

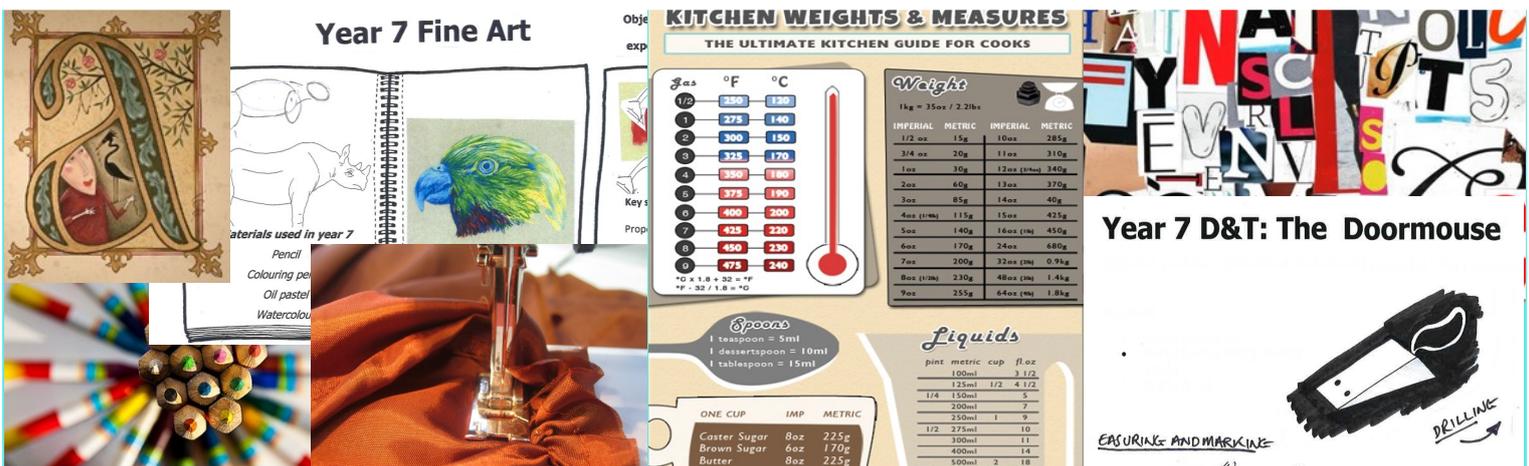
Year 7 Design & Technology Pathway

Knowledge Booklet

Name:

Class:

This is your copy to **KEEP** for the entire school year



What will you have learnt by the end of Year 7?

Design and Technology Pathway:

Resistant Materials and Catering

Year 7 Resistant Materials

- 'Door Mouse'
- 'Elephant Desktidy'
- 'Cam Car' (mechanisms)
- 'Earbud storage'

In Resistant Materials, we teach the topic of the 'Cam Car' project, because...

The National curriculum for D&T states that students should '*Understand and use mechanical systems in their products for example, gears, pulleys, cams, levers and linkages*'. Other projects enable students to build upon existing basic knowledge from Year 5/6 and act as an excellent introduction to the KS3 TDS curriculum i.e. the safe use of tools and equipment, designing, planning, manufacture and evaluation.

Year 7 Catering

- "An introduction to basic food preparation skills and healthy eating"

In year 7, we teach the students the topics above, because...

The National Curriculum states that '*students need to develop the knowledge, skills and practical ability to meet all the requirements needed to lead a better quality of life. Food has a role to play in linking aspects of education that relate to health, life skills and in preparing young people as citizens*'.

What will you learn in the Design and Technology Pathway?

You will learn about tools/ processes in the workshop/catering room, mechanisms, motion, drawing conventions, healthy eating, health and safety. The work of others- designers and movements, famous chefs

Why?

To give you an opportunity to gain an understanding of 'real life' practical skills. You will be learning through a broad range of practical activities and theoretical elements to enable you to become confident in your D&T lessons

Health and Safety is an important part of the D&T environment, so you must understand safety rules and expectations and apply them to your own working practice

Throughout your time in D&T, you will be encouraged to improve your design skills through practice and demonstration, be creative and have high expectations of yourself!

