# Design and technology Long Term Plan 2026-2027 (Cycle B)

| Half term | Mars Reception and Year 1 | Venus Years 2 and 3 | Saturn Years 4 and 5 | Jupiter Years 5 and 6 |
|---|---|---|---|---|
| **Autumn 1** | Textiles: Bookmarks (EY)<br>Mechanisms: Making a Moving Storybook (Y1) | Mechanisms: Making a Moving Monster | Electrical Systems: Torches | Electrical Systems: Torches |
| **Autumn 2** | Structures: Junk Modelling (EY)<br>Structures: Stable Structures (Y1) | Textiles: Pouches | Textiles: Stuffed Toys | Textiles: Stuffed Toys |
| **Spring 1** | Structures: Boats (EY)<br>Mechanisms: Wheels and Axles (Y1) | Mechanisms: Fairground Wheel | Digital World: Navigating the World | Digital World: Navigating the World |
| **Spring 2** | Structures: Boats (EY)<br>Textiles: Puppets (Y1) | Mechanical Systems: Pneumatic Toys | Structures: Bridges | Structures: Bridges |
| **Summer 1** | Cooking and Nutrition: Soup (EY)<br>Smoothies (Y1) | Structures: Product Packaging | Mechanical Systems: Mechanical Cars | Mechanical Systems: Mechanical Cars |
| **Summer 2** | Cooking and Nutrition: Rainbow Salad (EY)<br>Smoothies (Y1) | Cooking and Nutrition: Eating Seasonally | Cooking and Nutrition: Come Dine with Me | Cooking and Nutrition: Come Dine with Me |

# Design & Technology knowledge and skills progression

**Cycle B 2026 to 2027**

**EYFS to Year 6**

Children learn to solve practical problems by understanding users, choosing materials and systems, making products and using tests to improve them. This guide maps the six progression documents to the school's Cycle B topics and shows how expectations develop within a shared lesson.

| Class | Shared curriculum | Progression within the class |
|---|---|---|
| **Mars: Reception and Year 1** | Paired EYFS and Year 1 topics in six half term blocks. | Reception explores and explains choices through play and making. Year 1 plans for a user, controls tools and checks simple criteria. |
| **Venus: Years 2 and 3** | One topic in each half term. | Year 2 secures KS1 technical foundations. Year 3 applies early KS2 planning, diagrams, material choices and evidence from tests. |
| **Saturn: Years 4 and 5** | Same topics and timing as Jupiter. | Year 4 works with supported technical planning; Year 5 develops independence, prototypes and reasoned choices. |
| **Jupiter: Years 5 and 6** | Same topics and timing as Saturn. | Year 5 uses the same standard in either class. Year 6 diagnoses problems and justifies decisions against more detailed criteria. |

# Design making and evaluation across the years

| Year | Design and communicate | Make and select | Test evaluate and improve |
|---|---|---|---|
| **Reception** | Talk about a plan and choose from available materials. | Explore joining, shaping, threading and food preparation with support. | Try it, describe a preference and suggest a change with adult prompts. |
| **Year 1** | Identify a user and purpose; draw an idea and discuss existing products. | Sequence simple steps, choose tools and materials and follow demonstrated safety routines. | Compare with a plan and test whether it works; respond to feedback. |
| **Year 2** | Use a brief and simple criteria; label parts and model moving ideas. | Select materials by properties and cut, shape and join with increasing control. | Test against criteria, locate a problem and suggest a practical improvement. |
| **Year 3** | Develop criteria, compare feasible ideas and use labelled sketches or diagrams. | Plan stages, select suitable tools and make with increasing accuracy. | Use tests and peer feedback to modify a design and explain a technical reason. |
| **Year 4** | Use clear criteria and purposeful diagrams or prototypes. | Measure more accurately, choose for appearance and function, and reinforce or refine construction. | Compare effectiveness with criteria and explain why a material or method worked. |
| **Year 5** | Research needs and constraints, consider alternatives and use repeated prototypes. | Explain selections, organise resources and make with more independence. | Assess function, appearance, user needs, materials and cost where relevant; explain revisions. |
| **Year 6** | Develop and justify a response to a client or user, using detailed diagrams and constraints. | Select and combine processes accurately, diagnose problems and manage stages. | Use repeatable tests and feedback, evaluate trade offs and justify further improvements. |

Apply these expectations to the product being made. Independence increases through decisions and problem solving; it does not remove adult supervision or imply unrestricted tool use. Oral explanation, models and photographs can support the evidence without making writing the main measure of design capability.

