

RESISTANT MATERIALS

		CORE KNOWLEDGE		CORE SKILLS									
9A	EXCELLING	The 6R's thoroughly, including associated social, moral and cultural issues. Carbon footprint. Carbon offsetting. Globalisation. General classification of: hardwoods; softwoods; manufactured boards; ferrous metals; non-ferrous metals; thermoplastics; thermosets; composites. Performance characteristics of these materials. Industrial and workshop finishes for these materials. 'Smart' materials. Pre-manufactured components, particularly fixings. Anthropometrics & ergonomics. Prototyping materials such as card, foam-board and Styrofoam. Precise tool names of a wide range of hand and machine tools – half-round file, milling machine etc – and their characteristic uses. Industrial and workshop processes classified as: preparing; wasting; deforming; fabricating; re-forming; additive manufacture. Health and safety including risk assessment, COSHH & safety symbols		EXCELLING	Identify complex links between products and their materials & manufacture. Identify design trends in existing products. Perform primary and secondary research to write a design brief and develop it into a thorough specification. Produce a comprehensive range of creative designs, communicated through quality annotated 3D sketching, rendering, orthographic drawing, isometric drawing, 2D CAD and 3D CAD. Develop an idea into a final design suited to available resources. Plan complex manufacturing. Consistently select appropriate materials tools and processes and use them safely. Solve practical problems. Make quality products with components accurate to $\pm 0.5\text{mm}$. Provide comprehensive notes and photographic evidence of manufacturing stages. Critically analyse manufacturing processes and their own products. Consistently use correct SPAG.		9A						
9B							9B						
8A							8A						
8B							8B						
7A							7A						
7B							7B						
6A							6A						
6B							6B						
5A							5A						
5B							5B						
4A	SECURING	Industrial and workshop processes classified as: preparing; wasting; deforming; fabricating; re-forming; additive manufacture. Health and safety including risk assessment, COSHH & safety symbols		SECURING			4A						
4B							4B						
3A							3A						
3B							3B						
2A	DEVELOPING KS3	Full names and uses of equipment they have used. Names and properties of materials they have used. Names and methodology of the processes they have used. Health and safety rules for the workshop and how to apply them. What a design specification is and how it can be useful.	DEVELOPING KS4	The 6R's simply. Basics details and performance characteristics of hardwoods, softwoods, boards, metals, thermoplastics, thermosets, composites. Workshop finishes for these materials. Woodscrews, nuts & bolts. Basic ergonomics. Correct names and uses of a limited range of workshop hand-tools and machine tools. Some industrial processing methods. Health & safety in the workshop.	Research a given design brief and prepare a basic design specification. Communicate designs with 2D and simple 3D sketches including annotation explaining function, form and some manufacturing details. Plan manufacturing with familiar processes. With guidance, make a more complex product with accuracy. Be able to evaluate their products with reference to the design brief.	DEVELOPING KS4	2A						
2B							2B						
1A							1A						
1B							1B						
P8							PREPARING for GCSE	Basic names of tools – saw, file etc. Basic names of materials – wood, metal, plastic. Basic health and safety rules for the workshop.		PREPARING for GCSE	List some criteria that their product should meet. Create simple designs linked to a given design brief. Communicate designs with simple sketches and labels which identify key features. List manufacturing tasks in order. With guidance, make a simple product with some accuracy. Identify good parts of their design, and parts which could be improved.		P8
P7													P7
P6	P6												
P5	P5												
P4	P4												
P3	P3												
P2	P2												
P1	P1												

The main purpose of assessment in our school is to help teachers, parents and pupils plan their next steps in learning.