The Subjects

At KS3, students will study both an "Art and Design" pathway and a "Design and Technology" pathway for 1hr per area per week.

Assessment

As all subjects within the Art, Design and Technology faculty are predominantly practical, assessment and verbal feedback is an essential aspect of most lessons- this may be teacher led, peer or self-assessment.

At the end of each module, each student will be given grades based upon the work they have completed in addition to an Attitude to Learning and Homework grade.

Wider Understanding

Each subject has a Scheme of Work geared towards teaching essential skills, knowledge and understanding with progression towards the KS4 GCSE courses in mind. Please find some resources listed below for wider reading in each subject area:

Art

How to Draw: 53 Step-by-Step Drawing Projects (Beginner Drawing Books) – Alison Calder
www.tate.org.uk/visit/tate-britain www.pinterest.co.uk www.saatchigallery.com www.youtube.com

Catering

Hospitality and Catering - Anita Tull and Alison Palmer
Exploring Food and Nutrition KS3 - Yvonne Mackey
Essential Equipment for the Kitchen - Peter Fiell
www.eatwell.gov.uk www.thinkfast.co.uk www.health4schools.net
www.bbc.co.uk/schools/gcsebitesize/hospitality

Textiles

Three-Dimensional Embroidery - Janet Edmonds
Digital Textile Design - Melanie Bowles
www.technologystudent.com/ www.design-technology.info/home.htm
www.viviennewestwood.com/en/ www.designmuseum.org/

Graphics

www.ilovetypography.com www.canva.com/ www.kidsthinkdesign.org/graphics/index.html www.bbc.co.uk/schools/gcsebitesize/art

Resistant Materials

How Things Work - Conrad Mason
The Design of Everyday Things - Don Norman
Starting Product design Exerciser: Questions and Answers - Artiom Dashinsky
www.carlclerkin.co.uk www.dornob.com www.alessi.com www.designmuseum.org

During Year 7 Design and Technology pathway you will....

Key skills & Knowledge: Understand Health & Safety/Workshop rules – Carefully use a pencil and ruler to conduct basic measuring & marking – Understand Machine Safety - Laminate – Use a range of finishing techniques– Make design considerations - Test & Evaluate a product – Produce dimensioned engineering style drawings – Understand and use Basic Standard Components – Identify material properties (basics) – Understand the work of existing designers & iconic design

Develop Literacy skills:

Literacy: There are a range of extended writing opportunities for each of the projects delivered

Oracy: In line with TDS policy, students are expected to answer questions in full sentences during discussion work and encouraged to read out loud where appropriate

Keywords: Research, Design, Manufacture, Rendering, Materials, Health & Safety Techniques, Construction, Investigate, Evaluate, Identify, Generate, Original, Target, Market, Evaluate, Develop, Creative

Develop Numeracy skills:

- Calculations of sizes
- Use of metric systems
- Data interpretation
- Scaling drawings
- Determining the amount of materials required
- Measurement and marking out
- Graphic presentation of ideas to others

Develop Scientific skills:

- Use of scientific principles when developing a brief or specification
- Measurement of materials and selection of components
- Classification of materials and their properties
- Knowledge of material properties to be applied when designing and making
- Knowledge of function of mechanical devices- movement, forces, changing magnitude

Final Endpoints– by the end of the project, you should be able to:

Safely and confidently, interpret and use a range of drawing conventions and sketch methods, hand tools, scroll saws, pillar drills and sanders to design, realise and modify a range of personalised products. Understand the principles of motion via a simple mechanism. Understand the work of others. Be able to interpret and then write a personalised brief and specification and analyse and develop outcomes in light of feedback

LINES

What do each of following lines mean

SHAPES

How to measure different shapes

ANGLES

Use the right tool to get the right angle

A try square is used to mark a 90° angle.
A mitre square is used to mark a 45° angle.
A sliding bevel is used to mark irregular angles.

NUMERACY SUPPORT IN D&T

MEASURES OF AVERAGES

This help you draw conclusions from data

The mean is the most common measure of average. To calculate the mean add the numbers together and divide the total by the amount of numbers:
Mean = sum of numbers ÷ amount of numbers

If you place a set of numbers in order, the median number is the middle one.

