Subject:	3D PD Intent:	Our Exam Board is: Edexcel
3D Product Design	3D PD encourages students to think creatively, converting ideas and a wide range of materials into the products and services that we all need and use every day of our lives. Everything around us has been designed and this subject enables students to gain a better understanding of the world they live in and to improve and sustain this for future generations. 3D PD is a creative and technical subject which involves designing, making and problem solving, innovating for improvement. Students use the iterative design process to develop innovative solutions to realistic problems and will be introduced to a range of design, modelling techniques and CAD packages as well as being able to work in Polymers, Paper and Board, Timbers, Textiles and Metals.	

The Big Questions…

Year 10	Year 11
Metal Tag Project -What are the different properties of Ferrous and Non Ferrous Metals? How can they be formed and assembled together? Investigating the working characteristics of metals, what is meant by Ductility, Malleability, Hardness, Toughness, Elasticity, Resilience? How can I soft solder? What are pop rivets? September - November **Industry Project- designing and making a toy for a disabled child.** What are common inputs, outputs and controls in electronics. How are mechanisms used to give mechanical advantage and how can this be applied to cams, levers, linkages, gears and pulleys? How can board construction techniques be used to manufacture mechanisms? How can products be designed to meet the needs of a specific user group? How can modelling in manufactured boards be used to test and develop designs? How is the use of 2D design and the laser cutter advantageous in product modelling? November January. **Disaster. Designing then modelling a shelter for refugees**. What are basic human needs of a refugee from a natural or man made disaster? What cultural influences determine design? What are the properties of manufactured and natural textiles? Why is porosity important in textile design. What are ergonomics? **Contextual Challenge (June- April in yr11)** -Please refer to yr11 section to the right.	**Contextual Challenge (June- April) - Controlled Assessment (50% of GCSE)** -Student will produce a design folder and practical outcome in response to a contextual challenge set by the exam board (released in June of year 10) There are four parts to the assessment: **Investigate (June- Sept)** -How can we apply a range of research strategies to investigate, analyse and evaluate the contextual challenge and develop a design brief and specification? **Design (Oct- Dec)** How can we develop realistic design proposals as a result of the exploration of design opportunities and user needs, wants and values? How can we apply the iterative design process to explore, create and evaluate a range of outcomes? How can we apply a range of design strategies, communication and modelling techniques to design and develop solutions? - **Make (Jan- Feb)** -How we apply a range of manufacturing processes and techniques (including CAD/CAM) to produce a quality prototype? **Evaluate (March)** -How can we test our product and evaluate it effectiveness in meeting the design specification? **Technical Aspects of Designing and Making (Sept- May)-**How are materials selected for their physical and mechanical properties? How are materials manufactured and formed into a range of products? What is the impact of new and emerging technologies? What are the environmental, social and economical challenges designer face? How does the work of past and present designers influence the design of products?

What skills will I develop?	How will I be assessed?
The GCSE in Graphics enables students to understand and apply iterative design processes through which they explore, create and evaluate a range of outcomes. The qualification enables students to use creativity and imagination to design and make prototypes (together with evidence of modelling to develop and prove product concept and function) that solve real and relevant problems, considering their own and others' needs, wants and values. It gives students opportunities to apply knowledge from other disciplines, including mathematics, science, art and design, computing and the humanities.	Project work is monitored through the use of progress tracking charts and formative feedback given at the end of each project, detailing the strength and areas for improvements against the GCSE assessment criteria. Homework, including exam question and flash cards, is set and marked each week and recorded in SMHW. Teacher feedback is given verbally and on assessed work so that pupils can improve their understanding before moving on to the next section of the course.

What great resources can I use?	Three ways that parents/carers can help…
Two laser cutters whose use is invaluable throughout the key stage, textiles, sewing machines, wide range of metals, centre lathes, scroll saws, scalpels, craft knives, card, Styrofoam, corrugated card, pills drills, BW0 computer suite, a range of polymers, drawing boards, fineliners, magic markers, line benders three multi disciplinary workshops, hand tools, disc sanders, machine sander.	1. Ask to see your daughter/son's project book. If you have to ask what any page is about the students should add explanation. 2. In the final project, The Contextual Challenge, your help putting the student in touch with either clients or users will be invaluable. 3. Encourage them to visit The Design Museum, The V+A, The Science Museum in person as well as using Design based websites like Design Boom.