A-Level Design and Technology: Product Design (AQA 7552)

Student Expectations and Course Overview

Exam Board: AQA

Course: A-Level Design and Technology: Product Design (7552)

This programme is structured around the AQA specification and is designed to prepare students for the Non-Exam Assessment (NEA) beginning in June of Year 12.

Year 12 Course Overview

Term	Topic	AQA Specification Focus	Skills Development
Autumn 1	Materials and Their Applications	Classification and performance characteristics of woods, metals, polymers, papers & boards, composites, smart and modern materials.	Material testing, analysis, selection and justification; workshop skills; written technical analysis.
Autumn 2	Design Theory and Product Analysis Project	Design communication, product development, inclusive design, ergonomics, anthropometrics, aesthetics and design influences.	Product analysis, design sketching, CAD, modelling, user-centred design and evaluation.
Spring 1	Manufacturing Processes and CAD/CAM Project	Forming, redistribution and addition processes; joining methods; adhesives; finishes; CAD/CAM and rapid prototyping.	Laser cutting, CNC manufacture, 3D printing, workshop practice, technical drawing and prototype manufacture.
Spring 2	Commercial Manufacture and Design for Manufacture	Scales of production, efficient use of materials, enterprise and marketing, feasibility studies, design for manufacture, maintenance, repair and disposal.	Designing for manufacture, costing, sustainability, market research and client-focused design work.
Summer 1	NEA Preparation Project	Research methods, specification	Independent research, questionnaire design, specification writing, design

		writing, investigation techniques, client and user needs, feasibility studies and iterative design.	development and evidence gathering.
Summer 2	NEA Launch	Identification of a design context, investigation of needs, wants and values, establishment of a design brief and specification.	Beginning the AQA NEA portfolio and project management.

Year 13 Course Overview

Year 13 is focused upon completion of the NEA alongside preparation for Paper 1 (Technical Principles) and Paper 2 (Designing and Making Principles). Students will continue to develop advanced manufacturing, testing, evaluation and exam technique skills.

Student Expectations

- Maintain a professional attitude and contribute positively to lessons and workshop activities.
- Bring a lever-arch folder, stationery and required equipment to every lesson.
- Keep notes, assessments and NEA evidence organised and up to date.
- Meet all coursework, homework and assessment deadlines.
- Complete at least one hour of independent study for every taught hour.
- Regularly review technical principles and design theory content.
- Use Google Classroom and other digital platforms to access resources and submit work.
- Take responsibility for catching up on missed work following absence.
- Follow all workshop health and safety procedures at all times.

A Level Product Design

You are to investigate something that interests you as part of a **product study** linked to the **Summer Tasks.**

As part of the **product study** you should:

a) Analyse and disassemble(if possible) the product.
b) Identify any types of motion.
c) Look at aesthetics and ergonomics.
d) Identify materials and manufacturing processes.

Present your idea as a Google slide document

Product analysis is an important starting point.

You need to collect information about **products**.

You then need to **analyse** their parts carefully.

When you are analysing a product it is helpful if you can **divide the task** into separate areas.

Go through each step of the analysis of your products and answer these questions:

- What is the product for?
- What is its function?
- What is its form?
- What mechanisms are used?
- How is it made/manufactured?
- What materials have been used?