# Structures progression

| Year | Knowledge and skills from the source progression | Application and coverage in Cycle B |
|---|---|---|
| **Reception** | Materials and joins behave differently. Some objects float and others sink; test boat materials and shapes. | Junk Modelling and Boats in Mars: choose, join, predict, test and improve. |
| **Year 1** | A structure serves a purpose. Bases, supports, shape and material choices affect stability and stiffness. | Stable Structures in Mars: build a freestanding form and improve it after a stability test. |
| **Year 2** | Strong, stiff and stable describe different properties. Folding can stiffen sheet materials. | Product Packaging in Venus: make and test a simple package for an agreed object. |
| **Year 3** | Shell structures have a thin outer covering. Nets, accurate templates and reinforcement help turn flat materials into forms. | Product Packaging: compare nets or prototypes, measure and assemble accurately, then justify a change. |
| **Year 4** | Frame structures support a shape; material and joint choices affect their performance. | Bridges in Saturn: compare beams and frames and reinforce weak points with guidance. |
| **Year 5** | Triangulation can reinforce frames. Material properties, span and joint quality affect load bearing. | Bridges in either older class: plan and build a truss model and test a defined span and load. |
| **Year 6** | Constraints include materials, cost, users and impact. Repeated prototypes can improve structural design. | Bridges in Jupiter: compare alternatives, control test conditions and justify trade offs and refinements. |

The source’s named products illustrate progression; this map applies the relevant knowledge and skills through the school’s selected Cycle B products. It does not add every source example as another unit.

# Mechanisms and mechanical systems progression

| Year | Knowledge and skills from the source progression | Application and coverage in Cycle B |
|---|---|---|
| Reception | Explore how parts move and what happens when something is pushed or pulled. This is a practical foundation. | Shared story page and transport activities in Mars; the PDF starts its formal mechanism progression at Year 1. |
| Year 1 | Sliders guide straight movement; levers turn about pivots. Wheels and axles enable rotation. | Moving Storybook and Wheels and Axles: label parts, test movement and fix a turning or guide problem. |
| Year 2 | Input movement causes output movement; linked levers can transfer or change movement. | Moving Monster and Fairground Wheel: build and adjust linkages or wheel assemblies against criteria. |
| Year 3 | Pneumatic systems use moving or compressed air to transmit force and create movement. | Pneumatic Toys: use connected syringes or a suitable air system, build secure housing and test output movement. |
| Year 4 | Mechanisms work together within a mechanical system; diagrams help explain the moving parts. | Mechanical Cars in Saturn: follow the selected drive model, identify its parts and adjust alignment or friction. |
| Year 5 | Gears or pulleys transfer movement and force; gearing can change speed, direction or turning effect. | Proposed car transmission uses gears or pulleys. Explain its input, transmission and axle output through a working model. |
| Year 6 | A system can change or transfer movement; select and combine mechanisms for a purpose. | Mechanical Cars in Jupiter: use tests to justify a transmission choice and refine the model. Cams and followers are not claimed as a separate Cycle B project. |

Mechanical Cars has no specified drive in the overview. A gear or pulley transmission is the proposed application here; teachers must confirm it. A simple free rolling car alone would not demonstrate gear or pulley knowledge. Wheels can rotate on a fixed axle or with a rotating axle, depending on the design.

