




Design and Technology  
Key Stage 3  
Curriculum Overview


Key Stage 3 Curriculum Journey: Design and Technology

Y7	Week 1  Week 39					
	<i>Working With Wood</i>	<i>Designing By Hand And CAD</i>	<i>Electronics</i>	<i>Working With Plastic</i>	<i>Mechanical Systems</i>	<i>Working With Metals</i>
Key content (know that...know how...)	<p><b><u>Materials theory – Wood</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to timbers</li> <li>• Sources and uses</li> </ul> <p><b><u>Block Bot – Practical</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to workshop safety</li> <li>• Tools and equipment used</li> <li>• Measuring and marking out</li> <li>• Cutting and shaping</li> <li>• Finishing</li> </ul> <p><b><u>Product Test – Teacher Specification</u></b></p> <ul style="list-style-type: none"> <li>• Testing their Block Bot against a given set of criteria</li> </ul>	<p><b><u>Designing – Isometric</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to drawings techniques</li> <li>• Isometric and 3D cubes introduction</li> <li>• Complex 3D shapes</li> <li>• Assessment Camper Van</li> </ul> <p><b><u>2D Design – Simple Ruler</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to CAD (Advantages and disadvantages)</li> <li>• Using 2D Design</li> <li>• Laser cutter</li> </ul> <p><b><u>Designer Case Study</u></b></p> <ul style="list-style-type: none"> <li>• Famous designers</li> <li>• Work of designers</li> <li>• Uses and applications of designs</li> </ul>	<p><b><u>Electronic Circuits</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to electronics</li> <li>• Circuit symbols</li> <li>• Simple circuit making – Conductive dough</li> <li>• Card design</li> </ul> <p><b><u>Emerging Technology – Mobile</u></b></p> <ul style="list-style-type: none"> <li>• Developments in technology</li> <li>• How mobiles have changed</li> <li>• Extended answer question</li> </ul>	<p><b><u>Materials theory – Plastic</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to plastics</li> <li>• Sources and uses</li> </ul> <p><b><u>Key Fob – Practical</u></b></p> <ul style="list-style-type: none"> <li>• Recap workshop safety</li> <li>• Tools and equipment used</li> <li>• Layering plastic</li> <li>• Designing – Scruffiti</li> <li>• Cutting and shaping</li> <li>• Finishing</li> </ul> <p><b><u>Energy / Environment – Plastics Non Renewables (Bag)</u></b></p> <ul style="list-style-type: none"> <li>• Non-renewable sources</li> <li>• Plastic impact</li> <li>• Designing logo</li> <li>• Sub printing bag</li> </ul>	<p><b><u>Mechanical Systems – Levers (Simple Machines)</u></b></p> <ul style="list-style-type: none"> <li>• 6 simple machines</li> <li>• Uses and functions</li> <li>• Simple lever (Card modelling)</li> </ul> <p><b><u>Cardboard Levers and Linkages</u></b></p> <ul style="list-style-type: none"> <li>• Types of motion</li> <li>• Manufacturing levers and linkages (grabber project)</li> </ul>	<p><b><u>Materials theory – Metals</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to metals</li> <li>• Sources and uses</li> </ul> <p><b><u>Dog Tag – Practical</u></b></p> <ul style="list-style-type: none"> <li>• Recap workshop safety</li> <li>• Tools and equipment used</li> <li>• Marking out metal</li> <li>• Letter stamping</li> <li>• Polish and finish</li> </ul>

Prior Knowledge	<p><b><u>Materials theory – Wood</u></b></p> <ul style="list-style-type: none"> <li>• Where wood comes from</li> <li>• Different types of wood and any uses for it</li> </ul> <p><b><u>Block Bot – Practical</u></b></p> <ul style="list-style-type: none"> <li>• Basic understanding of health and safety and how to stay safe</li> <li>• Names of tools and equipment and some basic understanding of their usage</li> <li>• Measuring using a ruler</li> </ul> <p><b><u>Product Test – Teacher Specification</u></b></p> <ul style="list-style-type: none"> <li>• Evaluation and analysis skills – basic understanding</li> </ul>	<p><b><u>Designing – Isometric</u></b></p> <ul style="list-style-type: none"> <li>• Different techniques of drawing. Sketching / Crating / Oblique / Isometric</li> <li>• What is a 3D shape?