



Long Term Planning/Assessment

Design and Technology

Key stage 1 (Y1/2) Milestone 1				
When designing and making, pupils should be taught to:				
Design	<ul style="list-style-type: none"> design purposeful, functional, appealing products for themselves and other users based on design criteria generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology 			
Make	<ul style="list-style-type: none"> select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics 			
Evaluate	<ul style="list-style-type: none"> explore and evaluate a range of existing products evaluate their ideas and products against design criteria 			
Technical knowledge	<ul style="list-style-type: none"> build structures, exploring how they can be made stronger, stiffer and more stable explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. 			
Cooking and nutrition	<ul style="list-style-type: none"> use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from. 			
Milestone 1 (Y1/2)	Key Concepts Knowledge & Skills (Learning Objectives)	Basic/ Working towards	Advancing/ Expected	Deep/ Exceeding
Skills	<p>Food Cut, peel or grate ingredients safely and hygienically.</p> <p>Measure or weigh using measuring cups or electronic scales.</p> <p>Assemble or cook ingredients.</p>	<p>With the support of a teacher, ingredients are prepared safely and hygienically</p> <p>With the support of a teacher, weighing and measuring is accurate</p>	<p>There is a growing awareness of safety and hygiene procedures when preparing food</p> <p>There is a growing ability to weigh and measure accurately.</p>	<p>There is a good understanding of the need to work safely and hygienically when preparing food.</p> <p>There is a good understanding of how to weigh and measure accurately using a range of scales</p>
Assessment				

	<p>Materials Cut materials safely using tools provided.</p> <p>Measure and mark out to the nearest centimetre.</p> <p>Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).</p> <p>Demonstrate a range of joining techniques (such as gluing, using hinges or combining materials to strengthen)</p>	<p>With the support of a teacher, materials are cut safely.</p> <p>When supported by a teacher, maths skills are sometimes used to help measure and mark to the nearest centimetre.</p> <p>During structured activities, a range of cutting and shaping techniques are used</p> <p>During structured activities, a range of joining techniques are used</p>	<p>There is a growing ability to cut materials safely.</p> <p>Maths skills are often used to help measure and mark to the nearest centimetre.</p> <p>There is a growing use of a range of cutting and shaping techniques.</p> <p>There is a growing use of a range of joining techniques</p>	<p>There is a good level of control of tools so that materials are cut safely</p> <p>There is a good application of maths skills to help measure and mark to the nearest centimetre</p> <p>There is a wide use of a range of cutting and shaping techniques.</p> <p>There is a wide use of a range of joining techniques</p>
Assessment				
	<p>Textiles Shape textiles using templates</p> <p>Join textiles using running stitch.</p> <p>Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).</p>	<p>With the support of a teacher, textiles are shaped using templates</p> <p>With the support of a teacher, textiles are joined with a basic running stitch.</p> <p>With the support of a teacher, a number of decoration techniques are experienced.</p>	<p>Templates are beginning to be created and used to shape textiles</p> <p>A basic running stitch is used well to join textiles.</p> <p>A growing number of decoration techniques are used.</p>	<p>Templates are created to a good standard and used to shape textiles effectively</p> <p>A controlled running stitch is used to securely join textiles</p> <p>Effective decoration techniques are chosen and applied to good effect</p>
Assessment				

	Construction Use materials to practise drilling, screwing, gluing and nailing materials to make products (such as wheeled vehicles).	With the support of a teacher, materials are combined to make products.	With growing independence, materials are combined to make products.	Good choices of materials and how to combine them are made when making a wide range of products.
Assessment				
	Mechanics Create products using levers and winding mechanisms	With the support of a teacher, products using levers and winding mechanisms are made	With growing independence, and a developing understanding of mechanisms, products using levers and winding mechanisms are made.	With a high level of independence and a good understanding of mechanisms, good-quality products using levers and winding mechanisms are made
Assessment				
Design and Make	Design products that have a clear purpose and an intended user. Make products, refining the design as work progresses.	When supported by a teacher, designs to meet a purpose are created. When encouraged by a teacher, designs are improved as the making process develops	With growing independence, designs that have a clear purpose and intended user are created Generally, good-quality products are made by a process of refinement during the making process	With a high level of independence and a good understanding that designs require a purpose and user, very good designs are created. High-quality products are made through a process of constant refinement throughout the making process
Assessment				
Inspiration	Explore objects and designs to identify likes and dislikes of the designs. Suggest improvements to existing designs.	With structured activities, designs of others are evaluated to identify likes and dislikes. When prompted, basic improvements to existing designs	With growing independence and a growing understanding of design features, likes and dislikes of the designs of others are identified. Suitable and appropriate improvements to	With a high level of independence and a good understanding of design features, likes and dislikes are identified, explained and justified with examples Thoughtful and well-reasoned improvements to existing designs are

	Explore how products have been created.	are suggested.	existing designs are generally identified.	identified.
Assessment				

Vocabulary
General vocab: inspiration, design, purpose, features, materials, techniques, user, equipment, draw, make, construct, evaluate, products, designer, template, develop, model, safety, improve, explain, adapt, organise.

