Year 11 Engineering Design Knowledge organiser Spring Term

Unit R108 3D Design Realisation

This term you will be making a sliding bevel from mild steel based on a specification given to you by the exam board

- Knowledge: Plan the making of a prototype, know safety procedures for manufacture, know tools and equipment needed, know how to evaluate your practical work.
- Skills: working with metal work tools to produce a working prototype.

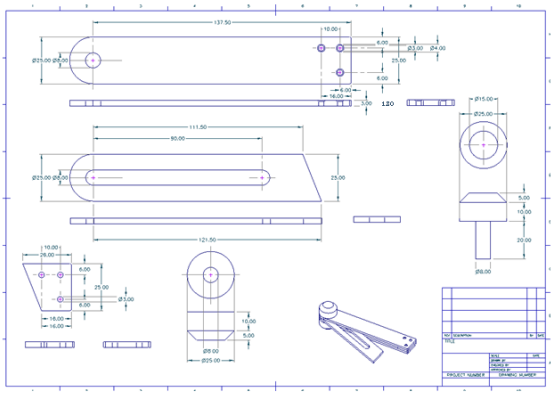
Scenario for the Assignment

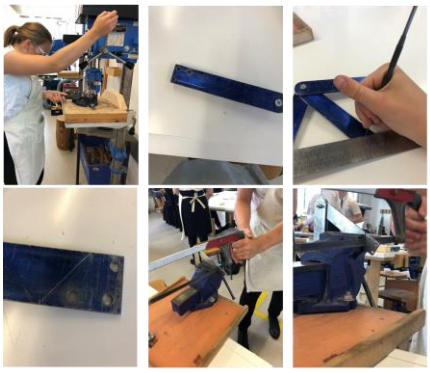
Following feedback from customers, A local Engineering company have designed a new sliding bevel for its range of tools to be used on site . This sliding bevel allows users to transfer or set angles in every day DIY and in the workplace. You have been asked to produce a prototype sliding bevel for field testing.

The product specification is shown below:

The sliding bevel must:

- Allow both adult male and female users to transfer and set angles easily
- Have a quality 'solid' feel
- Have a suitable finish which allows the product to be used in a mixture of environments
- Not be damaged by chemicals such as diesel, petrol etc.
- Be able to withstand rigorous testing in the 'field'
- Not require any surface finishing
- Be readily identifiable





After punching the holes I moved onto the **pillar drill** and created the three holes with a 3.2mm bit for the rivets to go in next lesson.

I then proceeded to measure 15 mm on the side with one hole and 33mm on the side with two holes and marked it with a **scribe**. This was on the middle piece of metal. I joined the two marks up with a **rule**. Following that, I secured my metal to the **vice** and begun sawing the metal across the line with the **hacksaw**.

Marking Criteria – Total Marks for this unit is 60

LO1 **Know how to plan the making of a prototype**	Produces a **detailed** and **appropriate** interpretation of product specification. **5 – 6 marks**
	Comprehensively describes each planning stage to be used in the making of a prototype, demonstrating **thorough** knowledge of key considerations. **7 – 9 marks.**
LO2: Understand safe working practices used when making a prototype	Shows **thorough understanding** of safety considerations and **independently** produces and uses a suitable risk assessment in relation to their production plan. **Independently** uses a range of hand tools and machines safely, applying their risk assessment to assess potential hazards and take appropriate precautions. **Independently** uses appropriate PPE when working with tools, machines, material, chemicals, finishes and solvents. **Clearly** draws upon **relevant** skills/knowledge/ understanding from other units in the specification. **10 –15 marks**
LO3: Produce a prototype	**Independently** produces a prototype from a production plan**.** Selects **the most appropriate** materials to produce the prototype. Uses tools and processes **effectively** to produce and assemble an outcome that **fully** meets the production plan**.** Uses **appropriate** methods to record **in detail all** of the key stages of making the prototype. **13 – 18 marks**
LO4: Be able to evaluate the success of a prototype	Produces a **detailed** and comprehensive evaluation of the production plan and prototype which compares the outcome against the product specification. **Fully** considers potential improvements, justifying any suggestions made. **Comprehensively** assesses own performance in realising the design, demonstrating a **clear** understanding of their own strengths and weaknesses. **9 – 12 marks**

You will need to record each step of the manufacturing process with photographs and a written description of how you made it. Finally you will evaluate your work to compare it against the specification.