pins and needles. Make sure they are put away after use and they are not left on tables
7. Do not use an iron without supervision
8. Switch off equipment when you have finished.
9. Be respectful of all resources and equipment
10. Be tidy and put everything back in the correct place when you have finished.

D. EDO MORALES

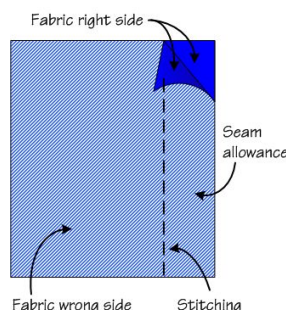
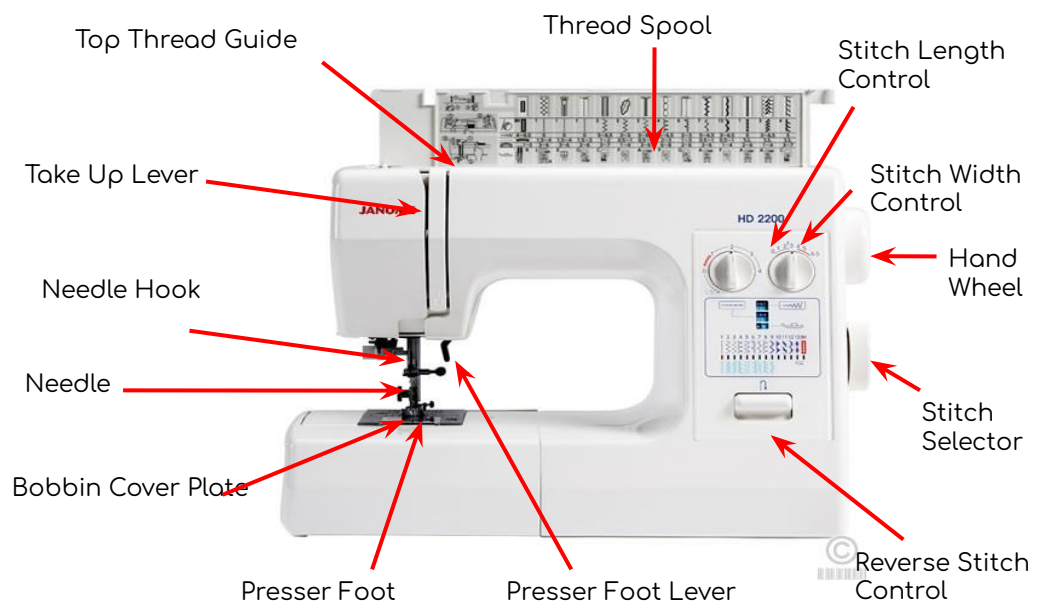
Edo Morales (Eduardo Morales) is an artist based in Santiago, Chile. He uses textiles and mixed media to create his portraits, including photography. His textile self portrait collection was made in 2011 – 2012. Amongst his portraits he has creatively represented celebrities such as the artist Frida Kahlo and British pop icon David Bowie.

Morales' works can be described as abstract, bright, vibrant and detailed. He uses a variety of applied fabric, embroidery and printing to create texture in his works.



Above: Edo Morales Work

E. PARTS OF THE SEWING MACHINE



F. SEAMS

A seam is made when two pieces of fabric are sewn together. The most common type is a plain seam. There are many different types of seams. The one you use depends on the fabric type and the product you are making.

Food

Skill focus: Safety

1a. Temperature control

Fill in the missing words using the word bank below

Storing food correctly will minimise the risk of _____ and food poisoning.

When _____ are stored in warm conditions for too long, it can cause _____.

_____ are everywhere. They _____ quickly if they have warmth, _____, _____ and _____ to grow.

Once foods are _____ with bacteria, they reproduce by _____ (splitting in two).

Bacteria can reproduce as quickly as every _____ minutes.

Bacteria grows best in the _____ which is between 5 and 63 degrees C.

- Below 5 degrees C, bacteria are _____; they grow very slowly or not at all.
- Above 63 degrees C, they are mainly destroyed by heat
- You can use a _____ to check the food has reached the correct temperature.

REPRODUCE, BACTERIA, FOOD, HIGH-RISK FOODS, DORMANT, TIME, TEMPERATURE DANGER ZONE, 10, FOOD SPOILAGE, MOISTURE, FOOD POISONING, TEMPERATURE PROBE, CONTAMINATE, BINARY FISSION.

1b.. Tick which of these are High Risk Foods.



Food

Skill focus: Comprehension

2. Cereals - Turning wheat into flour

Read the passage on cereals then demonstrate your understanding with these true / false statements (T / F)

Cereals are cultivated grasses. The grains of these grasses are used as the food source. One of the most important cereals is wheat.

Primary processing means changing the raw food material into food that can be either eaten immediately or processed into other types of food products. During the primary processing of wheat, the outer layers of the grain need to be separated from the inner layers. To achieve this, the wheat must be milled.

Milling is the process of grinding down the wheat grain. Wheat is usually ground down to make flour. The **extraction rate** is the percentage of wheat grain found in the flour. The higher the extraction rate, the higher the amount of **fibre**. Fibre absorbs liquid so more liquid is needed with recipes using wholemeal or brown flour.

100% extraction rate = whole grain / whole wheat

85% extraction rate = brown flour

70% extraction rate = white flour

When white flour is produced, all the wheat germ and bran are removed. This removes the vitamins and minerals. To replace these lost vitamins, and minerals, the flour is **fortified** with calcium, iron and some B vitamins.

Are these statements true or false?	T / F?
The higher the extraction rate, the lower the amount of fibre is retained in the flour.	
Primary processing means turning raw food into edible food	
Wheat is one of the most important cereals	
Brown flour has an 85% extraction rate	
The process of grinding down wheat grain is called grinding	
Wholemeal flour is better for your gut because it contains more fibre	
Wholemeal flour is fortified with calcium, iron and some B vitamins	

Food

Skill focus: Evaluating

3. Sensory Evaluation and Tasting

Complete the table, filling in the gaps and by selecting at least 2 foods found in the kitchen. Answer 3 questions about your personal taste preference, giving reasons for your choice

Basic taste	Foods tasted
S.....	
Salt	
S...	
B.....	
Umami	

In the box below, write about your favourite taste. Be sure to write in full sentences with good English and punctuation. Consider if your choice is related to your family, cultural or personal preferences and any memory / emotional associations you have with this taste.

a)What is your favourite taste. Identify what foods you particularly enjoy with this taste.

b)Describe on what occasions you enjoy to have this food

c)Explain what makes it so special for you.

Food

Skill focus: Knowledge and Understanding

4. Where does our food come from?

Read the passage on food provenance then demonstrate your understanding by categorising the foods listed.

Food provenance means knowing:

- Where food is grown, caught or reared
- How it is produced
- How it is transported

Food that is grown by farmers who:

- Prepare the soil, sow the seeds at the right time of year, water the crops and keep them free of weeds and pests. Harvest the crops and send for processing.

Food that is caught by fishermen by:

- Trawling with nets pulled along the seabed
- Line-caught individually with rods and bait
- Pots used to catch lobsters or crabs which are collected.