The mode is the value that occurs most often.

MEASURING

Measuring in millimetres is more accurate than measuring in centimetres. In the workshop you will frequently use the steel rule.

1mm = 0.1cm
10mm = 1cm
50mm = 5cm
57mm = 5.7cm
100mm = 10cm

To convert mm to cm ÷ 10
To convert cm to mm x 10

Personal Machine Training Record

As part of your Design and Technology course, you will be expected to use a range of equipment to help make your work to the highest standard. You will be taught how to use the equipment either individually, or as part of a group and as this happens you will be asked to tick and date the chart, below, to show that you are trained and confident. **Under no circumstances should you use equipment that you have not been trained to use!**

Equipment Name	Date	Trained (tick)
Tenon saw		
Chisel		
Hegner (scroll) Saw		
Sander/ Linisher		
Pillar Drill		
Flame Torch		
Ceramic Chip Hearth		
Strip Heater		
Centre Lathe		
Kitchen knives		
Ovens		
Hobs		
Kitchen utensils		

Make sure that you have made yourself aware of the safety signage and information located within your practical area

If you require further instruction on the machinery during your lessons, ask!

Year 7 D&T: The 'Doormouse'

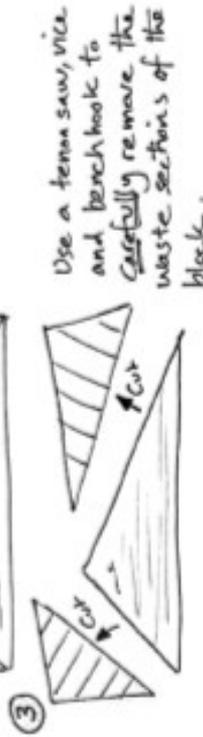
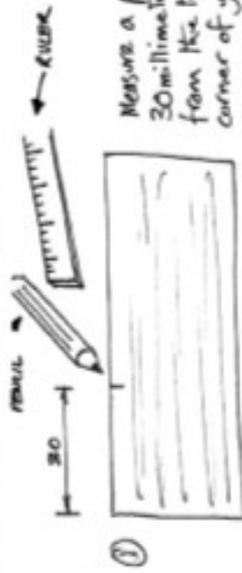
Objective: To create a personalised door arresting device (?) using a range of skills and processes.

Key Skills

- Accurate marking out
- Wasting (sawing, drilling, sanding)
- Finishing
- Heat treatment

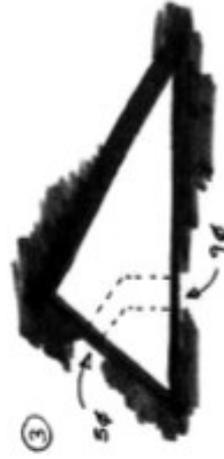
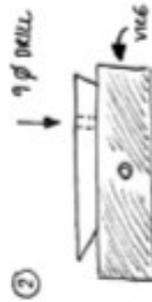
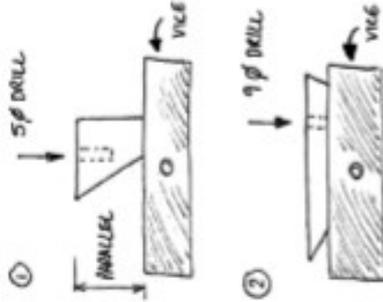


MEASURING AND MARKING:



Health and Safety- the basics!

- Always cut away from your body
- Clamp work down firmly using your bench vice
- Wear eye protection when using all machinery
- Tie long hair back and wear an apron
- Be aware of those around you
- Behave sensibly at all times



Softwoods A fast growing, light coloured, low cost family of trees. Softwoods can be easily shaped using a range of tools and processes.