Food: hygiene, vitamins, carbohydrates, proteins, fibre, fat, cook, cooking, baking, prepare, store, ingredients, amount, baking sheet, basin, chopping board, cleaning cloths, grater, knead, masher, measure, measuring jug, measuring spoons, method, mixing bowl, pastry, cutters, peeler, recipe, saucepans, scales, sieve, weigh, wooden spoon, time, dry, liquid, stir, grate, apron, chop, cut, equipment, fork, knife, mix, spoon, grating, peeling, slicing, folding, spreading, taste, grown, reared, caught, processed food, seasonal food, harvest, food poisoning,

Materials: junk modelling, cut, tearing, folding, curling, gluing, materials, safety, measure, mark, nearest centimetre, cutting skills, shaping techniques, join, joining techniques, hinges, strengthen, cello tape, glue Stick, masking tape, paper clip, ruler, straws, tools, mark, measure, combine, scale.

Textiles: Templates, shape textiles, pattern, pin, cut, shape, needle, stitch, join textiles, ribbon, thread, wool, finish, stable, decoration techniques, materials, tape measure, measure, centimetre, bead, button, fabric, felt, scissors, sew, running stitch, sequins, printing.

Electrical and electronics: battery, circuit, wire, bulb, fault, damage, diagnoses, water damage, operated, device, terminal damage.

Construction: balance/d, stable, free- standing, anchor, brace, base, properties, strong, build, beam, column, slab, solid, mortar, hollow, dam, arrange, bond, remove, earthquake, architects, foundations, materials, join, mark, assemble, products, centimetre, gluing, 2-D, 3-D, cut, metal, plastic, wire, wood, product, strength, joining, cutting, structures, stable.

Mechanics: mechanisms, levers, winding mechanisms, slider, wheels, axils, attach, chassis, strong, rear, guided bridge, rotating, horizontal, vertical, diagonal, attach, transparent, opaque, pivot, fulcrum, force, input, output

Key stage 2 (Y3/4) Milestone 2

When designing and making, pupils should be taught to:

Design	<ul style="list-style-type: none"> use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
Make	<ul style="list-style-type: none"> select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
Evaluate	<ul style="list-style-type: none"> investigate and analyse a range of existing products evaluate their ideas and products against their own design criteria and consider the views of others to improve their work understand how key events and individuals in design and technology have helped shape the world
Technical knowledge	<ul style="list-style-type: none"> apply their understanding of how to strengthen, stiffen and reinforce more complex structures understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.
Cooking and nutrition	<ul style="list-style-type: none"> understand and apply the principles of a healthy and varied diet prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Milestone 2 (Y3/4)	Knowledge & Skills (Learning Objectives)	Basic/ Working towards	Advancing/ Expected	Deep/ Exceeding
Skills	<p>Food Prepare ingredients hygienically using appropriate utensils.</p> <p>Measure ingredients to the nearest gram accurately.</p> <p>Follow a recipe.</p> <p>Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).</p>	<p>When reminded, appropriate utensils are chosen to safely and hygienically prepare food.</p> <p>With support from a teacher, accurate measurement, to the nearest gram, is experienced.</p>	<p>Appropriate utensils are generally chosen to safely and hygienically prepare food.</p> <p>There is generally accurate measurement to the nearest gram.</p>	<p>Appropriate utensils are chosen to safely and hygienically prepare food, with clear explanations for the choices made.</p> <p>There is accurate measurement to the nearest gram using a variety of scales.</p>
Assessment				