Food that is reared by farmers such as:

- Cows for meat, dairy and milk
- Sheep
- Pigs
- Chicken for meat and eggs

Categorise the foods listed in the word bank at the bottom of the table and place them in the correct column

Food that is grown	Food that is caught	Food that is reared
beef steak sugar beet apples salmon plums Pork	porridge oats lobster peas pears broccoli scallops	strawberries lamb mackerel tomatoes pumpkin grapes eggs potatoes honey turkey blackberries chicken

Food

Skill focus: Research and Investigating

5. Milk alternatives

Read the introduction and case study, then research and make your recommendation in the box below.

Introduction

Milk is a fantastic source of calcium especially for children who need calcium to grow strong bones and teeth. Cow milk is the most common type of milk produced in the UK, but with the rise in food related allergies, many families are turning to milk alternatives which can also be fortified with additional vitamins and minerals.

Case study

Rukia aged 22, has developed an intolerance to cow milk and is looking to switch to a milk alternative. She also does not get on well with hazelnuts. Rukia wants to do her bit to save the environment and tries not to waste food.

Should Rukia switch to soya milk, almond milk or oat milk?

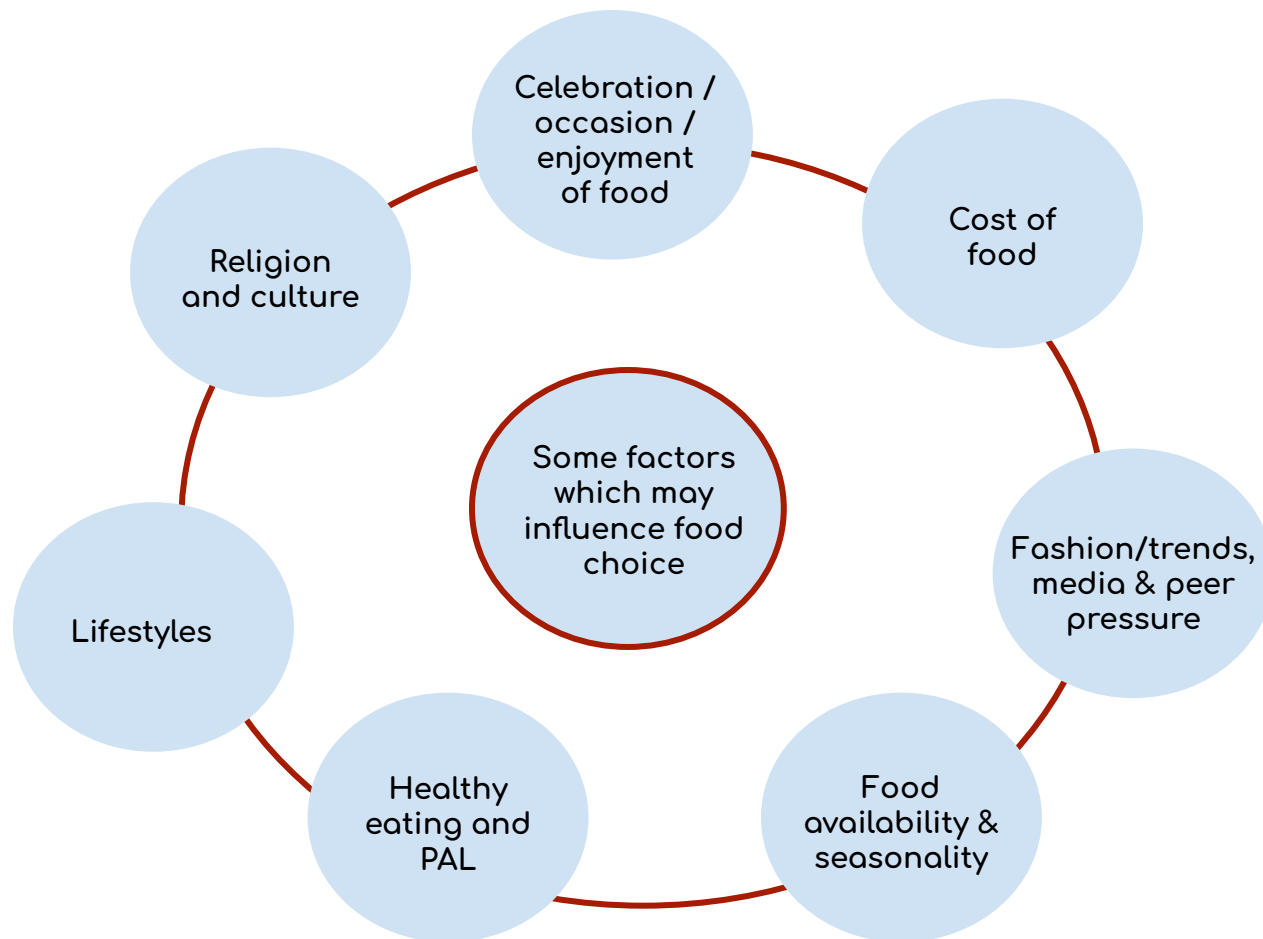
Research the following milk alternatives and make your recommendation giving reasons for your choice. Write in full sentences with good English and grammar.

In my opinion, Rukia should switch to _____ as her milk alternative because...

Food

Skill focus: Knowledge and Understanding

6. Factors affecting food choice - lifestyle



Choose one of the factors which may influence food choice that you feel most able to write about or you feel that you have most knowledge about. Write a short piece of persuasive writing for your food blog, in which you describe and account for why your chosen factor can influence food choice.

Food

Skill focus: Research and Investigating

7. Where does our food come from - food processing and provenance labelling. Read on to find out more and find the video on the Red Tractor logo to find out what food standards are applied to all Red Tractor endorsed products.

READING TASK

After food is grown, reared or caught, it is processed before it can be eaten. This is known as **Food Processing**.

- **Primary processing** means preparing a raw food for sale or cooking eg. milling wheat into flour
- **Secondary processing** involves turning the primary-processed ingredient into a food product eg. turning flour into bread.

Food production and farming methods

- Chicken for meat and eggs can be produced by **intensive farming**. This means keeping animals indoors in large numbers (caged hen farming)
- In **free range farming**, chickens are allowed to roam outside during daylight hours and are given a lot more space.
- **Organic farming** is where farmers produce food following very strict guidelines eg using no artificial pesticides or fertilisers.



WATCHING TASK

Type in the youtube url to find a 2 minute video about what the Red Tractor logo means:

https://www.youtube.com/watch?v=N_c-uAluEuo&ab_channel=RedTractor

EXTENSION TASK

Here are some other symbols that you will find on your food. Investigate and discuss with your family what these symbols mean?



Food

Skill focus: Research and Investigating

8. Allergens

Read the paragraph about allergens and spot the odd one out for each category of food intolerance

READING TASK

What is a food allergy?

An allergen is a substance or food that may cause an allergic reaction. Some food allergies are mild, but others can be very serious if the correct treatment is not given quickly. In serious cases, some people suffer severe allergic reactions and require an injection of adrenaline from an Epipen to help them recover. Here are some examples of foods that some people can be allergic to:



QUIZ: About 1 person in 100 suffer from intolerance to gluten known as **coeliac disease** whose symptoms are diarrhoea, bloating and weight-loss. Gluten is found in wheat flour and other cereals such as rye, oats and barley.

Put a cross (X) through any foods pictured below that a person with coeliac disease should avoid.