Key Vocabulary

Pillar Drill	An electrically powered drill. Enables accurate holes to be drilled to different depths
Tolerance	An acceptable variation in dimension. This is how much larger or smaller a size can be eg 1 or 2mm
Tenon Saw	A hand held saw used for accurate line cutting
Bench Vice	Used for holding work securely whilst being cut, sanded etc
Linisher	A flat faced sander used for a variety of materials and tasks (not metals)
Ruler	An accurate measuring tool
Bench Vice	A holding device

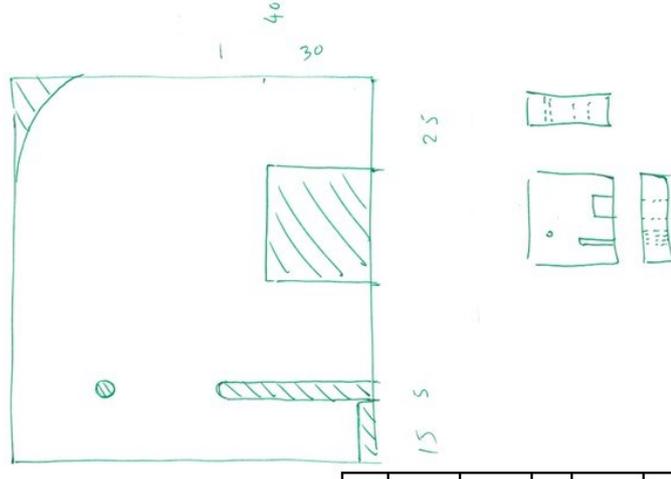
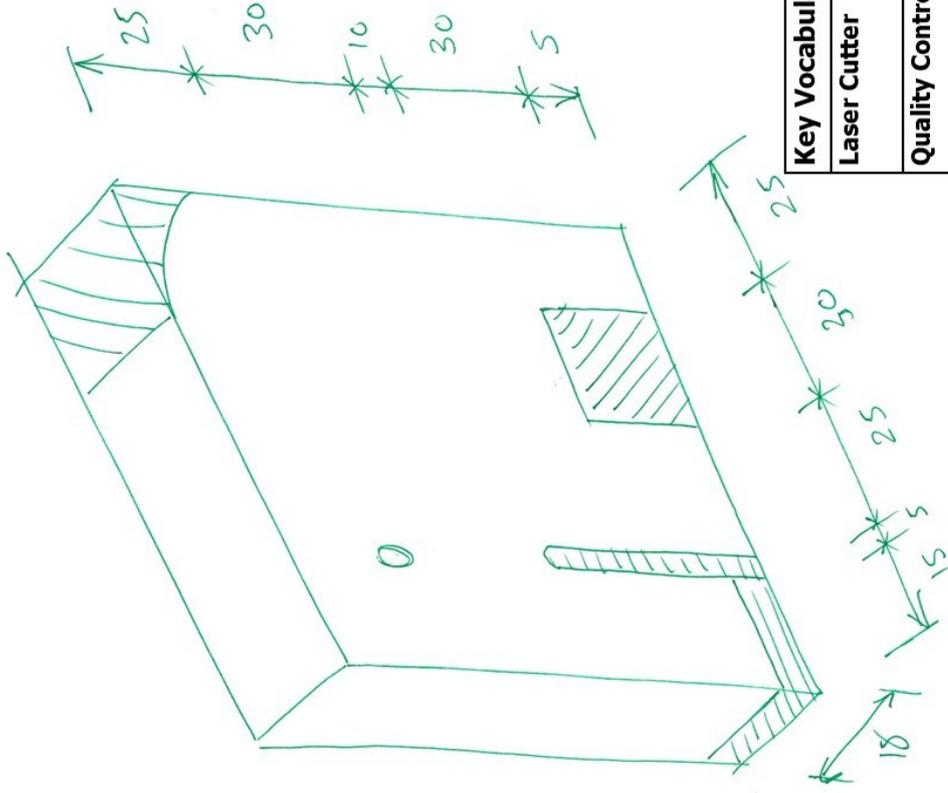
Final outcome- next steps...?

Once the basic product has been made, how could you develop it for a specific Client eg a young child, a football fan or a businessman?

Year 7 D&T: Elephant Desk Tidy

Health and Safety- the basics!