# Textiles progression

| Year | Knowledge and skills from the source progression | Application and coverage in Cycle B |
|---|---|---|
| **Reception** | A design records an idea. Threading passes one material through a hole or opening. | Bookmarks in Mars: choose materials, thread or weave and compare the outcome with the idea. |
| **Year 1** | Templates repeat shapes; fabrics and joining methods affect appearance and use. | Puppets in Mars: use a template, cut fabric and practise a simple joining method, including supported stitch trials. |
| **Year 2** | Sewing joins fabric; knots secure stitches. Even running stitches can form a seam. | Pouches in Venus: cut with a template, thread, sew and test whether the pouch holds its intended contents. |
| **Year 3** | A seam needs space at the edge; appliqué attaches smaller fabric pieces to a larger piece. | Pouches: plan a template or decoration, improve stitch control and justify a join. Cross stitch is a possible taught extension, not a new cushion unit. |
| **Year 4** | A mock up checks proportions; stitch and fastening choices serve different purposes. | Stuffed Toys in Saturn: test a paper pattern and practise a secure seam with support. |
| **Year 5** | Blanket stitch can join or reinforce edges; component proportions and secure seams retain stuffing. | Stuffed Toys in either older class: cut accurately, join with controlled blanket stitch and attach decorative fabric. |
| **Year 6** | Pattern pieces and combined joining methods support complex products; consistent stitches improve function and finish. | Stuffed Toys in Jupiter: refine a multi part pattern, choose suitable joins and evaluate usability, finish and resource use. No separate waistcoat unit is added. |

The source's named products illustrate progression; this map applies the relevant knowledge and skills through the school's selected Cycle B products. It does not add every source example as another unit.

# Electrical systems progression

| Year | Knowledge and skills from the source progression | Application and coverage in Cycle B |
|---|---|---|
| **Reception to Year 2** | No formal electrical systems outcomes are supplied for these years in this PDF. | No dedicated Cycle B electrical unit in Mars or Year 2 Venus. Practical design foundations are shown on page 2. |
| **Year 3** | Recognise components and how an electrical product uses a complete circuit. | No dedicated Cycle B electrical unit in Venus. Check prior and future entitlement in the wider programme; do not record these outcomes as taught here. |
| **Year 4** | A complete conducting path is needed for current. A switch opens or closes the circuit. | Torches in Saturn: construct a working circuit and a suitable case for an agreed user. |
| **Year 5** | Components and their arrangement affect function. Design criteria can include use, cost, resources and appearance. | Torches in either older class: plan assembly, diagnose contact problems and compare case or switch prototypes. |
| **Year 6** | Evaluate an electrical product through function, construction and user experience; use accurate diagrams and tests. | Torches in Jupiter: justify a refined design and test usability and reliability. The PDF's buzzer game is not added as another unit. |

Use accurate explanations: a cell or battery stores chemical energy; a simple series circuit has a single path for current. Use supervised low voltage classroom components. The source's motor example is wider progression and is not an automatic requirement for the torch project.

# Digital world progression

| Year | Knowledge and skills from the source progression | Application and coverage in Cycle B |
|---|---|---|
| **Reception to Year 2** | No formal Digital World outcomes are supplied for these years in this PDF. | No dedicated Cycle B Digital World unit in Mars or Year 2 Venus. Explore user and purpose through the planned products. |
| **Year 3** | A programmable device can respond to an input. Simple programs and CAD can support a product concept. | No dedicated Cycle B Digital World unit in Venus. These are wider progression checkpoints, not claimed coverage. |
| **Year 4** | Algorithms, variables and debugging support programmed functions. Prototypes can test fit and appearance. | Navigating the World in Saturn: use a scaffolded compass program and prototype a case for an agreed user. |
| **Year 5** | Sensors detect changes; conditional instructions can select a response. CAD models allow design trials. | Navigation in either older class: test direction input and output and justify code, case and material choices. A temperature monitoring unit is not added. |
| **Year 6** | A magnetometer measures magnetic field; a programmed device can use this to indicate direction. Design responds to a client brief. | Navigation in Jupiter: develop, test and explain a functioning compass concept and CAD or physical case, considering sustainable choices. |

The older shared topic draws on a Year 6 source context, with deliberate Year 4 and Year 5 scaffolding. Keep the same product brief while varying support, code independence and the depth of testing.