Product Design

Skill focus: Drawing Techniques

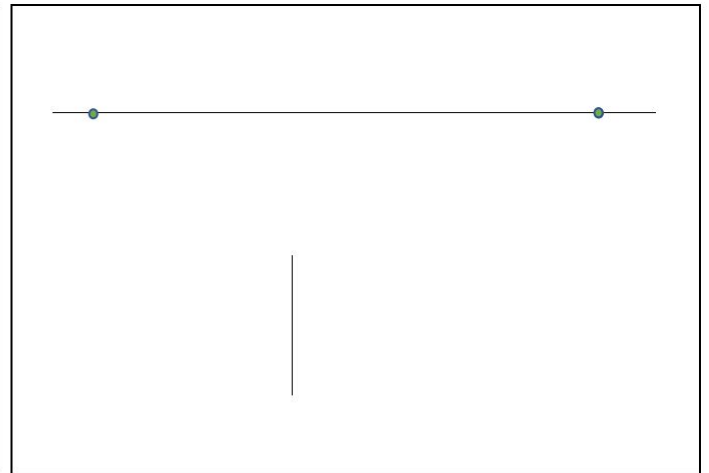
1a. Drawing in 2 Point Perspective

Two point perspective is a drawing technique used to take 2D shapes and make them appear 3D. Follow the steps below to create your own 2 Point Perspective drawing on the following page.

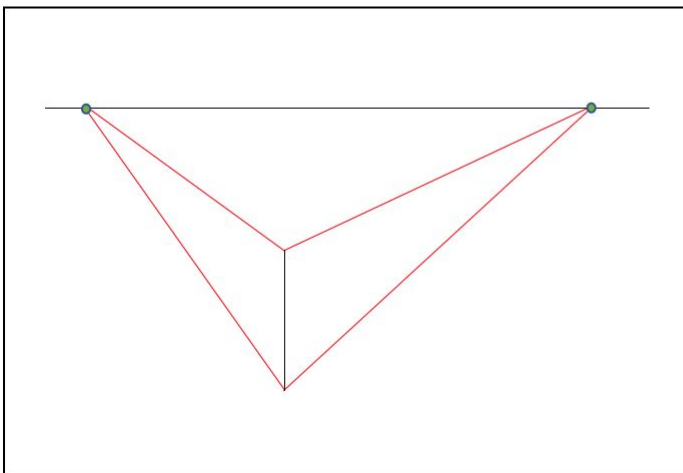
Remember: Always use a ruler to draw your guidelines.



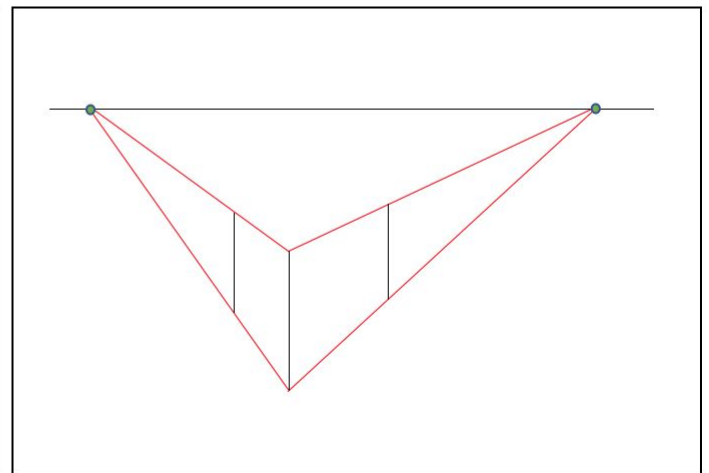
1. Draw a horizontal line and mark two vanishing points.



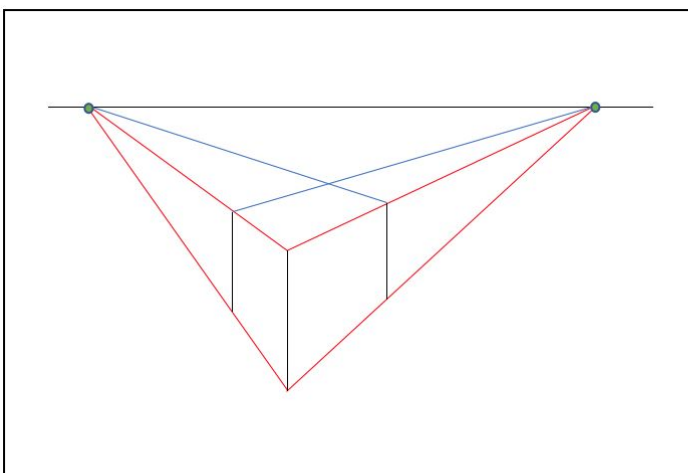
2. Draw a vertical line below (or above) your vanishing points.



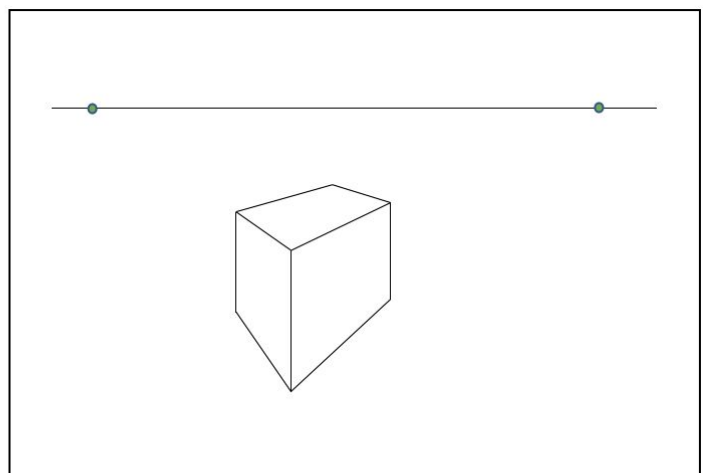
3. Lightly draw some guidelines from the top and bottom of your vertical line to the vanishing points.



4. Draw two more vertical lines within your new guidelines, either side of the line you drew in step 2.



5. Draw two more guidelines from the top of your new vertical lines to the opposite vanishing point.



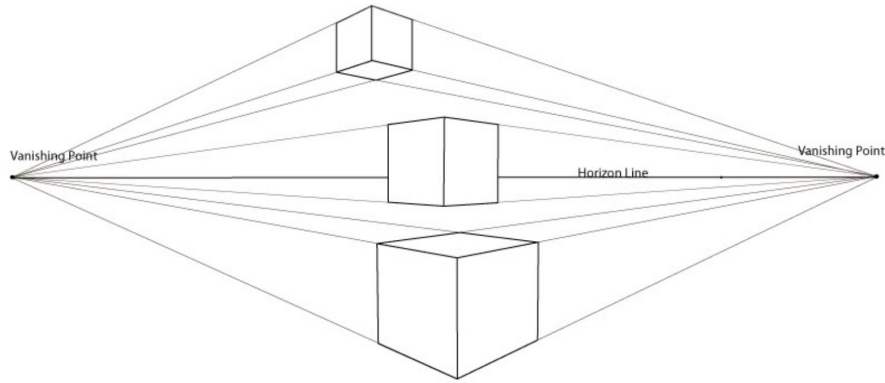
6. Rub out the guidelines that do not form a part of your shape.