- Always cut away from your body
- Clamp work down firmly using the bench vice
- Wear eye protection when using all machinery
- Tie long hair back and wear an apron
- Be aware of those around you
- Behave sensibly at all times



Key Vocabulary	
Laser Cutter	A technology that uses a laser to vaporize materials, resulting in a cut edge.
Quality Control	Check the quality of your product to ensure it is the best it can be
Aesthetics	The appearance of your product
Precision	The quality, condition, or fact of being exact and accurate
Abrasive paper	Strong paper coated with a layer of sand or other abrasive, used for smoothing or polishing

Year 7 D&T: Mechanisms

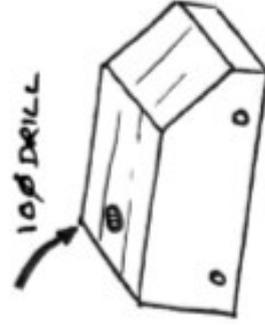
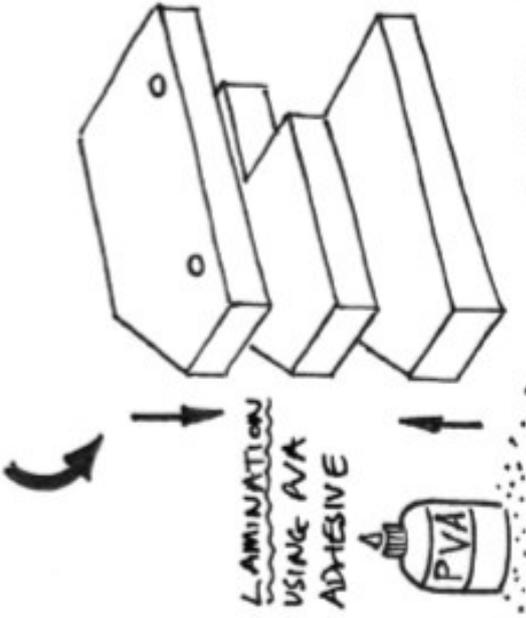
Objective: To create a pull or push toy that converts rotary into reciprocating motion.

Health and Safety- the basics!

- Always cut away from your body
- Clamp work down firmly using your bench vice
- Wear eye protection when using all machinery
- Tie long hair back and wear an apron
- Be aware of those around you
- Behave sensibly at all times

Key Skills

- Accurate marking out
- Wasting (sawing, drilling, sanding)
- Laminating
- Understanding and identifying motion types



MDF	A commonly available, sustainable, factory made sheet material. MDF is smooth on both sides and comes in a variety of thicknesses.
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Key Vocabulary

Pillar Drill	An electrically powered drill. Enables accurate holes to be drilled to different depths
Tolerance	An acceptable variation in dimension. This is how much larger or smaller a size can be eg 1 or 2mm
Tenon Saw	A handheld saw used for accurate line cutting
Bench Vice	Used for holding work securely whilst being cut, sanded etc
Linisher	A flat faced sander used for a variety of materials and tasks (not metals)
Dowel	An accurately made wooden rod
Lamination	The process of applying layers of material to each other, so that the properties of the product are improved

Once the basic product has been finished, how could you develop it to show different types of motion eg linear or oscillating?

Final outcome- next steps....?

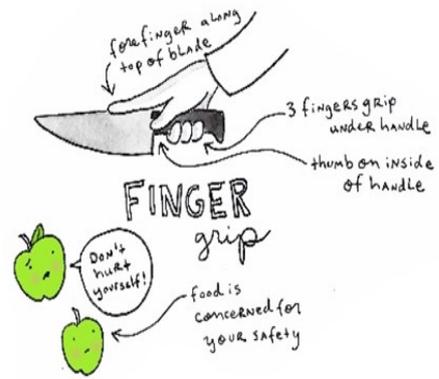
Year 7 Catering

Objectives: To learn the basics of food hygiene, food packaging, healthy eating and practical techniques.