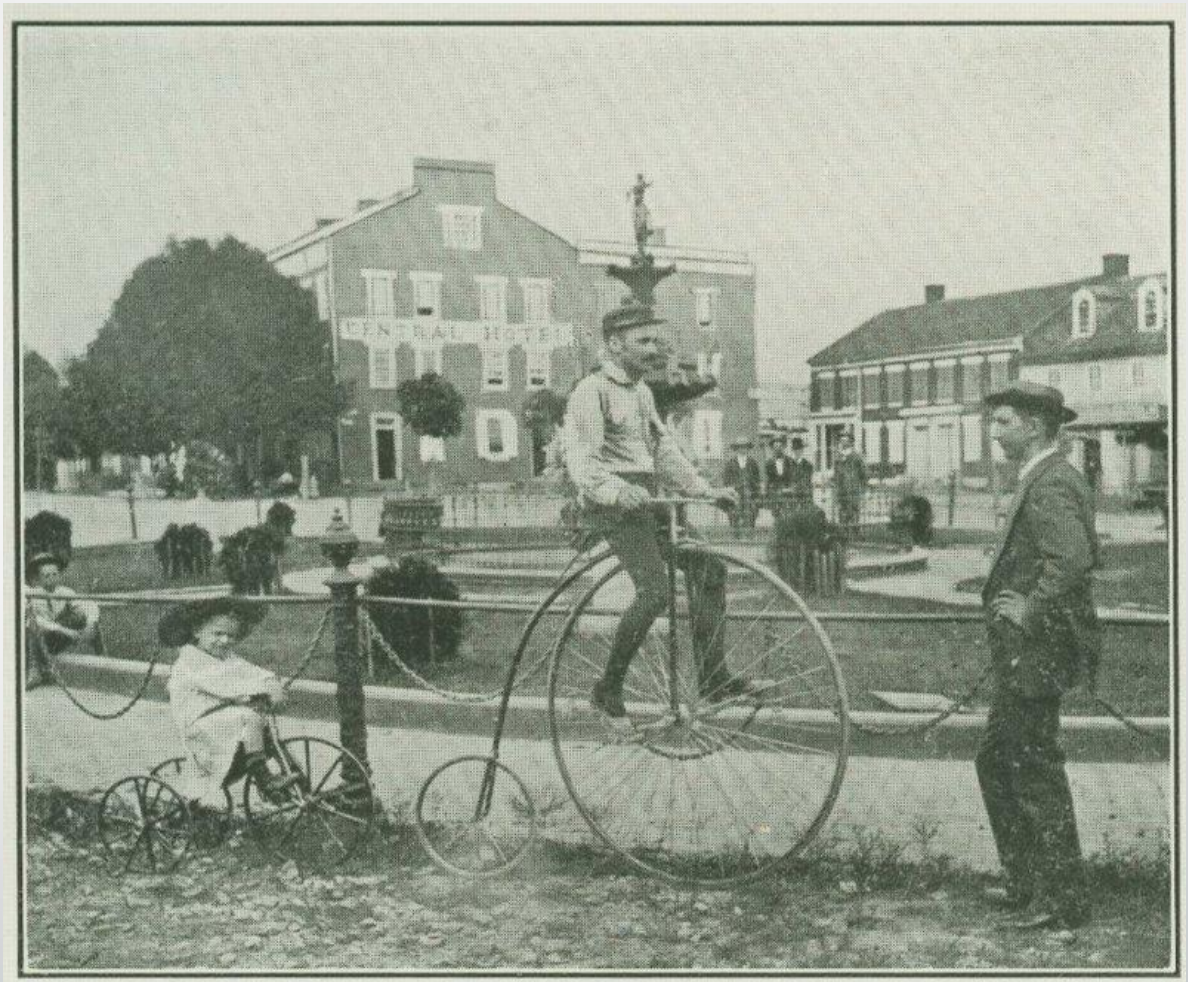
Your research should be in the format of a Google slide document. You need to allow at least a minimum of one slide per question.

Analysis of products

For people who could not afford horses, the problem of **personal transport** required a new product.

Bicycles were early examples of **solutions to the problem** of personal transport; they were quicker and easier than walking.

Early solutions were **interesting**!

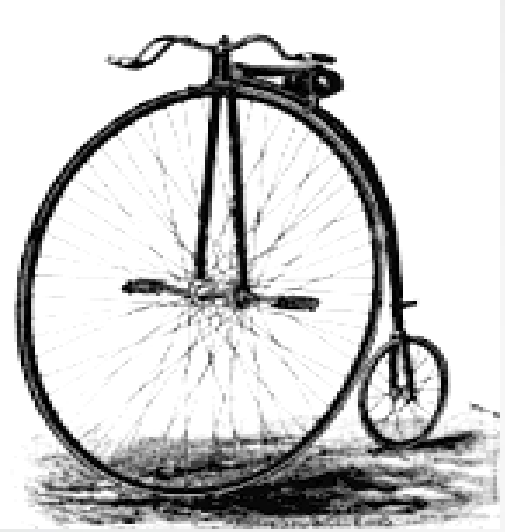


FIRST BICYCLE IN HANOVER
Allen H. Wentz on bicycle, Arnold Kleff on velocipede

1817

A walking bicycle

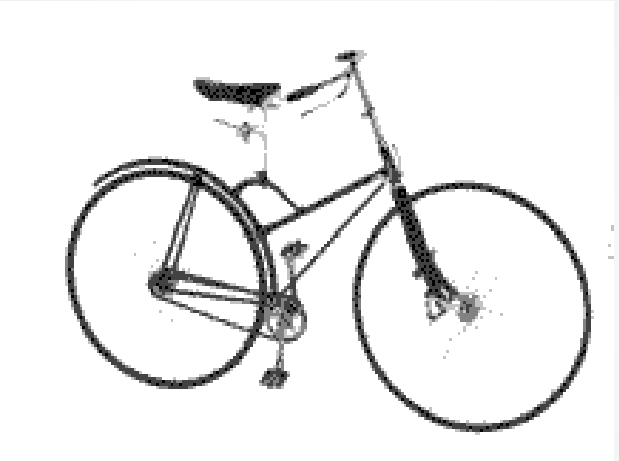
1870



The High Wheel Bicycle

(Penny Farthing)

