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| **Design and Technology Curriculum Milestone 3** | | | | | | |
| **Area** | **Key Vocabulary** | **Sticky Knowledge** | | | **Essential Skills to be covered** | |
| **Food:**  Viking Bread  **Traders and Raiders** | **Ingredients**  **Shaping**  **Kneading**  **Proving**  **Yeast**  **Dough**  **Grain**  **Crust** | * Bread is the product of baking a mixture of flour, water, salt, yeast and other ingredients * Basic process involves mixing of ingredients until the flour is converted into a dough. * Proofing is allowing the dough to ferment and rise. * Kneading the dough is important as it makes the bread light, airy and chewy. | | | **Make Viking bread and improve with their own bread recipe**   * Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. * Demonstrate a range of baking techniques to make their bread. * Present their final bread well. * Create and refine recipes, including ingredients, methods, cooking times for their bread. | |
| **Control:**  Vehicles  **Out of this World** | **Vehicle**  **Chassis**  **Axle**  **Transference**  **Belt drive**  **Pulley Wheel**  **Series circuit**  **Parallel circuit**  ***Circuits and motors optional*** | * A wheel and axle mechanism transfers force. * An axle is a shaft inserted into the centre of a wheel. For each revolution of the axle, the wheel makes one complete revolution. * Where use a rubber band, the force is *stored* in the rubber band when wound around the axle. * When winding the elastic band, it takes less force to use the wheel because it has a bigger diameter. | | | **Design and make a moon buggy to explore the planet’s surface.**   * Develop a simple mechanism to provide a transmission system. * Use innovative combinations of electrical and mechanics in their product design. * Use different kinds of circuit (parallel and series) and incorporate a motor, lights and buzzer into their product. * Refine their product and mechanism throughout the build process. * Mark, measure and cut out with precision to the nearest mm. * Cut materials accurately and safely using the appropriate tools. | |
| **Textiles:**  Stuffed Animal Toy  **Endangered** | Cross stitch  Back stitch  Blanket stitch  Applique  Running Stitch  Seam Allowance  **Template**  **Swatches**  **Tacking**  **Wadding**  **Hem** | * Running stitch is best used for attaching decoration * When joining fabrics together, could use the blanket stitch, zig-zag stitch or blind stitch. * Tacking is a temporary stitch which holds material in place until it can be stitched permanently. * A seam allowance is the area between the fabric edge and the stitching line on two pieces of material being sewn together. * Wadding is the padding or insulation between materials. * Applique is the layering of the fabrics. | | | **Make an endangered animal to sell to raise money**   * Consider how would make the product attractive and strong. * Use a range of stitching techniques (such as back stitch for seams and running stitch to attach decoration). * Cut materials with precision and refine the finish with appropriate tools * Create an animal creature that employs a seam allowance. * Think about how the product would be sold. * Use the qualities of materials to create suitable visual and tactile effects in the finish and decoration. | |
| **Mechanism**  Fairground Ride | Rotation  Spindle  Drive shaft  Axle  Drive Belt  Pulley wheel  Motor  Carousel | * Pulley systems are made from 2 pulley wheels attached to a drive shaft with a drive belt joining them. * A drive belt (elastic band) pulls on a pulley wheel to make it turn. * If you twist the drive belt, each pulley wheel will spin in an opposite direction to the other. * To change the speed of the turn, change the size of the pulley wheel. * **British Inventor developed the first carousel in 1861** | | | **Design and make a Victorian fairground ride**   * Develop a rotary motion using a motor, pulley wheels, a drive belt and a drive shaft. * Use innovative combinations of electrical and mechanics in their product design; for example horizontal rotation in a ferris wheel. * Use different kinds of circuit and incorporate a switch in their product. * Refine their product and mechanism throughout the build process. | |
| **Structure**  Egyptian Pyramid  **Walk Like Egyptian** | Hacksaw  Card Strengthener  45 degree angle  Vice  Marking  Sanding  Pyramid | * Cut wood safely by using a vice that will fasten it tight to the table. * Strengthen corners of square frame with card triangles on both sides. * Use 45 degree angle cutter for exact fit. * Can strengthen point of the pyramid by *pushing* card triangle inside the frame. | | | **Make a wooden square based pyramid for their mummy and sarcophagus.**   * Develop a range of practical skills to create products (such as cutting, nailing, gluing with glue gun, filling and sanding). * Hide joints to improve the look of a product. * Make sure their measurements are precise and accurate to make the wooden pyramid frame structure. * Ensure their product is strong through effective strengthening techniques. * Refine and finish with appropriate materials (sandpaper) | |
| **Structure**  **The Ship of Dreams** | Buoyancy  Water displacement  Float  Upthrust  Hull  Volume  Compartment  Frame  Skin | * The hull is the main structural part of a boat giving its capacity and buoyancy. * Buoyancy is when the upward force is equal to the weight of the liquid moved by that object. * Objects that are hollow float because the hollow sections increase the volume of the object. * Changing an objects shape changes it volume, which affects the size of the upward push. * Pockets of air reduce the density to allow an object to float. | | | **Design and make their own lifeboat to rescue as many passengers (marbles) as possible.**   * Investigate the different factors that can affect how an object floats. * Develop a range of practical skills to create a lifeboat (such as cutting, nailing, gluing with glue gun). * Ensure their boat is strong through effective strengthening techniques and waterproof through the use of it materials. * Make a structure that floats. * Test and evaluate their boats to see if it floats with increased load. | |
| **Design Technology Project Skills** | | | | | | |
| **Developing, Planning and Communicating Ideas** | | | **Working with tools, materials and equipment to make products** | **Evaluate and improve processes and products** | | **Inspiration from design in history** |
| * Use a range of information to inform their design including ***disassembling products***. * Take the users view into account and use market research to inform their designs. * Follow their design and adapt where necessary; identify good points and draw backs. * Produce detailed step by step plans. | | | * Use a range of tools and materials precisely. * Change the way they’re working if needed. * Ensure products have a high quality finish. * Make prototypes first, making constant refinements through ***focused practical tasks*** | * Test and evaluate their final product’s appearance and function against agreed design criteria. * Assess is it fit for purpose. * Identify improvements to be made. | | * Combine elements of design from a range of inspirational designers throughout   history, giving reasons for choices.   * Create innovative designs that improve upon existing products. * Evaluate the design of products so as to suggest improvements to the user experience. |