</li> <li>• How to draw cubes and simple shapes</li> <li>• Crating and curved shapes</li> </ul> <p><b><u>2D Design – Simple Ruler</u></b></p> <ul style="list-style-type: none"> <li>• Basic computer usage</li> <li>• Saving and mouse use</li> </ul> <p><b><u>Designer Case Study</u></b></p> <ul style="list-style-type: none"> <li>• Names of designers and existing products</li> </ul>	<p><b><u>Paper Circuits</u></b></p> <ul style="list-style-type: none"> <li>• Simple current and electronic knowledge</li> <li>• What is a current flow?</li> <li>• Basic circuit symbols</li> <li>• Science knowledge of electronics</li> </ul> <p><b><u>Emerging Technology – Mobile</u></b></p> <ul style="list-style-type: none"> <li>• What is a mobile phone</li> <li>• Use of some new technology</li> <li>• How products changed</li> </ul>	<p><b><u>Materials theory – Plastic</u></b></p> <ul style="list-style-type: none"> <li>• Where plastic comes from</li> <li>• Different types of plastic and any uses for them</li> </ul> <p><b><u>Key Fob – Practical</u></b></p> <ul style="list-style-type: none"> <li>• Recapping the expectations of health and safety in the workshop environment</li> <li>• Names of tools and equipment and some basic understanding of their usage</li> <li>• How to work with plastic and plastic names</li> <li>• Recapping designing theory – Type of scruffiti</li> <li>• Using vice and tools safely to cut</li> <li>• Naming finishing techniques</li> </ul> <p><b><u>Energy / Environment – Plastics Non Renewables (Bag)</u></b></p> <ul style="list-style-type: none"> <li>• What does non renewable mean?</li> <li>• Understanding coal / oil / gas</li> <li>• Issues with plastic</li> </ul>	<p><b><u>Mechanical Systems – Levers (Simple Machines)</u></b></p> <ul style="list-style-type: none"> <li>• Prior knowledge and use of:             <ul style="list-style-type: none"> <li>○ Lever</li> <li>○ Screw</li> <li>○ Ramp</li> <li>○ Wheel</li> <li>○ Pulley</li> </ul> </li> <li>• Measuring and marking using a pencil and ruler</li> <li>• Using scissors and cutting cardboard</li> </ul> <p><b><u>Cardboard Levers and Linkages</u></b></p> <ul style="list-style-type: none"> <li>• Links to first lesson of mechanical systems. Any understanding of motion and examples             <ul style="list-style-type: none"> <li>○ Rotary</li> <li>○ Reciprocating</li> <li>○ Oscillating</li> <li>○ Linear</li> </ul> </li> </ul>	<p><b><u>Materials theory – Metals</u></b></p> <ul style="list-style-type: none"> <li>• Where metal comes from</li> <li>• Different types of metal and any uses for it</li> </ul> <p><b><u>Dog Tag – Practical</u></b></p> <ul style="list-style-type: none"> <li>• Recapping the expectations of health and safety in the workshop environment</li> <li>• Names of tools and equipment and some basic understanding of their usage</li> <li>• How to work with metal (Expectations)</li> <li>• Using vice and tools safely to cut</li> <li>• Naming finishing techniques learned in previous lessons (What are materials covered with?)</li> </ul>
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KS3 National Curriculum Links	<ul style="list-style-type: none"> <li>• Use research and exploration, such as the study of different cultures, to identify and understand user needs</li> <li>• Identify and solve their own design problems and understand how to reformulate problems given to them</li> <li>• Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture</li> <li>• Select from and use a wider, more complex range of materials,</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and communicate design ideas using annotated sketches</li> <li>• Develop and communicate design ideas using detailed plans</li> <li>• Develop and communicate design ideas using 3-D and mathematical modelling</li> <li>• Develop and communicate design ideas using computer-based tools</li> <li>• Understand developments in design and