1880



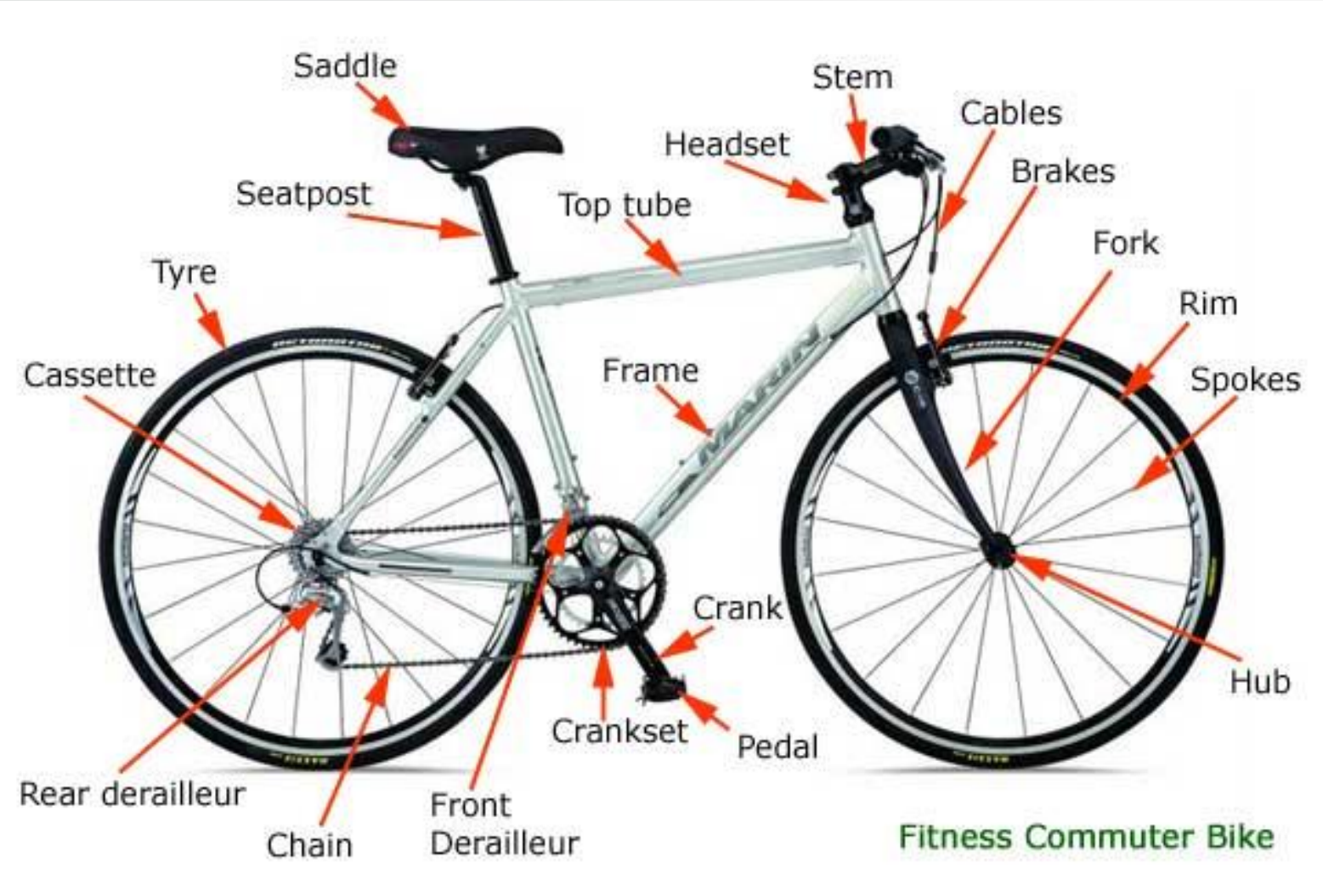
A pedal cycle with solid tyres

1890

A pedal cycle with pneumatic tyres

Over time, **mechanisms** on bicycles **developed** and became more sophisticated and efficient. Different **materials** were used for their properties and looks.

Modern Bicycle Product Study



Type/Make:

Purpose: off road etc

Cost:

Mechanisms:

Materials:

Processes:

Think how you could carry out a product analysis on an unusual bicycle like this one.

Developments due to new technology

In the 1970s an inventor called **Clive Sinclair** introduced miniature televisions, pocket calculators and digital watches to Britain. The next problem he tried to solve was to:

Design and manufacture an electric vehicle

- In the mid-1980s people were concerned about **pollution** and oil reserves.
- Sinclair decided to invent an **environmentally friendly** vehicle, something between a bicycle and a small car.
- The machine would be **pedalled** as well as being **battery powered**.
- It would be a vehicle that young people would buy and use.

The design team came up with a contemporary design – the Sinclair C5

It was marketed as an **environmentally friendly** personal transport system that everyone would want.
Sinclair predicted sales of **100,000**.

You could carry out a product analysis on the Sinclair C5 and investigate to mechanisms and systems used to drive it along

Do you think that the Sinclair C5 should now be looked at again as a viable transport alternative?

Do you think that it could be re-developed to include newer technologies that we now have?

Do you think that you are the type of person that would be able to investigate this sort of problem?

Now you need to choose a product, that you are interested in, and investigate it in depth as previously explained.

Possible products could be something small such as:

Sellotape dispenser	Spark Plug	Wood Plane
USB Stick	Torch	Spoke Shave
Solar Light	Pepper Mill	Hand Drill
Bicycle pump	Can Opener	Pliers
Multi tool	Soldering Iron	Bench Vice
Computer mouse	Stanley Knife	Adjustable spanner

Or something larger such as:

Domestic appliance	E Bicycle	Moped
Gaming computer	Lathe	Printer
Television	Skateboard	Welder