Product Design

Skill focus: Drawing Techniques

1b. Task: Use the space below to draw a cube in two point perspective. Remember to label the horizon line and the vanishing points. Choose at least 2 other shapes to draw and add them in, you can use the same horizon line and vanishing points for all 3 shapes.

Example:



Product Design

Skill focus: Research & Investigating

2. Wood in Furniture Design

The following designers have used wood as the primary material for creating these well known products. Research the following pieces of furniture and fill in the details below.



Designer: _____
Name of Wood(s): _____
Is this a hardwood, Softwood or Manufactured Board?
Why do you think the designer has chosen this material?

Designer: _____
Name of Wood(s): _____
Is this a hardwood, Softwood or Manufactured Board?
Why do you think the designer has chosen this material?



Designer: _____
Name of Wood(s): _____
Is this a hardwood, Softwood or Manufactured Board?
Why do you think the designer has chosen this material?

Designer: _____
Name of Wood(s): _____
Is this a hardwood, Softwood or Manufactured Board?
Why do you think the designer has chosen this material?



Product Design

Skill focus: Research and Investigating

3. Innovation in Materials

Over time, new materials are created and old materials are adapted to solve complex design challenges. These challenges include things such as:

- **Durability:** The need for materials to last a long time, particularly in harsh environments such as underwater, and in extreme heat and cold.
- **Aesthetics:** The need for materials to look good.
- **Sustainability:** Many materials use finite resources such as oil to be made, so there is a drive to replace these materials with more environmentally friendly solutions.

Task: Research the following materials and explain how they are made, and the challenges they aim to solve. What products are they used in?







Product Design

Skill focus: Investigating

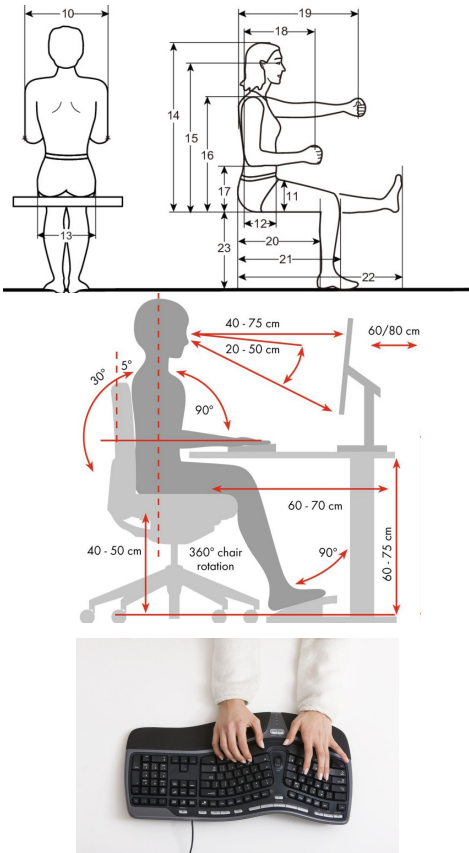
4. Ergonomics in Product Design

Anthropometrics is the study of the sizes of people in relation to products. For example, chairs used in schools need to be suitable for the average size of pupils in the schools.

Ergonomics is the relationship between people and the products that they use. It uses anthropometric data to help design products to meet the needs of the people using them.

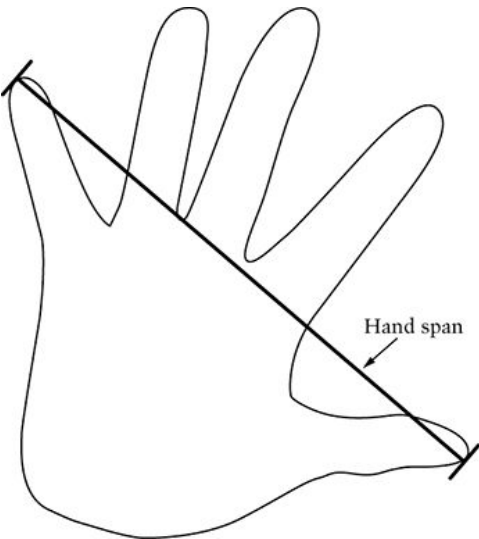
Example:

This computer keyboard has been designed to better fit the shape of the users hands.



Task 4a: Measure your hand span in millimetres. This is the distance between the tip of your thumb and the tip of your little finger when your hand is stretched out. Measure the hand span of 5 other people. This could be your classmates, family or anyone else. Write the hand spans. In the table below. Work out the **AVERAGE** hand span by adding them all together and then dividing them by how many there are.

PERSON	HAND SPAN
Example: Miss Underwood	192mm
AVERAGE:	



Product Design

Skill focus: Investigating

4b. Re-design this product to be more ergonomic. Consider the hand spans you measured in Task 1 to help you. How could the design be improved to make it easier and more comfortable to use for whoever is using it?



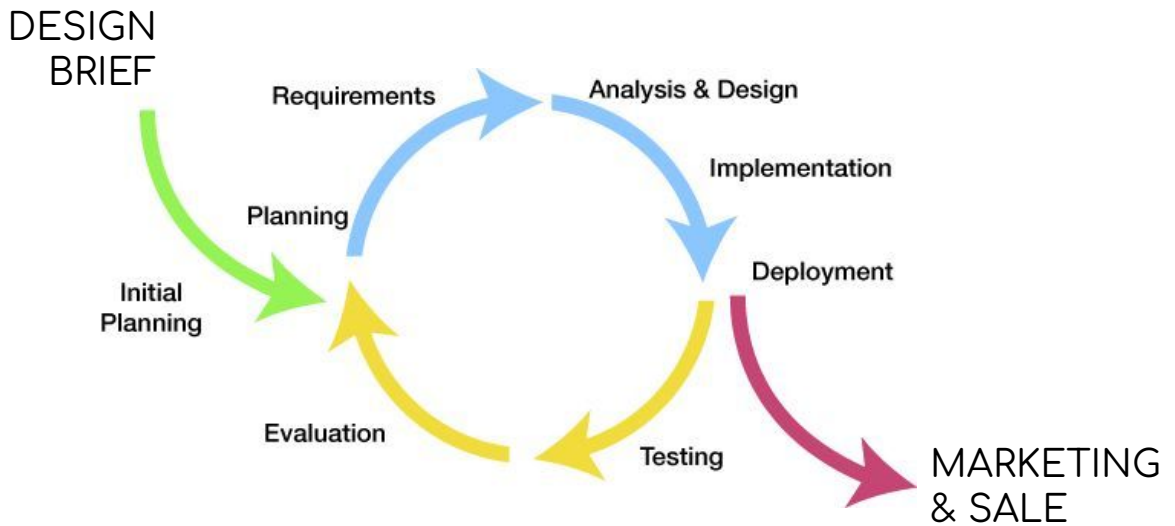
Draw your design in the box below. Include annotations to explain who the product is designed for, and the improvements you have made which make the design more ergonomic.

Product Design

Skill focus: Evaluating

5. The Iterative Design Process

The iterative design process is when a design is revisited and reflected upon at regular points in order to improve and refine design ideas. This ensures they best meet the needs of the final user. Iterative design is a circular design process that models, evaluates and improves designs based on the results of testing.



Task: Reflecting (also known as **evaluating**) your designs is a key part of the iterative design process. It is important to be able to consider how well a product functions and suits the needs of its user.