technology, its impact on individuals, society</li> </ul>	<ul style="list-style-type: none"> <li>• Apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers]</li> <li>• Understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and</li> </ul>	<ul style="list-style-type: none"> <li>• Use research and exploration, such as the study of different cultures, to identify and understand user needs</li> <li>• Identify and solve their own design problems and understand how to reformulate problems given to them</li> <li>• Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture</li> <li>• Select from and use a wider, more</li> </ul>	<ul style="list-style-type: none"> <li>• Understand how more advanced mechanical systems used in their products enable changes in movement and force</li> <li>• Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions</li> <li>• Understand how more advanced mechanical systems used in their products enable changes in movement and force</li> </ul>	<ul style="list-style-type: none"> <li>• Use research and exploration, such as the study of different cultures, to identify and understand user needs</li> <li>• Identify and solve their own design problems and understand how to reformulate problems given to them</li> <li>• Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture</li> <li>• Select from and use a wider, more</li> </ul>

	<p>components and ingredients, taking into account their properties</p> <ul style="list-style-type: none"> <li>• Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups</li> </ul>	and the environment	movement as inputs and outputs]	<p>complex range of materials, components and ingredients, taking into account their properties</p> <ul style="list-style-type: none"> <li>• Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups</li> </ul>		<p>complex range of materials, components and ingredients, taking into account their properties</p> <ul style="list-style-type: none"> <li>• Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups</li> </ul>
Assessments	<ul style="list-style-type: none"> <li>• AO4 Baseline assessment</li> <li>• AO2 Practical Making Assessment</li> <li>• AO3 Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• AO2 2D Design Ruler</li> </ul>	<ul style="list-style-type: none"> <li>• AO4 Paper circuits – Design and function (Complexity)</li> </ul>	<ul style="list-style-type: none"> <li>• AO2 Key Fob practical</li> <li>• AO2 Bag for life design</li> </ul>	<ul style="list-style-type: none"> <li>• AO4 Lever and linkages technical knowledge – Test</li> </ul>	<ul style="list-style-type: none"> <li>• AO3 Dog tag evaluation</li> <li>• AO4 End of year assessment</li> </ul>


Y8	Week 1  Week 39			
	<b>Working With Composites</b>	<b>Designing For Others</b>	<b>Electronics</b>	<b>Structural Systems</b>
<b>Key content (know that...Know how...)</b>	<p><b><u>Materials theory – Composites</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to composites</li> <li>• Sources and uses</li> </ul> <p><b><u>Desk Tidy – Practical</u></b></p> <ul style="list-style-type: none"> <li>• Recap workshop safety (Year 7)</li> <li>• Tools and equipment used</li> <li>• Marking out using templates</li> <li>• Cutting and shaping plywood (Composite)</li> <li>• Finishing and designing</li> </ul> <p><b><u>Product Test – Teacher Specification</u></b></p> <ul style="list-style-type: none"> <li>• How to create a working criteria for a product</li> <li>• Testing design against the criteria</li> </ul>	<p><b><u>Designing – Isometric / Rendering</u></b></p> <ul style="list-style-type: none"> <li>• Recap Isometric drawing style (Y7)</li> <li>• Crating and complex isometric shapes</li> <li>• Introduction to rendering – light / shade / tone</li> <li>• Assessment – Camera (Isometric and render)</li> </ul> <p><b><u>2D Design – Maze</u></b></p> <ul style="list-style-type: none"> <li>• Recapping 2D Design tools and equipment</li> <li>• Recapping CAD (Advantages and disadvantages)</li> <li>• Introduction to CAM – Using the laser