# Cooking and nutrition progression

| Year | Knowledge and skills from the source progression | Application and coverage in Cycle B |
|---|---|---|
| **Reception** | Vegetables are grown and ingredients differ in taste and texture. A recipe gives a sequence. | Soup and Rainbow Salad in Mars: name ingredients, prepare with support, describe sensory features and share a preference. |
| **Year 1** | Foods come from plants or animals; combining ingredients changes flavour and texture. | Smoothies in both summer blocks: prepare safely, compare combinations, improve a recipe and propose packaging information. |
| **Year 2** | A varied diet contains foods serving different nutritional roles. Ingredients and portions can be chosen for a brief. | Eating Seasonally in Venus: choose ingredients from available seasonal foods and describe how the dish contributes to variety. |
| **Year 3** | Seasonal means available in a particular season and place. Climate affects where crops grow. | Eating Seasonally: identify UK examples, follow a recipe, cut or peel safely and discuss environmental choices with care. |
| **Year 4** | Quantities, hygiene, user preferences and budget affect recipe design. | Come Dine with Me in Saturn: follow a supported recipe, measure quantities and suggest a practical adaptation. |
| **Year 5** | Recipes can be adapted for dietary requirements; ingredient information and food journeys inform choices. | Come Dine with Me in either older class: research and adapt a recipe, explain preparation choices and minimise cross contamination. |
| **Year 6** | A recipe communicates quantities, stages and timings; food has an origin and preparation journey. | Come Dine with Me in Jupiter: plan and carry out a recipe with increasing independence, use structured sensory feedback and justify improvements. |

Use accurate food language. Culinary vegetables can include botanical fruits such as tomatoes. Seasonality depends on place and growing conditions, and environmental impact also depends on production, storage and transport. Hygiene arrangements and dietary needs guide practical choices.

# The 7 strands with making skills mapped to the Cycle B topics in teaching order

## Mars Class (Reception / Year 1) autumn and early spring

Shared input and demonstrations with different expectations in the same class. Design, practical making and testing are linked throughout each project. The contexts and evidence examples below are proposed applications of the supplied progression.

### Autumn 1 Textiles Bookmarks (EY) and Mechanisms Making a Moving Storybook (Y1)

| Shared knowledge | Reception | Year 1 |
|---|---|---|
| A bookmark serves a reader; threading joins materials through openings. Sliders guide straight movement and levers turn about a pivot. | Explore threading and choose colours or textures for a bookmark; try a moving story part and talk about the result. | Design for a reader, draw a moving page, make a slider or lever and test whether it moves as intended. |

Key words: thread, user, slider, lever, pivot.

### Autumn 2 Structures Junk Modelling (EY) and Structures Stable Structures (Y1)

| Shared knowledge | Reception | Year 1 |
|---|---|---|
| A structure has a purpose. Bases, supports, materials and joins affect whether it stands securely. | Choose junk materials, try joins and say what they want to build; change a part after a simple test. | Draw a freestanding structure, select a stable base and strengthen or support it after testing. |

Key words: structure, base, support, join, stable.

### Spring 1 Structures Boats (EY) and Mechanisms Wheels and Axles (Y1)

| Shared knowledge | Reception | Year 1 |
|---|---|---|
| Boat materials and shape affect floating and water resistance. A vehicle needs wheels that turn freely in its chosen axle arrangement. | Predict which boat material will work, try a boat and change a feature; explore rolling parts with adult support. | Test boat choices, then draw and label wheels, axles and holders; build a vehicle and fix a blocked wheel or poor alignment. |

Key words: float, sink, waterproof, wheel, axle.

# Mars Class (Reception / Year 1) late spring and summer

Shared input and demonstrations with different expectations in the same class. Design, practical making and testing are linked throughout each project. The contexts and evidence examples below are proposed applications of the supplied progression.

### Spring 2 Structures Boats (EY) and Textiles Puppets (Y1)

| Shared knowledge | Reception | Year 1 |
|---|---|---|
| A boat can improve after testing. Templates repeat fabric shapes and joins create a usable puppet. | Revisit the boat, test a changed shape or material and explain a preference; explore fabric and threading in the shared puppet activity. | Plan a puppet for a story user, use a template, cut and join fabric and practise a supported running stitch on suitable fabric. |

Key words: template, fabric, join, stitch, improve.

