Year 3	Year 4	Year 5	Year 6
Mechanical systems – levers and linkages	**Electrical systems – circuits and switches**	**Mechanical systems – cams**	**Textiles – combining different fabric shapes**
Skills - Accurate use of measuring, marking out, cutting and joining skills and techniques. - Choose and create the correct mechanism for a desired motion. Knowledge - Understand and use lever and linkage mechanisms. - Distinguish between fixed and loose pivots. - Understand key vocabulary: mechanism, lever, linkage, pivot, slot, bridge, guide, linear, rotary, oscillating, reciprocating	Skills - Make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers. - make a variety of switches that operate in different ways e.g. when you press them, when you turn them, when you push them from side to side. - Test switches in a simple series circuit. Knowledge - Understand and use electrical systems in products, such as series circuits incorporating switches, bulbs and buzzers. - Apply their understanding of computing to program and control their products. - Understand key vocabulary: series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip	Skills - Explore and experiment how to change the types of movement and direction created of cams. - Make a cam based mechanism with rotary and reciprocating movement. - Develop measuring, marking, cutting, shaping and joining skills. Knowledge - Understand that mechanical systems have an input, process and an output. - Understand how cams can be used to produce different types of movement and change the direction of movement. - Understand key vocabulary: cam, snail cam, off-centre cam, peg cam, pear shaped cam, follower, axle, shaft, crank, handle, housing, framework, rotation, rotary motion, oscillating motion, reciprocating motion	Skills - Develop skills of threading needles and joining textiles using a range of stitches - Develop skills of sewing textiles by joining right side together and making seams - Develop skills of 2-D paper pattern Knowledge - Know that a 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. - Know how fabrics can be strengthened, stiffened and reinforced where appropriate. - Understand key vocabulary: seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces

Food – healthy varied diet	Mechanical systems – pneumatics	Food – celebrating culture & seasonality	Mechanical – pulleys and gears
Skills - Select and use a range of appropriate cooking utensils - Use a range of techniques for preparing ingredients such as the bridge & claw technique, grating, peeling, mixing, spreading and kneading. Knowledge - Know about appropriate equipment and utensils to prepare and combine food. - Know about a range of fresh and processed ingredients and whether they are grown, reared or caught. - Know about basic food hygiene practises such as hands and surface cleaning. - Understand key vocabulary: texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet (as well as names of equipment, utensils, techniques and ingredients)	Skills - Use appropriate equipment to create a pneumatic mechanism - Make a simple pneumatic system - Make a pneumatic mechanism with 2 desired outputs (two moving outcomes/parts) Knowledge - Understand pneumatic mechanisms, including why and when they are used. - Know what is needed to create pneumatic mechanisms. - Understand key vocabulary: components, fixing, attaching, tubing, syringe, plunger, split pin, paper fastener, pneumatic system, input movement, process, output movement, control, compression, pressure, inflate, deflate, pump, seal, air-tight, linear, rotary, oscillating, reciprocating	Skills - Measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients. - Use appropriate utensils and equipment and use safely and hygienically. - Follow a basic recipe to prepare and cook a savoury food product. - Explore adapting texture, taste and appearance of recipes, e.g. which ingredients could be changed or added in a basic recipe such as types of flour, seeds, garlic, vegetables. Knowledge - Know how to use utensils and equipment including heat sources to prepare and cook food. - Understand about seasonality in relation to food products and the source of different food products. - Understand key vocabulary: ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble	Skills - Investigate combinations of two different sized pulleys to know how to change the direction and speed of rotation - Build a working circuit that incorporates a battery, a motor and a handmade switch - Develop measuring, marking, cutting, shaping and joining skills Knowledge - Know what gears and pulleys are and when they are needed - Understand that mechanical and electrical systems have an input, process and an output. - Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. Understand key vocabulary: pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor

Structures – shell structures	Textiles – 2d shape to 3d product	Structures – frame structures	Electrical systems – complex switches and circuits
Skills - Use parts with flat faces to construct nets. Experiment with assembling nets in numerous ways. - Use techniques of scoring, cutting out and assembling using pre-drawn nets. Use techniques to create a window - cut out and acetate sheet added. - Use different ways of stiffening and strengthening shell structures e.g. folding and shaping, corrugating, ribbing, laminating. Knowledge - Develop and use knowledge of how to construct strong, stiff shell structures. - Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. - Understand key vocabulary: shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, tabs, adhesives, joining, assemble, stiff, strong, corrugating, ribbing, laminating, prototype, font, lettering, text, graphics	Skills - Use a range of stitching techniques to sew two pieces of fabric together e.g. running stitch, back stitch and blanket stitch. - Consider whether fabrics are suitable for the chosen purpose and user. - Use appropriate seam allowance when attaching two pieces of fabric. Knowledge - Know how to strengthen, stiffen and reinforce existing fabrics. - Understand how to securely join two pieces of fabric together. - Understand the need for patterns and seam allowances. - Understand key vocabulary: fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance	Skills - Build 3D frame structures by attaching joints with a variety of resources and materials. - Use techniques such as use of diagonals and triangulation to strengthen structures. Knowledge - Understand how to strengthen, stiffen and reinforce 3-D frameworks. - Understand key vocabulary: frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent	Skills - Investigate electrical sensors such as light dependent resistors (LDRs) and a range of switches such as push-to-make switches, push-to-break switches, toggle switches, micro switches and reed switches. - Explore a range of electrical systems that could be used to control products, including a simple series circuit, a series circuit and parallel circuits. Knowledge - Understand and use electrical systems in products. - Apply understanding of computing to program, monitor and control their products. Understand key vocabulary: series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program