cutter</li> <li>• Complex shapes and layering</li> </ul> <p><b><u>Materials Theory – Smart Materials</u></b></p> <ul style="list-style-type: none"> <li>• Introduction to Smart Materials</li> <li>• Sources and uses</li> </ul> <p><b><u>Big Life Fix – User Design</u></b></p> <ul style="list-style-type: none"> <li>• Inclusive Design</li> <li>• Watch Big Life Fix documentary</li> <li>• Investigation of products used to help people with disabilities</li> </ul> <p><b><u>Designer Case Study</u></b></p>	<p><b><u>Electronics Practical – Buzzer</u></b></p> <ul style="list-style-type: none"> <li>• Recapping electronics (Year 7)</li> <li>• Complex circuit symbols</li> <li>• Drawing circuits</li> <li>• Recap tools and equipment used</li> <li>• Press forming plastic</li> <li>• Cutting and shaping</li> <li>• Soldering electronics</li> <li>• Finishing</li> </ul> <p><b><u>Emerging Technology – Cars</u></b></p> <ul style="list-style-type: none"> <li>• Developments in technology</li> <li>• How cars have changed</li> <li>• Extended answer question</li> </ul> <p><b><u>Energy / Environment – Renewable Energy</u></b></p> <ul style="list-style-type: none"> <li>• Renewable energy sources</li> <li>• Wind and solar power practical</li> </ul>	<p><b><u>Theory – Structural Systems</u></b></p> <ul style="list-style-type: none"> <li>• Recap Y7 structures knowledge</li> <li>• Introduction to structural systems</li> <li>• Functions and examples</li> <li>• Shapes and uses</li> </ul> <p><b><u>Bridge / Tower Building – Practical</u></b></p> <ul style="list-style-type: none"> <li>• Demonstration of practical</li> <li>• Bridge building practical – Design and ideas (Teamwork)</li> <li>• Tower building practical – Design and ideas (Teamwork)</li> </ul> <p><b><u>Linkages / Cams and Followers – Practical</u></b></p> <ul style="list-style-type: none"> <li>• Recap Y7 linkages and motion knowledge</li> <li>• Different linkages and uses</li> <li>• Introduction to cams and followers</li> <li>• Practical – Cam and follower design (MDF) Students design the elements to be used on the follower</li> </ul>

		<ul style="list-style-type: none"> <li>• Famous designers</li> <li>• Work of designers</li> <li>• Uses and applications of designs</li> </ul>		
<b>Prior Knowledge</b>	<p><b><u>Materials theory – Composites</u></b></p> <ul style="list-style-type: none"> <li>• Basic understanding of some materials</li> <li>• Core materials knowledge – Wood / metal / plastics</li> <li>• What are composites? Names and types (If any known – Thoughts and ideas)</li> <li>• Products that are used with composites</li> </ul> <p><b><u>Desk Tidy – Practical</u></b></p> <ul style="list-style-type: none"> <li>• General understanding of health and safety and how to stay safe in a workshop environment</li> <li>• Names of tools and equipment and some basic understanding of their usage</li> <li>• Marking and drawing around templates using a pencil</li> <li>• Using a paint brush</li> </ul> <p><b><u>Product Test – Teacher Specification</u></b></p>	<p><b><u>Designing – Isometric / Rendering</u></b></p> <ul style="list-style-type: none"> <li>• Recap Y7 drawing skills</li> <li>• Different techniques of drawing. Sketching / Crating / Oblique / Isometric</li> <li>• How to draw cubes and simple shapes</li> <li>• Crating and curved shapes</li> </ul> <p><b><u>2D Design – Maze</u></b></p> <ul style="list-style-type: none"> <li>• Recap Y7 2D Design skills</li> <li>• Use of a computer to save and open files</li> <li>• What is a laser cutter?</li> <li>• CAD knowledge (Advantages and disadvantages)</li> </ul> <p><b><u>Materials Theory – Smart Materials</u></b></p> <ul style="list-style-type: none"> <li>• Basic understanding of some materials</li> <li>• Core materials knowledge – Wood / metal / plastics</li> </ul>	<p><b><u>Electronics Practical – Buzzer</u></b></p> <ul style="list-style-type: none"> <li>• General understanding of health and safety and how to stay safe in a workshop environment</li> <li>• Recap Y7 electronics knowledge</li> <li>• Basic circuit symbols</li> <li>• Science knowledge of electronics</li> </ul> <p><b><u>Emerging Technology – Cars</u></b></p> <ul style="list-style-type: none"> <li>• What is a car? How does it work? Changes and developments?