	<p>Materials Cut materials accurately and safely by selecting appropriate tools.</p> <p>Measure and mark out to the nearest millimetre.</p> <p>Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut-outs)</p> <p>Select appropriate joining techniques.</p>	<p>When reminded, appropriate tools are chosen to safely cut materials</p> <p>With support from a teacher, accurate measurement and marking, to the nearest millimetre, is experienced.</p> <p>With support from a teacher, appropriate techniques are used to cut and shape materials.</p> <p>When reminded, appropriate joining techniques are used.</p>	<p>Appropriate tools are generally chosen to safely cut materials.</p> <p>There is generally accurate measurement and marking to the nearest millimetre.</p> <p>Appropriate techniques are generally chosen to cut and shape materials.</p> <p>Appropriate joining techniques are generally selected and used well.</p>	<p>Appropriate utensils are chosen to safely cut materials, with clear explanations for the choices made.</p> <p>There is accurate measurement and marking to the nearest millimetre using a variety of scales.</p> <p>Appropriate techniques are chosen to cut and shape materials, with clear explanations for the choices made.</p> <p>Appropriate joining techniques are selected and used to good effect, with reasons for choices clearly explained.</p>
Assessment				
	<p>Textiles Understand the need for a seam allowance.</p> <p>Join textiles with appropriate stitching.</p> <p>Select the most appropriate techniques to decorate textiles.</p>	<p>When demonstrated by a teacher, and support provided, appropriate allowances are made when joining fabrics.</p> <p>When demonstrated by a teacher, appropriate stitching is attempted with some good effects.</p> <p>When reminded, appropriate techniques are used to decorate textiles.</p>	<p>Generally, appropriate allowances for joining fabrics are used.</p> <p>Generally, stitching is appropriate to the product and effective.</p> <p>Generally, interesting and appropriate techniques are used to decorate textiles.</p>	<p>Accurate and well-planned allowances for joining fabrics are used.</p> <p>Confident and carefully chosen stitching, suitable for the product's purpose, is well executed.</p> <p>Excellent choices of appropriate techniques provide interesting and eye-catching textile decorations.</p>

Assessment				
	Computing Control and monitor models using software designed for this purpose.	With reminders algorithms are create and debugged Crumble	Generally, Computing knowledge is used to create and debug algorithms. Crumble	Computing knowledge is readily applied to create and debug algorithms Crumble
Assessment				
	Electricals and electronics Create series and parallel circuits.	When reminded, knowledge of science is applied to create series and parallel circuits in products	Generally, science knowledge is applied well to create series and parallel circuits in products.	Science knowledge is readily applied to good effect in creating series and parallel circuits in products.
Assessment				
	Construction Choose suitable techniques to construct products or to repair items.	When reminded by a teacher, suitable techniques are used to construct products or repair items.	Suitable techniques are generally used to construct or repair items.	Suitable techniques are chosen and justified when constructing or repairing items.
Assessment				
	Mechanics Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a	When reminded, knowledge of science is applied to creating mechanism products.	Generally, knowledge of science is applied to creating mechanism products.	Knowledge of science is readily applied when creating mechanism products.

	product (such as levers, winding mechanisms, pulleys and gears).			
Assessment				
To design, make, evaluate and improve	<p>Design with purpose by identifying opportunities to design. Make products by working efficiently (such as by carefully selecting materials).</p> <p>Refine work and techniques as work progresses, continually evaluating the product design.</p>	<p>During structured activities, opportunities for design are realised.</p> <p>When supported by a teacher, appropriate materials are selected.</p>	<p>Generally, there is a good understanding of opportunities for design.</p> <p>Planning of workflows and careful selection of materials means work is generally carried out efficiently.</p>	<p>Excellent examples of suggestions for design show an in-depth understanding of the need for design.</p> <p>Very efficient workflows and well-reasoned choices of materials make work very efficient.</p>
Assessment				
To take inspiration from design throughout history	<p>Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.</p> <p>Improve upon existing designs, giving reasons for choices.</p> <p>Disassemble products to understand how they work.</p>	<p>With support from a teacher, some of the most notable designers' work is examined to provide inspiration for ideas.</p>	<p>A growing knowledge of a range of notable designers is used to provide inspiration for designs.</p>	<p>An in-depth knowledge of some notable designers provides inspiration and ideas for designs.</p>
Assessment				

Vocabulary

General vocab: inspiration, pioneer, design, purpose, intended user, features, materials, equipment, evaluate, products, designer, template, develop, model, accurate, modify, explain, adapt, organise, arrange, criteria, investigation, self-evaluation, test, improve, applying, modify, explain, mark out, temporary, permanent, sustainable, engineer, accurately, appropriate techniques, repair, refine, disassemble, analyse, combine, criteria, health and safety, parameters, requirements, accurate, enhance,

Food: Recipes, instructions, bacteria, preserve, refrigerated, nutrients, pulses, wholegrain, vitamins, carbohydrates, proteins, fibre, fat, utensils, measuring, weighing, gram, kilograms millimetre, temperature, ladle, millilitre, litre, spatula, whisk, chopping, snipping, stirring, frying, simmering, juicing, blending, crushing, oven, hob, grill, seasonal, savoury, grown, processed.