Write an evaluation of your design from the previous task. If you were to design it again, what would you change? How could you improve it even more? Consider who will use it and how it will be useful to them, as well as it's aesthetics. Ask at least one other person (a classmate, friend, parent) what they think to help you write this.

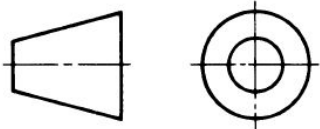
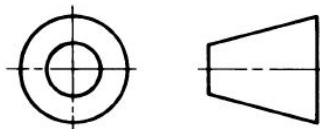
This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

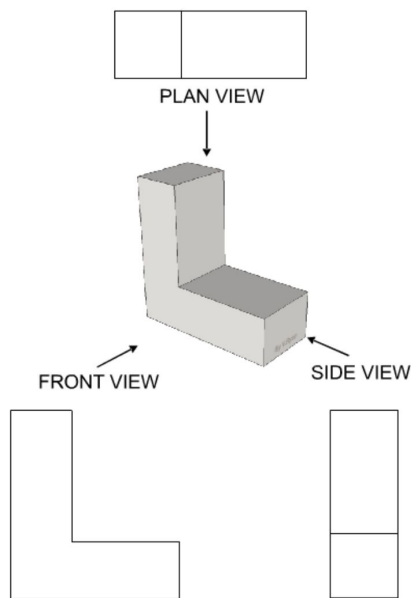
Product Design

Skill focus: Drawing Techniques

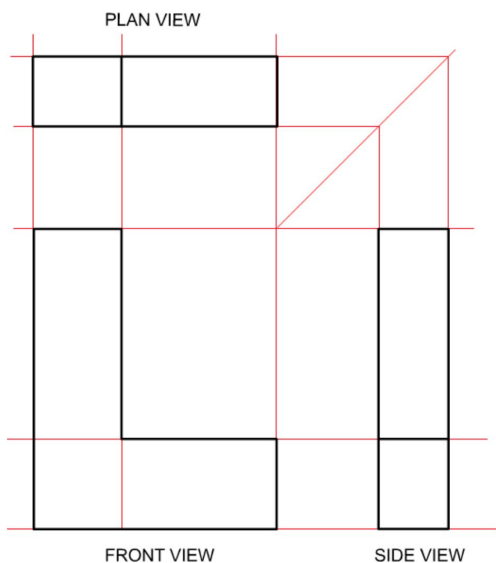
6. Working Drawings: Orthographic Projection

In order for designs to include enough detail for a manufacturer to produce them, a working drawing is often necessary. Working drawings are best presented in **orthographic projection**. The two types used are **first angle projection** and **third angle projection**. When using these drawing techniques, it's important to label your drawings with the appropriate symbol to explain your drawings.

Projection	Symbol
First angle	
Third angle	



This 'L' shape block is drawn in third angle projection below. The PLAN view is taken from above looking down. The front and side views are from the sides.

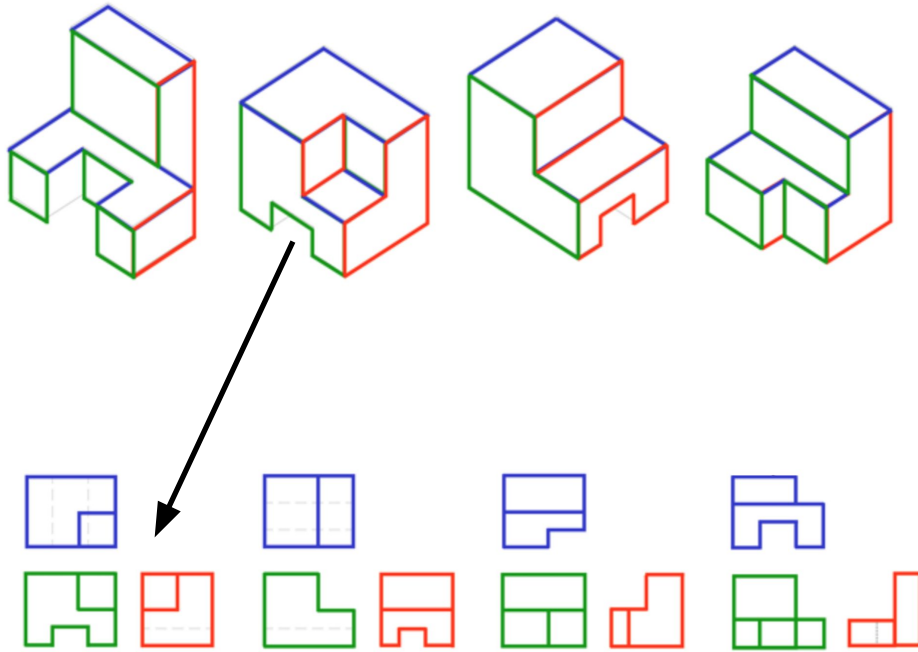


In third angle projection, the front view is always drawn in the bottom left corner. The plan view is above, and the side view to the side. Guidelines are drawn to keep the dimensions the same across all three drawings.

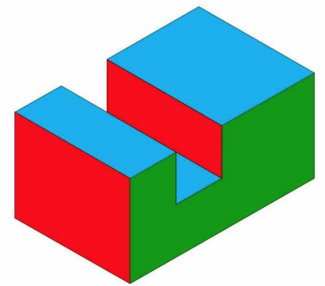
Product Design

Skill focus: Drawing Techniques

6a. Draw lines to match the Isometric drawing to the third angle projection drawing. Which are the same?



6b.: Draw this 3D shape in third angle projection in the box below. Use a ruler and draw guidelines to help you. Remember to draw the appropriate symbol next to your drawing.

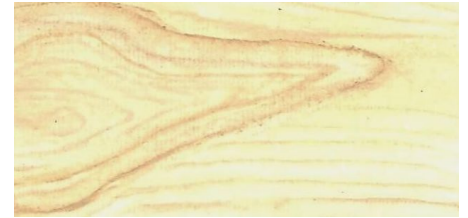
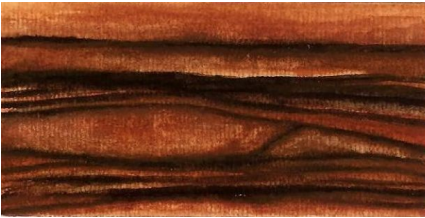


Blank area for drawing the 3D shape in third angle projection.

Product Design

Skill focus: Rendering Techniques

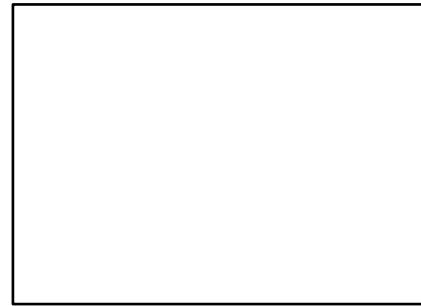
7. Different materials have different surfaces and textures which we can recreate by rendering our drawings. Below are examples of rendered woods.



Task: Use coloured pencils to recreate the colour and texture of the following woods. Use skills that you've been practicing in your Art lessons to do this.



Cherry →



Beech →



Oak →



Ash →



Textiles

Skill focus: Comprehension

1. The History of Textiles

Read the information below and highlight key words and dates before answering the questions in full sentences on the next page.