</li> <li>• Use of some new technology to manufacture and run</li> <li>• How products changed</li> <li>• Materials knowledge</li> </ul> <p><b><u>Energy / Environment – Renewable Energy</u></b></p> <ul style="list-style-type: none"> <li>• Link back to Y7 and non-renewables</li> <li>• What are renewables?</li> <li>• Understanding solar (Science) / Tidal / Biomass / Wind</li> </ul>	<p><b><u>Theory – Structural Systems</u></b></p> <ul style="list-style-type: none"> <li>• Prior knowledge and use of: <ul style="list-style-type: none"> <li>○ Lever</li> <li>○ Screw</li> <li>○ Ramp</li> <li>○ Wheel</li> <li>○ Pulley</li> </ul> </li> <li>• What is a structure? – knowledge of buildings and bridges</li> <li>• Working with cardboard to make simple shapes and working to measurements – Y7 card and scissors project</li> </ul> <p><b><u>Bridge / Tower Building – Practical</u></b></p> <ul style="list-style-type: none"> <li>• Knowledge of structure learned in previous lessons – what make good structures</li> <li>• Marking and measuring</li> <li>• Team working</li> <li>• Working with cardboard and scissors</li> </ul>

	<ul style="list-style-type: none"> <li>Evaluation and analysis skills – basic understanding. Sentence structures and key words learned in Y7</li> </ul>	<ul style="list-style-type: none"> <li>What are smart materials? Names and types (If any known – Thoughts and ideas)</li> <li>Products that are used with smart materials</li> </ul> <p><b><u>Big Life Fix – User Design</u></b></p> <ul style="list-style-type: none"> <li>Disabilities</li> <li>Naming any products that can help people</li> <li>Understanding of some peoples’ different needs</li> </ul> <p><b><u>Designer Case Study</u></b></p> <ul style="list-style-type: none"> <li>Recap Y7 knowledge of designers learned</li> <li>Names of designers and existing products</li> </ul>	<ul style="list-style-type: none"> <li>News and impacts on current and modern life?</li> </ul>	<p><b><u>Linkages / Cams and Followers – Practical</u></b></p> <ul style="list-style-type: none"> <li>Linking back to Y7 motion <ul style="list-style-type: none"> <li>Rotary</li> <li>Reciprocating</li> <li>Oscillation</li> <li>Linear</li> </ul> </li> <li>Use of cams and followers in modern machines</li> <li>Cutting and marking on cardboard</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>KS3 National Curriculum Links</b></p>	<ul style="list-style-type: none"> <li>Use research and exploration, such as the study of different cultures, to identify and understand user needs</li> <li>Identify and solve their own design problems and understand how to reformulate problems given to them</li> <li>Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture</li> <li>Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties</li> </ul>	<ul style="list-style-type: none"> <li>Develop and communicate design ideas using annotated sketches</li> <li>Develop and communicate design ideas using detailed plans</li> <li>Develop and communicate design ideas using 3-D and mathematical modelling</li> <li>Develop and communicate design ideas using computer-based tools</li> <li>Understand developments in design and technology, its impact on individuals, society and the environment</li> </ul>	<ul style="list-style-type: none"> <li>Apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers]</li> <li>Understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]</li> </ul>	<ul style="list-style-type: none"> <li>Understand how more advanced mechanical systems used in their products enable changes in movement and force</li> <li>Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions</li> <li>Understand how more advanced mechanical systems used in their products enable changes in movement and force</li> </ul>