Materials: score, assemble, accurate, measuring, nearest millimetre, perimeter, slot, cut out,

Textiles: seam, back stich, binca, bodkin, cotton, thread, cross stitch, hook and eye, loom, press stud, seam allowance, tacking, thimble, technique, aesthetic, components, functional.

Computing: Model, design, software, purpose, control, monitor. Also see Computing long term planning

Electrical and electronics: component, technology, parallel circuit, battery holder, bulb holder, buzzer, switches, devices, app-enabled, respond, LED, conductive, adhesive, explored diagram.

Construction: rigid, stability, strength, angles, frame, structure, truss, distribute, strut, joining plate, chord, pier, variety, contains, conjunctions, external, aspects, components, coordinates, assemble, vice, wire strippers, marking out, junior hacksaw, screw driver, stapler, dowel, sand paper, drill, drill bits, file, goggles, hole punch.

Mechanics: rigid, pulley, gears, motor, pivot, fulcrum, linear, rotary, reciprocating, oscillating, pneumatic, compressed, pressure, hydraulic, piston, hollow cylinder, reciprocating, levers, winding mechanisms, pulleys and gears

Also remind and use vocab from previous milestones to develop schemas and mastery.

Key stage 2 (Y5/6) Milestone 3

When designing and making, pupils should be taught to:

Design	<ul style="list-style-type: none"> use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
Make	<ul style="list-style-type: none"> select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
Evaluate	<ul style="list-style-type: none"> investigate and analyse a range of existing products evaluate their ideas and products against their own design criteria and consider the views of others to improve their work understand how key events and individuals in design and technology have helped shape the world
Technical knowledge	<ul style="list-style-type: none"> apply their understanding of how to strengthen, stiffen and reinforce more complex structures understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.
Cooking and nutrition	<ul style="list-style-type: none"> understand and apply the principles of a healthy and varied diet prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Milestone 3 (Y5/6)	Knowledge & Skills (Learning Objectives)	Basic/ Working towards	Advancing/ Expected	Deep/ Exceeding
Skills	<p>Food Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms).</p> <p>Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.</p> <p>Demonstrate a range of baking and cooking techniques</p> <p>Create and refine recipes, including ingredients, methods, cooking times and temperatures.</p>	<p>There is some awareness of the principles and practices of safe food storage and handling.</p> <p>When reminded, mathematical knowledge is applied to accurately calculate ratios of ingredients.</p> <p>When guided, a range of baking and cooking techniques is demonstrated.</p> <p>With support from a teacher, a range of recipes are created.</p>	<p>Science knowledge is applied to the safe storage and handling of ingredients.</p> <p>Mathematical knowledge is generally applied to calculate ratios of ingredients.</p> <p>A developing range of baking and cooking techniques is demonstrated.</p> <p>A developing range of interesting recipes is created.</p>	<p>A thorough scientific understanding of microorganisms is rigorously applied to the practices of storage and handling of ingredients</p> <p>Knowledge of mathematics is readily applied to calculate ratios of ingredients.</p> <p>A good range of baking and cooking techniques is demonstrated.</p> <p>A wide repertoire of recipes with interesting combinations of ingredients is created.</p>

Assessment				
	<p>Materials Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape).</p> <p>Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (e.g. fabric may require sharper scissors than for paper).</p>	<p>There are some good examples of precision cutting.</p> <p>When reminded, the qualities of materials are considered when selecting tools.</p>	<p>There are many good examples of precision cutting using a growing range of cutting implements.</p> <p>The properties of materials are generally considered in choosing tools.</p>	<p>There are widespread examples of precision cutting using a wide variety of cutting implements.</p> <p>An in-depth understanding of the properties of materials is used to carefully select appropriate tools.</p>
Assessment				
	<p>Textiles Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).</p> <p>Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion)</p>	<p>There are some good examples of effective joins.</p> <p>There are some good examples of art skills being used to provide decoration.</p>	<p>There is a growing range of examples of effective joining techniques that show control and some precision.</p> <p>There are many good examples of art skills being applied to good effect to provide visual and tactile decoration.</p>	<p>There is a wide range of very effective joining techniques that show a high level of precision and control.</p> <p>Well-chosen art skills are used to create eye-catching decoration.</p>
Assessment				