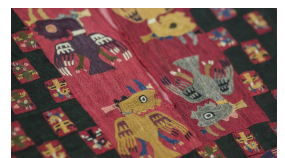
The term 'Textile' is a Latin word originated from the word 'texere' which means 'to weave'. Textile refers to a flexible material comprising of a network of natural or artificial fibers, known as yarn. Textiles are formed by weaving, knitting, braiding, crocheting, knotting, felting and pressing fibers together.

Yarn, fabrics, and tools for spinning and weaving have been found among the earliest relics of human habitations. Although examples of prehistoric textiles are extremely rare because of the perishability of fabrics.

Linen fabrics, dating from 5000 BC, have been discovered in Egypt. Woollen textiles, from the early Bronze Age, have been discovered in Scandinavia and Switzerland. Cotton has been spun and woven in India since 3000 BC. Silk has been woven in China since at least 1000 BC. By the 14th Century fabrics were being woven on hand looms.

The textile industry, although highly developed as a craft, remained essentially a cottage industry until the 18th century. Factory organization became most advanced in the north of England, and the Industrial Revolution, at its height between 1760 and 1815, this greatly accelerated the growth of the mill system.

Throughout the 19th century a succession of improvements in textile machinery steadily increased the volume of production, lowering prices of finished cloth and garments. The trend continued in the 20th century, with emphasis on fully automatic or nearly fully automatic systems of machinery.



Textiles

Skill focus: Comprehension

The History of Textiles - Questions:

1. What does the word Textile mean and where does it originate?

2. How are fabrics made?

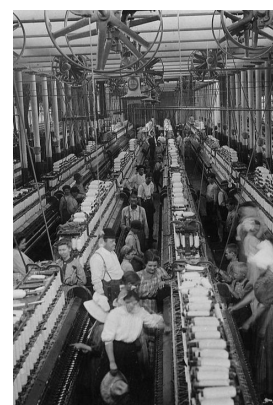
3. Where were linen fabrics discovered?

4. What type of textiles were found in the Bronze Age?

5. When was cotton first spun and woven?

6. What fabric has been woven since at least 1000 BC?

7. How did the development of machinery improve the textile industry during the 19th Century?



Textiles

Skill focus: Comprehension

2. Fast Fashion

Read the article below and highlight key facts in the text before answering the questions that follow.

Fast fashion is costing the Earth and slow fashion is the future, say scientists

iNews, Sally Guyoncourt, 7 April 2020



Fashion industry is second largest polluter after aviation, according to study. Fast fashion is costing us the Earth and we must change the way we shop and dress to save the planet, experts have warned. Research by scientists from the UK, Scandinavia, the US and Australia has revealed that the fashion industry is the second largest polluter after aviation, accounting for up to 10 percent of global pollution.

Dr Patsy Perry, of Manchester University, said: "We highlight the need for urgent and fundamental changes in the fashion business model to minimise and mitigate the detrimental environmental impacts." The paper published in online journal *Nature Reviews Earth and Environment* reveals the impact fast fashion is having environmentally.

Researchers said cheap mass manufacturing, frequent consumption and short-lived garment use means each year the industry produces 92 million tonnes of waste either burnt or in landfill, consumes 1.5 trillion litres of water, produces 1.7 billion tonnes of CO₂ and creates 190,000 tonnes of microplastic pollution in our oceans.

Demand for new clothes has seen global consumption rise to an estimated 62 million tonnes of textile products per year, projected to reach 102 million tonnes by 2030. The report revealed the average consumer in the USA now purchases one item of clothing every 5.5 days. In Europe, shoppers in Italy buy 14.5kg of new clothes a year, 16.7kg in Germany, 26.7kg in the UK and between 13 and 16 kg of textiles across Scandinavia.

Textiles

Skill focus: Comprehension

This constant consumption creates environmental problems at every stage of a garment's life. Much of the textile production and manufacture of the garments is carried out in developing nations, whereas design and consumption tends to be focused in developed countries.

According to the report: "The globalisation of the textile and fashion system has resulted in an uneven distribution of these environmental consequences, with developing countries (who largely produce the textile and clothing) bearing the burden for developed countries." Short garment lifetimes and increased consumption means globally textiles account for up to 22% of mixed waste worldwide.

To end this negative cost to the environment, scientists recommend an industry and consumer move away from fast to slow fashion. "A transition away from fast fashion towards slow fashion requires a slowdown in manufacturing volumes, the introduction of sustainable practices throughout the supply chain and a shift in consumer behaviour to reduce the amount of new clothing being purchased and increase garment lifetimes", said Dr Perry, "Such systemic changes could improve the long-term sustainability of the fashion supply chain."

Kirsi Niinimäki, co-author of the paper and Associate Professor at Aalto University, Finland, said "slow fashion is the future" but will need "creativity and collaboration between designers and manufacturers, various stakeholders, and end consumers."

Keywords	Definition
Garment	An item of clothing.
Sustainable	Causing little or no damage to the environment.
Developing Country	A country with little industrial and economic activity where people generally have lower incomes
Developed Country	A country with a lot of industrial and economic activity where people generally have higher incomes.
Consumer	A person who buys goods or services
Globalisation	An increase in trade around the world, especially by large companies producing and trading goods in many different countries.

Textiles

Skill focus: Comprehension

Task: Respond to the prompts and questions below, recording your answers in full sentences and taking time to check your spellings of keywords and vocabulary are correct.

1. Summarise the problems associated with 'fast fashion'.

2. Explain what causes the 92 million tonnes of waste produced by fast fashion each year. What happens to this waste?

3. Compare and contrast how much clothing is bought per year in different countries. Which countries purchase the most / least amount of clothing?

4. Compare and contrast the role that developing countries and developed countries play in fast fashion. Which countries tend to produce/consume clothes? Which countries are negatively affected by fast fashion?

5. Describe what needs to happen for the fashion industry and the public to move from 'fast fashion' to 'slow fashion'.

Textiles

Skill focus: Research & Investigating

3. Applique

Read the information below and highlight key words before answering the questions in full sentences on the next page.

Applique is a decorative technique in which a piece of fabric is applied to another fabric. It is often used in quilting to create bright and distinctive designs, and it may also be used to embellish clothing or textile products like bags, cushions or wall hangings. Appliqué is a very old art form, and examples of appliqué which are hundreds of years old can be seen in museums all over the world.

The word appliqué comes from the French word *appliquer*, which means “to apply.” To create appliqué, you start with a base material and then shapes are cut from other textiles and sewn or glued onto the base fabric; it is also possible to make appliqué with ribbons, cords, sequins and beads. It can be sewed by hand embroidery or machine embroidery.



A silk appliqué depicting yama, late 18th century.



Handmade Flower Sequin Appliqué



Handmade Stag applique with machine embroidery

Raw-Edge Appliqué

This is when the edges of the cut-out are not finished or turned under. The cut out is simply secured in place with one of various stitches such as straight stitch, zig zag and free motion stitching. Because the edges are not emphasised, the cut out seems to merge with the background fabric.