	<ul style="list-style-type: none"> <li>• Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups</li> </ul>			
Assessments	<ul style="list-style-type: none"> <li>• AO4 Baseline assessment</li> <li>• AO2 Practical Making Assessment</li> <li>• AO3 Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• AO2 2D Design maze</li> <li>• AO1 Investigation – Designing for disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• AO2 Electronics buzzer</li> </ul>	<ul style="list-style-type: none"> <li>• AO3 Tower building / Bridges</li> <li>• AO2 Cams and Followers</li> <li>• AO4 End of Year assessment</li> </ul>

Y9	Week 1  Week 39			
	<b>Working With Mixed Materials</b>	<b>Designing for the build Environment</b>	<b>Construction and the Environment</b>	<b>STEM</b>
<b>Key content (know that...Know how...)</b>	<p><b><u>All Materials theory – General Application and uses (Multi materials) – Properties</u></b></p> <ul style="list-style-type: none"> <li>Recap general material applications</li> <li>Recap material sources and uses</li> <li>Mixed material products</li> <li>General applications of materials in everyday (Research and evaluate)</li> <li>Working and physical properties</li> </ul> <p><b><u>Lamp Project – Practical</u></b></p> <ul style="list-style-type: none"> <li>Recap workshop safety (Year 7/8)</li> <li>Tools and equipment used in KS3</li> <li>Marking out using templates</li> <li>Cutting and shaping pine for body</li> <li>Laser cutting acrylic legs</li> <li>Soldering and electronics</li> <li>Finishing and final assembly</li> </ul> <p><b><u>Product Test – Teacher Specification</u></b></p> <ul style="list-style-type: none"> <li>Creating a criteria for their product based on clients needs</li> <li>Testing design against the criteria and evaluating</li> </ul>	<p><b><u>Designing Brief – Isometric / Rendering (Iteration)</u></b></p> <ul style="list-style-type: none"> <li>Recap Isometric drawing style (Y7/Y8)</li> <li>Recap crating and complex isometric shapes</li> <li>Recap rendering – light / shade / tone</li> <li>Layering multiple shapes</li> <li>Fine lining and presentation skills</li> <li>Designing for a criteria using isometric</li> </ul> <p><b><u>Designer case study</u></b></p> <ul style="list-style-type: none"> <li>Famous designers and design movements</li> <li>Work of designers in these movements</li> <li>Uses and applications of designs</li> <li>Impact</li> </ul> <p><b><u>CAD - SketchUp (Architecture)</u></b></p> <ul style="list-style-type: none"> <li>Introduction to 3D design using CAD</li> <li>Recap CAD / CAM</li> <li>Introduction to “The built environment”</li> <li>Designing architectural models based on a brief / criteria</li> </ul>	<p><b><u>Picture Frame – Practical</u></b></p> <ul style="list-style-type: none"> <li>Recap workshop safety (Year 7/8)</li> <li>Tools and equipment used in KS3</li> <li>Construction joinery introduction</li> <li>Wood joints</li> <li>Assembly and finishing</li> </ul> <p><b><u>All Materials theory – General Application and uses (Multi materials)</u></b></p> <ul style="list-style-type: none"> <li>Recap general material applications</li> <li>Recap material sources and uses</li> <li>Mixed material products</li> <li>General applications of materials in everyday (Research and evaluate)</li> <li>Working and physical properties</li> </ul> <p><b><u>Energy / Environment – Sustainability &amp; Society</u></b></p> <ul style="list-style-type: none"> <li>Recap renewable and non-renewable sources</li> <li>What is sustainability?</li> <li>What are the 6R’s</li> <li>Linked to everyday product</li> <li>Product evaluations based on 6R’s</li> </ul>	<p><b><u>Emerging Technology – Robotics / Nano Tech</u></b></p> <ul style="list-style-type: none"> <li>Developments in technology (Recap Y7 /Y8)</li> <li>What is robotics?</li> <li>What is Nano Tech?</li> <li>Extended answer question</li> </ul> <p><b><u>Hydraulic and Pneumatic Systems – Practical (Kit project)</u></b></p> <ul style="list-style-type: none"> <li>Introduction to STEM</li> <li>What is hydraulic?</li> <li>What is Pneumatic?</li> <li>Project kit assembly – Reading and following instructions</li> </ul> <p><b><u>STEM Kit Project – Practical</u></b></p> <ul style="list-style-type: none"> <li>Recap STEM knowledge</li> <li>Project kit assembly – Reading and following instructions (Individual and team build tasks)</li> <li>Quiz / Questions based on knowledge learned from the kits – Real world applications</li> </ul>