	Computing Write code to control and monitor models or products.	With support explore simple coding systems. Crumble	Computing knowledge is generally applied when using simple programming in systems. Crumble	Use Computing knowledge to programme, monitor and control their product, applying understanding of systems. Crumble
Assessment				
	Electricals and electronics Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistor and chips).	With support, and reminders of science knowledge, a range of circuits is created and used in products.	Science knowledge is generally applied to the design process to create products that employ a range of electronic components.	Science knowledge is readily applied to the design process, creating high-quality products that employ a broad range of electronic components.
Assessment				
	Construction Develop a range of practical skills to create products and repair items (such as cutting, drilling and screwing, nailing, gluing, filling and sanding).	With support, a range of practical skills are emerging to help create or repair products.	A growing range of practical skills are used effectively to make or repair products.	A wide range of practical skills are put to very effective use to make or repair a wide variety of products.
Assessment				
	Mechanics Convert rotary motion to linear using cams. Use innovative combinations of electronics (or computing) and mechanics in product designs.	With support, cams are created. With support, combinations of design components are used in product designs.	A range of differently shaped cams are created. There is some interesting experimentation with combinations of design components in product designs.	Combinations of differently shaped cams are used to create interesting and useful movement. There are some innovative combinations of design components in product designs.

Assessment				
To design, make, evaluate and improve	<p>Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).</p> <p>Make products through stages of prototypes, making continual refinements.</p> <p>Ensure products have a high quality finish, using art skills where appropriate.</p> <p>Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.</p>	<p>With guidance, products are designed with some reference to the user experience.</p> <p>With support, prototypes are made and later developed.</p> <p>Art skills are generally applied and, along with attention to detail, create a high-quality finish.</p>	<p>Generally, the user experience is used as a rationale for design choices.</p> <p>Generally improvements are continual throughout the making process, with initial prototypes often changed radically through a number of refinements</p> <p>When reminded, a high-quality finish is achieved by applying art skills.</p>	<p>The experience of the user drives the design process. There are many excellent examples and explanations of how choices improve the user experience.</p> <p>Initial prototypes and alternative designs are thoroughly explored and explained. Refinements are continually made throughout the making process.</p> <p>Impeccable attention to detail and the extremely effective application of art skills create a professional quality finish</p>
Assessment				
To take inspiration from design throughout history	<p>Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.</p> <p>Create innovative designs that improve upon existing products.</p> <p>Evaluate the design of products so as to suggest improvement to the user experience.</p>	<p>With support, elements of design from notable designers are incorporated into designs.</p> <p>There are some good examples of designs that improve upon existing products.</p> <p>When reminded, evaluations are carried out throughout and at the end of the design process.</p>	<p>Generally, there are some well-reasoned choices for combining elements from a range of designers.</p> <p>There is a growing range of examples of designs that improve upon existing products.</p> <p>Evaluations are generally ongoing and thorough. They relate to the user experience.</p>	<p>An in-depth knowledge of some designers' work is reflected in some striking designs. The rationale and background to the design ideas are explained thoughtfully.</p> <p>There are some notable examples of how the design of an existing product has been greatly improved.</p> <p>The user experience drives critical self-evaluation and helps to identify current and future improvements.</p>

Assessment				
------------	--	--	--	--

Vocabulary

General vocab: inspiration, pioneer, design, purpose, intended user, features, materials, evaluate, strength, products, designer, template, develop, model, accurate, modify, explain, adapt, organise, arrange, criteria, investigation, self-evaluation, test, improve, applying, modify, explain, mark out, temporary, permanent, sustainable, engineer, accurately, appropriate techniques, repair, refine, disassemble, analyse, combine, criteria, health and safety, parameters, requirements, accurate, enhance, prototype, refinement, quality finish, cross-sectional diagrams.

Food: microorganisms, ratios, perishable, infectious, sautéing, compost, perennials, annual, scale down, scale up.

Materials: precision cutting, properties, sanding, appropriate tools, cutting implements.

Textiles: seam, back stich, binca, bodkin, cotton, thread, cross stitch, hook and eye, loom, press stud, seam allowance, sewing machine, tacking, thimble. stitching techniques, running stitch.

Computing: See Computing long term planning

Electrical and electronics: Artificial intelligence, sensor, component, detect, rotary, propeller, combines, resistors, transistors, chips, inputs, processes, output.

Construction: Prototype, assemble, technique, extend, perfected, arch, keystone, voussoir, impost, pier, ellipse, parabola, combining, cutting, drilling and screwing, nailing, gluing, filing and sanding, strengthen

Mechanics: cams. Linear reciprocating, vice versa, dwell, eccentric circle, circumference, mechanical advantage, physicist, gear train, interlock, mitre gear, pulleys, fixed moving, Also remind and use vocab from previous milestones to develop schemas and mastery.