Subject: Engineering Unit 2 Year Group: 8

Week	1	2	3	4	5	6
Beginning						
Subject Topic	Understanding where metal comes from and how they are categorised. Ferrous and non-ferrous metal Measuring and marking in Engineering	Cutting and filing metal	Annealing and brazing metal Risk assessment	Shearing metal Metal finishing techniques	Structures	Engineer research
Key Learning	Intentions: - Understand how metals are extracted as ore and turned in to aluminium and steel - Become familiar with mining and its impacts on the environment. Questions: What colour was the Statue of Liberty originally and why has it changed? Name products normally made from copper From science lessons, can you tell me what an ore is? From where in the earth would they be extracted from? Other than the energy used, name some other negative impacts that might arise from mining? What benefits could mining bring to a region? What may happen to an open pit at the end of its useful life? DP: What may be the knock-on effects of the pollution caused by this industry? Understand the difference between ferrous and nonferrous metals	Intentions - Complete work on keyring - How to use a pillar drill safely (risk assessment) - Start to measure, mark and cut the pieces for the coat hook Questions: Recap tools used for marking out during previous lesson What is meant by accuracy? What is a tolerance? If we work to a 1mm tolerance and something has to be 50mm in length, what are the acceptable upper and lower limits that we can work to? What safety precautions should we take when using a pillar drill? What does PPE stand for?	Intentions - Understand how to join steel using the brazing process - Annealing steel to make it more malleable Questions	Intentions: - What is shearing - Measure mark and cut piece for letter holder - Metal finishing techniques Questions:	Introduction to wood box project Questions:	Intentions: Questions:

Subject: Engineering Unit 2 Year Group: 8

	Understand the parallels between engineering and maths How to measure and mark out accurately Start marking out aluminium key ring					
Linked Assessment	E4: Investigate & analyse products considering life cycle analysis and 'cradle to grave'.	M11 – Modifying the appearance of materials. Samples of block printing and sublimation printing.	T1/2: Materials M11 – Modifying the appearance of materials. Samples of dyeing and tie dye produced. Questions about cotton and polyester	M1: Tools & equipment Teacher assessment of how student uses the sewing machine including setting up.	M10: Joining methods M1: Tools & equipment Sample of a plain seam Step by step instructions showing how to produce a plain seam.	M10: Joining methods M1: Tools & equipment Samples of patchwork
Resources	Link to SharePoint					

Week Beginning	1	2	3	4	5	6	7	8
Subject Topic	Rendering Techniques	Design ideas	Design Ideas Manufacturing	Sewing machine practise	Pattern making & Cutting fabrics	Sewing patchwork together	Smart Materials: Thermochromic	Stencilling Complete coaster
ТОРІС			Specification				Stencilling	

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Key Learning	Intentions: Be able to apply rendering techniques to design ideas using a variety of methods Questions: What is cross hatching? What is tonal shading? How would you apply water colour effectively?	Intentions: Understand what the design brief and specification for this project are. Gather research on a variety of patchwork techniques to inform design ideas To produce a range of initial ideas that are rendered using a chosen technique. Questions: What is a design brief? What are qualitative and quantitative specification points? What are initial ideas?	Intentions: To produce a range of initial ideas that are rendered using a chosen technique. To evaluate your initial ideas against the specification To understand how to use CAD to produce a manufacturing specification. Questions: What do we evaluate against a specification? What are annotations? What is a manufacturing specification used for?	Intentions: Understand what a sewing pattern is and why it would be used. To produce a sewing pattern for a patchwork design, adding seam allowances and markings. Questions: What is a grain line? What is a seam allowance? How do I cut fabric efficiently? How do I cut fabric using a sewing pattern correctly?? What is tailors chalk?	Intentions: Gain experience in using the sewing machine safely and accurately. Understand how a plain seam is used to sew together a patchwork pattern Understand how to finish a seam to a high standard, using the correct neatening methods. Questions: What is a plain seam? What is the right/wrong side of fabric? What is the correct seam allowance for a plain seam? What should you do if you sew something incorrectly? How should you ensure you have finished a seam off to a high standard? What are pinking shears? How should I use an iron to press?	Intentions: Understand what a smart material is and be able to explain what thermochromic ink does. Understand and be able to demonstrate how CAD can be used to produce a very simple stencil. Be able to explain what a laser cutter is. Be able to demonstrate how to apply paint correctly to a stencil. Questions: What is a smart material? What is thermochromic? How could thermochromic be used in products? What is a stencil? How could thermochromic ink be applied to a coaster? What effect will a hot drink have to the thermochromic ink when applied to a coaster? How do you apply paint accurately to a stencil?	Intentions: Demonstrate how to accurately apply thermochromic ink to a stencil. Gain experience in using the sewing machine safely and accurately. Understand how a plain seam is used to sew together a patchwork pattern Understand how to finish a seam to a high standard, using the correct neatening methods. Questions: How should a stencil be applied accurately? What happens when a mug is placed on top of the thermochromic ink?	Intentions: Demonstrate how to use the sewing machine safely and accurately when sewing the front and back of your coaster together. Demonstrate understanding of neatening techniques when using pinking shears to neaten raw edges of the coaster. Understand how to evaluate and test against the specification. Questions: What are pinking shears? What is a raw edge? How could we neaten the edge differently? Why is it important to evaluate and test against the specification?
Linked Assessment	D2/D3: Design ideas Assessment of applying rendering on initial ideas	D2/D3: Design ideas Assessment of applying rendering on initial ideas	D2/D3: Design ideas Assessment of applying rendering on initial ideas D6: Evaluation against the specification D5/T5: Orthographic drawing.	T3/M10: Joining methods Assessment of pattern pieces and patchwork produced.	T3/M10: Joining methods Assessment of pattern pieces and patchwork produced.	M7 – CAD/CAM Stencil design using CAD T1/2: Material properties Knowledge of Smart materials, focusing on thermochromic ink.	M7 – CAD/CAM Stencil design using CAD T1/2: Material properties Knowledge of Smart materials, focusing on thermochromic ink.	T3/M10: Joining methods Assessment of final coaster
Resources	Link to SharePoint							