		<p><b><u>All Materials theory – General Application and uses (Multi materials)</u></b></p> <ul style="list-style-type: none"> <li>Recap general material applications</li> <li>Recap material sources and uses</li> <li>Mixed material products</li> <li>General applications of materials in everyday (Research and evaluate)</li> <li>Working and physical properties</li> </ul>		
<p>Prior Knowledge</p>	<p><b><u>Materials theory – General Application</u></b></p> <ul style="list-style-type: none"> <li>General material knowledge – Woods / Metals / Polymers / Composites / Smart materials</li> <li>Real world product knowledge</li> <li>Application of materials and why</li> <li>Properties of materials and their meaning</li> </ul> <p><b><u>Lamp Project – Practical</u></b></p> <ul style="list-style-type: none"> <li>General understanding of health and safety and how to stay safe in a workshop environment</li> <li>Names of tools and equipment and some understanding of their usage</li> <li>Marking and drawing around templates using a pencil</li> <li>Cutting and filing materials</li> <li>General assembly</li> <li>Soldering / Electronics knowledge Y8</li> </ul>	<p><b><u>Designing Brief – Isometric / Rendering (Iteration)</u></b></p> <ul style="list-style-type: none"> <li>Recap Y7/Y8 drawing skills</li> <li>Different techniques of drawing. Sketching / Crating / Oblique / Isometric</li> <li>How to draw cubes and simple shapes</li> <li>Crating and curved shapes</li> <li>Using fine line pens</li> <li>What is good presentation?</li> </ul> <p><b><u>Designer / Design Movement case study</u></b></p> <ul style="list-style-type: none"> <li>Recap Y7/Y8 knowledge of designers learned</li> <li>Names of designers and existing products</li> </ul> <p><b><u>CAD - SketchUp (Architecture)</u></b></p> <ul style="list-style-type: none"> <li>What is architecture?</li> <li>What is the “Built Environment”</li> </ul>	<p><b><u>Picture Frame – Practical</u></b></p> <ul style="list-style-type: none"> <li>General understanding of health and safety and how to stay safe in a workshop environment</li> <li>Names of tools and equipment and some understanding of their usage</li> <li>Marking and drawing on timber using a pencil</li> <li>Cutting and filing materials</li> <li>Wood joints and names</li> <li>General assembly</li> <li>Finishing / Painting</li> </ul> <p><b><u>All Materials theory – General Application and uses (Multi materials)</u></b></p> <ul style="list-style-type: none"> <li>General material knowledge – Woods / Metals / Polymers / Composites / Smart materials</li> <li>Real world product knowledge</li> <li>Application of materials and why</li> </ul>	<p><b><u>Emerging Technology – Robotics / Nano Tech</u></b></p> <ul style="list-style-type: none"> <li>What is robotics? How does it work? Changes and developments? Current real world applications?</li> <li>Science – Nano tech?</li> <li>Use of some new technology to manufacture</li> <li>How products changed</li> <li>Materials knowledge – What things can be made from?</li> </ul> <p><b><u>Hydraulic and Pneumatic Systems – Practical (Kit project)</u></b></p> <ul style="list-style-type: none"> <li>Application of pneumatic / hydraulic in everyday products – Uses within DT and prior knowledge from Y7/Y8 projects and machines seen / used</li> <li>Comprehension knowledge - Following of instructions</li> </ul>

