Topic: KS3 Year 9 Material Testing		Duration: 6 lessons. Summer Term 1	Composite: Unit Test
Key vocabulary:	**Core knowledge Components**	**Powerful knowledge components crucial to commit to long term memory**	**Links to previous and future topics**
Destructive testing, Non-destructive testing. Fatigue, fracture, corrosion, fair test. Properties. Tensile strength, hardness, ductile, malleable, strength to weight ratio, thermal conductivity. Ultrasonic, thermal imaging. Steel, carbon fibre, aluminium, HIPS, acrylic, mdf, pine.	▪ **What is destructive testing?** ▪ **Where does destructive testing occur in industry? What is being tested? Why is it being tested?** ▪ **What is non-destructive testing?** ▪ **Where does non-destructive testing occur in industry? What is being tested? Why is it being tested?** ▪ **What does 'fair' test mean?** ▪ **What does it mean when a test must be 'measurable'?** ▪ **What does 'hard' mean in technology?** ▪ **What 3 ways can hardness be tested in a workshop?** ▪ **What does 'strength to weight ratio' means.** ▪ **What does 'malleable' mean?** ▪ **What does 'ductile' means.**	• **Explain what makes a test fair.** • **Be able create a fair test, to compare the tensile strength of a range of products.** • **Be able to explain the difference between destructive and non-destructive testing.** • **Be able to apply a knowledge of thermal testing to identify how to improve the thermal characteristics of a house.** • **To have devised and used a test in the workshop to test the hardness of a range of materials.** • **To be able to explain how to do a fair test for strength, weight, malleability and ductility.** • **Be able to choose and justify material choices for a range of products (based on material properties).**	Links to materials and material groups covered in year 7. Links to Structural elements (forces), covered in year 8 (Structures). Links to mathematics (tables, graphs). Links to science (properties of material, fair tests).

Topic: KS3 Year 9 Design and Make		**Duration: 6 lessons. Summer Term 2**	**Composite: Unit Test**
Key vocabulary:	**Core knowledge Components**	**Powerful knowledge components crucial to commit to long term memory**	**Links to previous and future topics**
Design Brief, Specification, Research, Design Ideas, Development, Components, Fixings, Scale, Model, Isometric, Orthographic, Working Drawings, Constraints	▪ **What is a Brief?** ▪ **Why does a designer have a brief?** ▪ **Why does a designer research?** ▪ **What should be included on a design sheet?** ▪ **Why does a designer need a range of ideas?** ▪ **What is a component part?** ▪ **What is a fixing?** ▪ **Why are models useful?**	• **Be able to identify a wide range of design possibilities that meet a set brief.** • **To be able to draw and annotate a range of ideas (in isometric (3D) if possible).** • **To be able to justify with reference to a brief, a final choice of design.** • **Be able to identify the component parts, materials, tools and equipment needed to produce a design model.** • **To be able to choose material for a model, based on the properties required.** • **To produce a model of a design idea, to scale.** • **To be able to apply previous knowledge of drawing or CAD to independently produce working drawings.** **Extension:** **Level of complexity and detail on model.** **Level of complexity on working drawings.**	Knowledge of materials and properties from year 7 Knowledge of CAD/CAM and laser cutting from year 8. Knowledge of isometric and Orthographic drawing from Year 8. Knowledge of structures from year 8. Knowledge of mechanisms year 8. Knowledge of making to dimensions in year 9 (wood and metal). Pupils may choose materials based on environmental issues from year 9. Pupils will have a knowledge of measuring and using tools from year7, year 8 and year 9.