### Summer 1 Cooking and Nutrition Soup (EY) and Smoothies (Y1)

| Shared knowledge | Reception | Year 1 |
|---|---|---|
| Soup and smoothies combine ingredients; preparation methods change texture. A recipe gives an order of actions. | Help plan a vegetable soup, name ingredients and prepare with support; describe look, smell or taste without pressure to taste. | Prepare a smoothie combination using safe taught methods, compare flavours or textures and suggest useful packaging information. |

Key words: ingredient, recipe, vegetable, blend, texture.

### Summer 2 Cooking and Nutrition Rainbow Salad (EY) and Smoothies (Y1)

| Shared knowledge | Reception | Year 1 |
|---|---|---|
| A salad combines different ingredients. Revising a smoothie recipe can respond to a user's feedback. | Choose ingredients for a rainbow salad and practise supported cutting or tearing; explain a preference or change. | Use earlier smoothie feedback to change a combination for an agreed user; plan ingredients, prepare and compare against the brief. |

Key words: salad, combination, hygiene, flavour, feedback.

# Venus Class (Year 2 / Year 3) autumn and early spring

Shared input and demonstrations with different expectations in the same class. Design, practical making and testing are linked throughout each project. The contexts and evidence examples below are proposed applications of the supplied progression.

### Autumn 1 Mechanisms Making a Moving Monster

| Shared knowledge | Year 2 | Year 3 |
|---|---|---|
| A lever turns about a pivot; linked levers transfer movement. A hand input creates the monster's output movement. | Sketch a monster for an audience, make card levers and split pin pivots and adjust parts so the monster moves. | Compare linkage options, label input and output, choose materials for stiffness and test how a changed part affects motion. |

Key words: lever, linkage, pivot, input, output.

### Autumn 2 Textiles Pouches

| Shared knowledge | Year 2 | Year 3 |
|---|---|---|
| A pouch needs a suitable fabric shape and secure seams. A template repeats a shape and knots secure stitching. | Use a template, cut fabric, thread with support as needed and join with controlled running stitch; test whether contents stay inside. | Adapt a template for an agreed purpose, allow space for a seam and improve stitch control or appliqué decoration. |

Key words: pouch, template, seam, running stitch, knot.

### Spring 1 Mechanisms Fairground Wheel

| Shared knowledge | Year 2 | Year 3 |
|---|---|---|
| A fairground wheel needs a stable frame, a rotating wheel and a suitable axle or holder. Parts must move without colliding. | Make a wheel and support frame, test rotation and balance and adjust a blocked moving part. | Develop labelled diagrams, select a reliable axle arrangement and use repeated tests to improve stability and clearances. |

Key words: wheel, axle, frame, balance, rotate.

# Venus Class (Year 2 / Year 3) late spring and summer

Shared input and demonstrations with different expectations in the same class. Design, practical making and testing are linked throughout each project. The contexts and evidence examples below are proposed applications of the supplied progression.

### Spring 2 Mechanical Systems Pneumatic Toys

| Shared knowledge | Year 2 | Year 3 |
|---|---|---|
| Air can transmit force to move part of a toy. Secure connections help control pneumatic movement. | Explore connected air filled syringes with the class, describe push and movement and build a supported toy with a simple housing. | Design a pneumatic toy, explain air input and movement output, create secure housing and diagnose an air leak or restricted movement. |

Key words: air, pneumatic, pressure, syringe, housing.

### Summer 1 Structures Product Packaging

| Shared knowledge | Year 2 | Year 3 |
|---|---|---|
| A package protects or contains a product. Shape, stiffness, joins and opening method affect use; a net can fold into a three dimensional shell. | Use a brief for an agreed object, sketch and make a simple card package and improve its strength or ease of opening. | Compare and adapt nets or prototypes, measure and score accurately, reinforce where needed and justify material use. |

Key words: packaging, net, shell, fold, stiff.