	<p><b><u>Product Test – Teacher Specification</u></b></p> <ul style="list-style-type: none"> <li>• How to set criteria</li> <li>• Evaluation and analysis skills</li> <li>• Sentence structures and key words learned in Y7 / Y8</li> </ul>	<ul style="list-style-type: none"> <li>• Use of a computer to save and open files</li> <li>• CAD/CAM knowledge (Advantages and disadvantages) – Y7/Y8</li> </ul> <p><b><u>All Materials theory – General Application and uses (Multi materials)</u></b></p> <ul style="list-style-type: none"> <li>• General material knowledge – Woods / Metals / Polymers / Composites / Smart materials</li> <li>• Real world product knowledge</li> <li>• Application of materials and why</li> <li>• Properties of materials and their meaning</li> </ul>	<ul style="list-style-type: none"> <li>• Properties of materials and their meaning</li> </ul> <p><b><u>Energy / Environment – Sustainability &amp; Society</u></b></p> <ul style="list-style-type: none"> <li>• Energy / Environment knowledge from Y8/Y7 – Renewable and non-renewable</li> <li>• Some aspects of 6R's and what the words mean <ul style="list-style-type: none"> <li>○ Reduce</li> <li>○ Rethink</li> <li>○ Repair</li> <li>○ Refuse</li> <li>○ Recycle</li> <li>○ Reuse</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Use of tools and equipment to assemble products</li> <li>• Glue and adhesive where necessary</li> </ul> <p><b><u>STEM Kit Project – Practical Cross curricular – What is STEM?</u></b></p> <ul style="list-style-type: none"> <li>• What have you learned in Science throughout KS3?</li> <li>• What have you learned in Maths throughout KS3?</li> <li>• Application of the subjects</li> <li>• Comprehension knowledge - Following of instructions</li> <li>• Use of tools and equipment to assemble products</li> <li>• Glue and adhesive where necessary</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>KS3 National Curriculum Links</b></p>	<ul style="list-style-type: none"> <li>• Use research and exploration, such as the study of different cultures, to identify and understand user needs</li> <li>• Identify and solve their own design problems and understand how to reformulate problems given to them</li> <li>• Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture</li> <li>• Select from and use a wider, more complex range of materials, components and ingredients,</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and communicate design ideas using annotated sketches</li> <li>• Develop and communicate design ideas using detailed plans</li> <li>• Develop and communicate design ideas using 3-D and mathematical modelling</li> <li>• Develop and communicate design ideas using computer-based tools</li> <li>• Understand developments in design and technology, its impact on individuals, society and the environment</li> </ul>	<ul style="list-style-type: none"> <li>• Use research and exploration, such as the study of different cultures, to identify and understand user needs</li> <li>• Identify and solve their own design problems and understand how to reformulate problems given to them</li> <li>• Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture</li> <li>• Select from and use a wider, more complex range of materials, components and ingredients,</li> </ul>	<ul style="list-style-type: none"> <li>• Understand how more advanced mechanical systems used in their products enable changes in movement and force</li> <li>• Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions</li> <li>• Understand how more advanced mechanical systems used in their products enable changes in movement and force</li> </ul>

	<p>taking into account their properties</p> <ul style="list-style-type: none"> <li>• Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups</li> </ul>		<p>taking into account their properties</p> <ul style="list-style-type: none"> <li>• Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups</li> </ul>	
<b>Assessments</b>	<p>AO4 – Baseline Assessment AO2 – Lamp Practical</p>	<p>AO1 – Investigate and research design problems AO2 – CAD SketchUp (Architecture) – Final Model</p>	<p>AO2 – Picture Frame Practical AO3 – Evaluate product based on 6R's</p>	<p>AO4 – End of Year assessment AO2 – STEM kit practical</p>