Key Skills
Rubbing in method
Creaming Method
Kneading
Folding
Knife skills

Menu
Scones
Small cakes
Fruit Salad
Pizza

HEALTH & SAFETY
Wash hands before you begin
Long hair should be tied back
Aprons must be worn
Dirty equipment must be stacked behind the taps
Clean surfaces and equipment where possible as you go



Key Vocabulary: Word Bank	
Appearance	Flat, bright, burnt, cloudy, colourful, dull, even, decorated, patterned, smooth, watery, undercooked
Taste	Bland, meaty, spicy, salty, zest, sweet, strong, creamy, sharp, mild, tasteless
Texture	Chilled, firm, flaky, runny, sticky, tough, hot, juicy, rubbery, chewy, crumbly, crunchy, dry, soggy, brittle, natural
Aroma	Aromatic, scented, rancid, strong, spicy, savoury, weak, acrid, musty, pungent, floral, appealing



- Be organised- write everything down
- Check dates for homework/cooking
- Check spellings
- Write in full sentences

Recipes & Homework are found displayed outside the DT office on the VLE



Design and Technology Pathway

Homework in Design and Technology

You will be set homework tasks in each subject pathway that is equivalent to two tasks per term. For each homework task, a traffic light system is used to indicate the level of difficulty as follows:

-  -An outstanding piece of homework that is carefully completed with elements of personalisation. Presentation is exemplary
-  -A well-presented piece of work which meets all of the requirements of the task
-  -A basic piece of work that meets some of the requirements of the task. Some attempt has been made to present this well

Catering – Homework for 2 terms	
Homework one	Due Date
<p>Read the text below in readiness for a test on this subject</p> <p>Food Packaging All foods come in food packaging. They come in many shapes and designs, and are made from different materials. All packaging has advantages and disadvantages.</p> <p><u>Cardboard e.g. pizza boxes</u> Advantages- is easy to write on, can be recycled, strong, reusable. Disadvantages- breaks easily, weak when wet, crushes easily.</p> <p><u>Glass e.g. milk bottles</u> Advantages- strong, can see through it, recyclable Disadvantages- breaks easily, expensive to manufacture</p> <p><u>Metal e.g. tin cans</u> Advantages- recyclable, strong, rigid Disadvantages- cannot be used in a microwave, cannot be used when dented</p> <p>Packaging needs to have plenty of information on it so that the customer understands in full what they are buying, as well as being colourful, and having a logo it also has</p> <ul style="list-style-type: none"> • Name of product • Name and address of the manufacturer • Weight of product • Use by/ sell by dates • Nutritional information • Cooking/storage instructions • Allergy advice 	w/c
Continue on next page...	

Catering – Homework for 2 terms

Homework two

Due Date

Read the text below in readiness for a test on this subject

w/c

Health and safety and hygiene in the kitchen

Health safety and hygiene is of utmost importance in a kitchen. It is very important that all equipment is used sensibly and carefully.:

- Knives should not be left on the work surface
- Knives should be carried with blade pointing downwards
- You should not catch a falling knife
- You should not place a knife in the sink
- Knives should be kept in a knife block
- All bags etc. should be kept out of the way, this includes chairs and wires which can be tripped over.
- Any food spillages on work surfaces should be cleaned immediately, especially those on the floor as this can cause slips and falls. Once cleaned a beware safety sign should be put in place.
- Use oven gloves for food being put into and out of the oven should be used to prevent burns.
- All food not being used should be kept in the fridge at 5' which is out of the danger zone.
- All dirty utensils should be placed behind the sink in readiness for washing up.
- All work surfaces should be wiped down with a dish cloth using either hot soapy water or anti-bacterial spray. Remember to clean as you go, and throw away rubbish, this prevents cross contamination.

To wash and dry up correctly you should

- Put the plug in
- Fill the sink with hot water
- Add washing up liquid
- Use a dish cloth to wash the dishes, place them upside down on the draining board
- Use a tea towel to dry the dishes

Homework three

Due date

Read the text below in readiness for a test on this subject:

w/c

Nutrients

Nutrients are found in all food and drink that we consume. Nutrients are needed to give us healthy bodies and to help us to grow. Every nutrient does a different job. There are 5 nutrients as well as dietary fibre and water.

Young children and adults up to young adult hood need nutrients to help their bodies grow and develop. In older people nutrients are needed to protect and maintain the body. The skeleton stops growing at the age of 21.