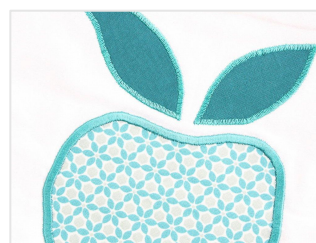


Other types of applique include:

- Couched
- Lined
- Negative
- Bias Strip

Satin-Stitched Appliqué:

Tightly spaced zigzag stitches form a small ridge around the edges of the cut out, accenting the edges and giving the appliqué prominence



Textiles

Skill focus: Research & Investigating

Task: Answer the questions below in full sentences.

1. Define what is meant by appliqué

2. Give three examples where appliqué is commonly used?

3. Of the four other examples of appliqué given on the sheet, research one of them and explain how it is made (couched, negative, lined, or bias strip)

4. Other than fabric what are three other textile components that could be used for appliqué?

5. Describe the difference between raw edge applique and satin stitch applique

Textiles

Skill focus: Research & Investigating

4. Textiles from around the World



Textiles play an important role in representing the culture of a country. It could be said that the culture of the world is woven into local fabrics. **Task:** Research the three materials and fabrics listed below sourcing three images and three facts for each before presenting neatly over these two pages using the spaces provided

Scottish Tartan



Ghanaian Kente



Japanese Kimono



Scottish Tartan

Textiles

Skill focus: Research & Investigating

4. Textiles from around the World Continued

Ghanaian Kente

Japanese Kimono

Textiles

Skill focus: Research & Investigating

5. Textiles and the Environment

Some materials and processes in the fashion and textiles industries are the cause of environmental problems and concerns.

- Research each of the three materials/processes below.
- Record three potential environmental problems each material or process can cause.
- For each problem record a potential solution. Follow the example highlighted for cotton, below.

Cotton	
Problem	Solution
Cotton uses lots of pesticides to grow because it is susceptible to bugs and pests. Pesticides are harmful to farmers and to the land on which the cotton grows.	Promote the use of natural pesticides and organic cotton farming which does not harm farmers or cause as much environmental damage.

Textiles

Skill focus: Research & Investigating

Synthetic Fibres	
Problem	Solution

Chemical Dyes	
Problem	Solution

Textiles

Skill focus: Research & Investigating

6. Colour in Textiles

Read the information below, before moving on to the research task on the next page.

In Textiles colour plays a really important role, as it is often the one thing that makes us buy a product in a shop. There are many ways that fabric can be colourful. Yarns, that is the threads that are needed to weave or knit fabrics, can be space dyed and create really interesting effects.

Fabrics or whole garments can be dyed in a range of colours, whilst tie dyeing can be used to create more unpredictable and unusual patterns.

Painting by hand is often found on silk products and produces intricate designs. Block printing, screen printing and digital printing are all ways to add colour to textile products and can be used for large pieces of fabric where a colourful and accurate pattern is required.

Paints and dyes used in textiles are very different to other types of paints used for creative purposes. The main difference being that the paint or dye is permanent. Another difference between them is that fabric paints must be treated with heat to make them permanent. This is usually achieved by ironing the back of the fabric with a hot iron once the paint is dry.

The paints or dyes used to colour fabrics must be colourfast. This means that none of the colour should come off when the fabric is rubbed or placed in water. This is important for all dyed or printed fabrics but especially where dark or bright colours are used as these tend to be less likely to be colour-fast.



Textiles

Skill focus: Research & Investigating

Task: Research a textile printing or dyeing technique. Present your research clearly below. Include 5 interesting facts about the technique, a step by step of how to complete the technique and a variety of images/drawings that show the technique.

Textiles

Skill focus: Research & Investigating

7. Product Analysis

It is important to look at existing products as a form of research, by analysing a product it will enable you to develop a better understanding of how products are designed and made. The process can help you to develop a new product or improve an existing one. Look at the product below and answer the questions in detail, using full sentences.

Designer: Anya Hindmarch

Materials: Made from white, orange and burgundy coated-canvas sourced from 32 half-liter bottles found in landfills.

Cost: £765.63

Size:

Height 28cm (10.9in)

Width 41cm (16in)

Depth 15cm (5.9in)

Drop of the Handle 22.5cm (8.8in)



1. What is the main function of the product?

2. Is the product aesthetically pleasing to you?

3. What are the most important design features of the product?

Textiles

Skill focus: Research & Investigating

Product Analysis Continued

4. What materials have been used to make the product? Why do you think the designer chose to use these materials?

5. Have any environmental issues been considered when making the product?

6 How much does the product cost? Is the cost comparable to other products?

7. Who do you think is the target market for the product? Who would buy it?

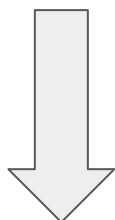
8. Are there any changes you would make to the product if you had the opportunity to redesign it?

Feedback & Reflection

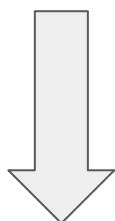
How have you done?

In this section you will be reflecting on your progress in Design & Technology across the three specialist areas: Food, Product Design and Textiles.

1. You will be guided on how to assess your strengths and/or weaknesses across all skill areas by completing a self reflection grid. It is important that you do not complete this self reflection until you have completed that specialist rotation at school.



2. Next you will review your understanding of key concepts in Design & Technology by answering a series of questions. Most of the information to answer those questions will be content found in this ILB or it will be content that you have studied in your lessons. In some cases you will be asked to conduct research to find out the answer to the question.



3. Finally, independently we would like you to recognise and understand what you have done well, as well as be aware of areas for improvement. Therefore you will be asked to write an achievement (something you feel you have done well) and also consider a target for your development in that subject area. We have included example targets to help you with this process.

Feedback & Reflection

Specialism: Food Technology

Self Reflection: Read through each success criteria statement and tick whether you feel your knowledge and skills are competent (green), emerging (amber) or limited (red).

Success criteria	Red	Amber	Green
I know the conditions required for bacteria to grow and how to prevent bacteria in the kitchen. I understand how temperature control is essential to prevent food poisoning.			
I understand how flour is turned into bread and flour and what is gluten. I know how to use a pasta machine and the ingredients needed to make pasta.			
I understand the difference between grading and, preference tests and why it is an essential part of the food industry. I know how to record the results of sensory tests.			
I know what cheese and yoghurt are and how they are made. I understand the key terms lactose, lactose intolerant, rennet coagulate, curds and whey, starter culture. I can make a lemon cheesecake using dairy products.			
I can cook with fish and make a tasty cheese sauce, adding extra vegetables to increase the vitamin intake. I know different types of fish and the difference between white, oily and shellfish.			
I can peel and chop fruit with more confidence safely. I can use stewing, rubbing in and baking techniques to prepare a quality apple crumble. I wash up and put away equipment efficiently and hygienically.			
I understand the process of making sugar and what sugar alternatives are available. I know the effects of eating too much sugar on my body. I can prepare sugar free banana muffins			
I can evaluate my own or others cooking and provide helpful feedback for improvement. I understand the importance of sensory descriptors to analyse a food product.			

Feedback & Reflection

Specialism: Product Design

Self Reflection: Read through each success criteria statement and tick whether you feel your knowledge and skills are competent (green), emerging (amber) or limited (red).

Success criteria	Red	Amber	Green
I can understand and can demonstrate how to be safe in the workshop.			
I can choose tools and equipment independently. I can use them correctly and safely.			
I was able to complete accurate drawings in isometric projection, and mark the angles of the lines created.			
I was able to accurately measure and mark out finger joints onto pine using a steel ruler, pencil and try square, and identify the areas I needed to cut out.			
I was able to use a tenon saw and coping saw to create precise cuts into pine, forming the finger joints before glueing the pieces together and filling any gaps.			
I was able to use a screwdriver to attach an MDF base to the box, ensuring that the screws were flush with the MDF and not protruding from the bottom of the box.			
I was able to use 2D design to digitally draw my logo design, ready for it to be laser cut onto the acrylic lid.			
I was able to shape acrylic using files and wet and dry paper to create a lid that fits well on the top of the box.			
I was able to successfully complete my box and ensure all edges were smooth and sanded to a good finish.			
I was able to evaluate my work and set targets for future improvement.			

Feedback & Reflection

Specialism: Textiles

Self Reflection: Read through each success criteria statement and tick whether you feel your knowledge and skills are competent (green), emerging (amber) or limited (red).

Success criteria	Red	Amber	Green
I can understand and can demonstrate how to be safe in the Textiles room.			
I can choose tools and equipment independently. I can use them correctly and safely.			
I was able to prepare an applique sample using bondaweb, and secure the applique with a range of hand embroidery stitches.			
I was able to thread a needle with embroidery thread. I was able to knot the thread independently.			
My hand embroidery was accurate, with each stitch being a similar size. My embroidery did not pull the fabric and was used creatively to add interest to my sample.			
I was able to complete a stencil sample accurately. My print was even in colour and did not smudge.			
I was able to thread up the sewing machine independently and complete my driving test. I made sure to keep the presser foot down and was able to control the machine effectively.			
To ensure my portrait was accurate, I successfully made pattern pieces, that I used to prepare my applique fabrics.			
I was able to accurately complete my portrait using a range of applique, hand embroidery and machine embroidery to add interest.			
My portrait showed strong aesthetic appeal and a degree of individuality			
I was able to successfully make my portrait in to a tote bag. The bag was secure and functional.			

Retrieval Practice Questions

Specialism: Food

1. What are bacteria?
2. How do bacteria get into the kitchen?
3. What is a high risk food? Give two examples
4. Explain why we do not wash chicken in the sink.
5. What is the purpose of a pasta machine?
6. Why is the old picture of a tongue showing areas detecting Salty, Bitter, Sour, Sweet wrong?
7. Explain what is food provenance?
8. What foods are reared?
9. What is the difference between a food allergy and a food intolerance?
10. What are the symptoms of Coeliac disease?
11. What are the symptoms of food poisoning?
12. Which one of the following is not a bacteria that causes food poisoning: E.coli, Wisteria, Bacillus cereus, Salmonella, Clostridium Perfringens?
13. Why are sensory descriptors needed?
14. Identify 3 factors affecting food choice?
15. What is a protein alternative and why do we need them?

Retrieval Practice Questions

Specialism: Product Design

1. Is pine a hardwood, softwood or manufactured board?
2. What is the name of the hand saw that you would use to cut a straight line?
3. What does ergonomics mean?
4. What does anthropometrics refer to?
5. Why do designers create working drawings?
6. What are the two types of orthographic projection?
7. What tool would you use to ensure angles are kept at 90 degrees?
8. What type of wood joint is commonly used in picture frames?
9. What can you NOT use in the workshop without supervision?
10. What are the 2 machines that you could use to smooth edges?
11. Why is it important that new materials are created?
12. Name 2 furniture designers.
13. What is the first thing you mark on the page when completing a 2 point perspective drawing.
14. What does the word aesthetics mean?
15. What does the word durability mean?

Retrieval Practice Questions

Specialism: Textiles

1. Name 3 health & safety rules that need to be followed in Textiles?
2. Why should fabric shears only be used to cut out fabric and not paper?
3. What is the difference between embroidery thread and sewing machine thread?
4. Who is Edo Morales?
5. Name 3 techniques that Edo Morales uses in his work?
6. What is applique?
7. What is the difference between raw edge applique and satin stitch applique?
8. What is bondaweb and how is it used?
9. What are the benefits of using bondaweb?
10. Name 3 ways of adding colour to textile products?
11. Write a step by step of how to stencil on to fabric?
12. What is the name of this part of the sewing machine?



13. Why do we analyse existing products?
14. What does the term fast fashion mean?
15. What are 3 environmental impacts of the fashion industry?

Feedback & Reflection

Next Steps: Achievements and Targets

Having completed your self assessment and completing the questions in each of the specialist areas; it is now time to consider your next steps by considering your achievements and by setting a target for each specialist area. If you are unsure of a suitable target, you could consider using one of the targets on the following page to help you.

Food:

Achievements:

Target for development:

Product Design::

Achievements:

Target for development:

Textiles:

Achievements:

Target for development:

Feedback & Reflection

Example Targets:

Consider using some of these targets to help you

Written Work

I should always complete tasks fully.

I should use complete sentences to write all my answers.

I should use my own words when completing written work and not copy and paste from the internet

I should read the question or task more carefully and answer the specific question.

I should try to answer questions in more detail.

I should try to use more technical language when completing written tasks.

I need to learn how to spell key words correctly.

I should consider using more mixed media/creativity when presenting my work.

I should always check previous targets & feedback from my teacher to ensure I act upon advice.

Research & Designing

My annotation needs to be more detailed when I am designing ((name, describe & evaluate).

I need to improve the presentation of my design ideas.

I should try to add further creativity to my design ideas using my research to help inspire me.

I should refer to my design specification when developing design ideas.

I should consider social, moral and environmental issues when researching, creating and annotating my work.

Feedback & Reflection

Example targets continued:

Analysis

I must ensure all detail is included on diagrams

When analysing other peoples' work I must also give my own opinion of their work.

When analysing my own work I should gain the opinions of others.

Testing & Evaluating

I must always ensure when testing my work I refer back to my design specification.

When evaluating I must refer to test results, including feedback from others. This includes sensory testing results in food.

I should try to include visual aids/photographs when evaluating my work.

I should always consider what has been successful in my work and what could be developed/improved.

Making

I should continue to practise my practical skills and try to improve my confidence.

I should try to ensure my product has a high level of precision and accuracy.

I should try to choose the correct tools and equipment for the right task.

I should try to be more independent when making my product..

I should try to ensure that all components are securely attached to my product.

I should ensure that my product has a high quality finish.

Curiosity

Why not broaden your understanding of Food, Product Design & Textiles by visiting some websites/galleries or markets.

Websites / Blogs / Online Magazines to browse:

- Tate.org.uk/art
- Vogue
- Artreview.com
- Design Museum
- Wired
- Wallpaper
- Blueprint
- craftscouncil.org.uk
- artmonthly.co.uk
- elephant.art
- Pinterest
- BBC Good Food
- Loving it Vegan
- Little Blog of Vegan

Galleries /Museums/Markets to Visit:

> Tate Modern

> Tate Britain

> The Design Museum

> The Fashion and Textiles Museum

> The British Museum

> The Victoria & Albert Museum

> Herne Hill Market / Brixton Market / Borough Market

For more information or guidance on completing your Independent Learning Booklet, speak to or email your Design & Technology teacher:

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Head of Visual Arts

Mrs Robjant - robjant.h@thenorwoodschool.org
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Keep up to date with STEM at The Norwood School Website,
Teaching & Learning > STEM (Science, Technology, Engineering & Mathematics)

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