Nutrient	Food it's found in	Job in the body
Carbohydrates	Wheat products	Gives slow releasing energy
Proteins	Fish meat cheese	Growth and repair of the body
Fat	Butter, oils, cakes etc.	Gives energy, insulates
Vitamins	Fruit, vegetables, meat	Helps make healthy red blood cells, releases energy, prevents heart disease, helps to produce calcium
Minerals such as Calcium Iron	Dairy products Red meats, liver, spinach	Strong teeth and bones Prevents anaemia, carries red blood cells which contain oxygen round the body.
Water	Tap, fruit juices, fruit	Keeps body hydrated
Dietary fibre	Cereals, fruit and veg	Removes waste from body

Resistant Materials

Homework 1– First Section

Due Date

Health and Safety Hazard Signs

w/c

Find out what the signs mean and where they are likely to be placed in the workshop

Homework 2

Due Date

Create an interesting, thoughtful and illustrated biography of your chosen person. Your Teacher will explain the task to you during the lesson.

w/c

- **Coco Chanel**
- **Harry Beck**
- **Norman Foster**

 -You will produce a 150 word, edited biography, show a good range of examples of the subjects work and analyse your examples in terms of personal opinion, materials, aesthetics, costs etc.

 -You will produce a part edited biography, show 3 examples of the subjects work and have analysed them in general terms.

 -You will produce a basic cut and pasted biography, few examples of work, little or no personal comments.

It is expected that:

- Your work will be well presented and can be done using ICT or handwritten methods.
- You will attribute any sources you have used e.g., websites or books
- You will meet the deadline given to you for submission of the work
- You will have checked your work for SPAG
- You will have spent approximately 2 hours on your work
- The work should be shown on no more than 1 side of A4 - so think how carefully you will need to edit your text/size of images.

Homework 3

Due Date

Types of timber: Create an informative, A3 sheet on hardwoods, softwoods and manufactured boards. Staff will explain full details.

w/c

Homework 4

Due Date

Create an interesting, thoughtful and illustrated report of your chosen design movement. Your Teacher will explain the task to you during the lesson.

w/c

- **Art and Crafts movement**
- **Art Deco**
- **De Stijl**

 -You will produce a 150 word, edited biography, show a good range of examples of the subjects work and analyse your examples in terms of personal opinion, materials, aesthetics, costs etc.

 -You will produce a part edited biography, show 3 examples of the subjects work and have analysed them in general terms.

 -You will produce a basic cut and pasted biography, few examples of work, little or no personal comments.

It is expected that:

- Your work will be well presented and can be done using ICT or handwritten methods.
- You will attribute any sources you have used e.g., websites or books
- You will meet the deadline given to you for submission of the work
- You will have checked your work for SPAG
- You will have spent approximately 2 hours on your work
- The work should be shown on no more than 1 side of A4 - so think how carefully you will need to edit your text/size of images.

Resistant Materials

Homework 1– Second Section

Due Date

The history of AUTOMATONS

w/c

On 1 side of A4 paper, create an informative report on the history, timeline, where we are now? robotics? What is an automaton? How does it work?

Homework 2

Due Date

Create an interesting, thoughtful and illustrated biography of your chosen person. Your Teacher will explain the task to you during the lesson.

w/c

- **Sir Alec Issigonis**
- **Marcel Breuer**
- **William Morris**



-You will produce a quality 150 word biography. Show a good range of examples of the subjects work and analyse your examples in terms of personal opinion, materials, aesthetics, costs etc.



-You will produce a part edited biography, show 3 examples of the subjects work and have analysed them in general terms.



-You will produce a basic cut and pasted biography, few/ no examples of work, little or no personal comments.

It is expected that:

- Your work will be well presented and can be done using ICT or handwritten methods.
- You will attribute any sources you have used e.g., websites or books
- You will meet the deadline given to you for submission of the work
- You will have spent approximately 2 hours on your work and carefully checked it for SPAG
- The work should be shown on no more than 1 side of A4 - so think how carefully you will need to edit your text/size of images.

Homework 3

Due Date

Manufacturing Process-How to create a 50p coin

w/c

Create a flowchart or step by step diagram of how a 50p coin is made– from the moment the metal is extracted from the ground to it leaving the Royal Mint

You might want to include sketches and photographs to explain your work– you decide!

Homework 4

Due Date

Using the '**Inside the Factory**' worksheet, watch the clip, read and answer the questions. The worksheet will also be accessible via Teams or speak to your teacher.

w/c