### Summer 2 Cooking and Nutrition Eating Seasonally

| Shared knowledge | Year 2 | Year 3 |
|---|---|---|
| Seasonality depends on season and location. A varied selection of foods contributes to a balanced diet; preparation changes texture. | Select from seasonal ingredients, prepare with taught methods and explain a taste, texture or variety choice. | Identify UK seasonal examples, follow or adapt a recipe and explain a reasoned choice using season, growing conditions and the brief. |

Key words: seasonal, ingredient, climate, peel, flavour.

# Saturn Class (Year 4 / Year 5) and Jupiter Class (Year 5 / Year 6) Autumn 1

## Electrical systems Torches

A torch combines a light source, power supply, switch and case. A complete circuit allows current to flow; opening the switch breaks the circuit. Conductors and insulators have different roles.

One shared topic and core demonstration in both classes. The Year 5 column applies equally in Saturn and Jupiter. These are proposed applications of the supplied year group progression.

| Focus | Year 4 in Saturn | Year 5 in either class | Year 6 in Jupiter |
|---|---|---|---|
| **Design** | Investigate torches and use supported criteria for a chosen user; sketch the case and component positions. | Compare user needs and case ideas; produce criteria, a resource list and an assembly plan. | Justify criteria and compare prototypes against use, appearance, resource use and cost constraints. |
| **Make** | Build and test a low voltage circuit and switch; cut and attach a case with suitable support. | Assemble accurately, secure contacts and components and revise the case so switching and maintenance remain practical. | Select and combine construction methods, diagnose faults systematically and refine reliability and access. |
| **Evaluate** | Test light, switching and whether the case meets simple criteria. | Compare performance and user feedback; explain a change to contacts, grip or component layout. | Use a repeatable test and evaluate trade offs between usability, finish, durability and resources. |
| **Technical knowledge** | Name components and explain a complete circuit, an open switch and a closed switch. | Explain the single path in a series circuit and how a loose contact interrupts function. | Use an accurate circuit diagram and evidence from tests to explain a fault and justify a repair. |

Key vocabulary: circuit, cell, battery, switch, conductor, insulator, contact.

# Saturn Class (Year 4 / Year 5) and Jupiter Class (Year 5 / Year 6) Autumn 2

## Textiles Stuffed Toys

A stuffed toy develops from a flat design and fabric pattern. Proportions, seam space, stitch control and secure joins affect its shape and ability to retain stuffing.

One shared topic and core demonstration in both classes. The Year 5 column applies equally in Saturn and Jupiter. These are proposed applications of the supplied year group progression.

| Focus | Year 4 in Saturn | Year 5 in either class | Year 6 in Jupiter |
|---|---|---|---|
| **Design** | Use a simple brief, make a paper pattern and test proportions before cutting fabric. | Design component shapes for a target user and create an accurate template, allowing room for seams. | Develop and justify a personal multi part pattern and compare construction options against user and resource constraints. |
| **Make** | Measure and cut from a template with support; practise a secure seam and attach simple details. | Thread independently, cut accurately and use controlled blanket stitch to join; attach appliqué or parts securely. | Choose suitable joins, maintain consistent stitching, shape and assemble components and resolve construction problems independently. |
| **Evaluate** | Check the toy against the plan and find an area where a seam or shape can improve. | Test seams and stuffing retention; use feedback to improve proportions, finish or component attachment. | Evaluate usability, finish and resource use; justify a change based on test results and the intended user. |
| **Technical knowledge** | Explain how a mock up and template help with fit and shape; identify a seam. | Explain why secure knots and small, consistent stitches help hold fabric and stuffing. | Explain the sequence of joining and stuffing and why different parts may need different joining methods. |

Key vocabulary: pattern, template, seam, blanket stitch, appliqué, component, prototype.

# Saturn Class (Year 4 / Year 5) and Jupiter Class (Year 5 / Year 6) Spring 1

## Digital World Navigating the World

A navigation concept responds to a user brief. A micro:bit magnetometer measures magnetic field and a program can use its readings to indicate direction. A physical or CAD case must allow the device to function and be operated.

One shared topic and core demonstration in both classes. The Year 5 column applies equally in Saturn and Jupiter. These are proposed applications of the supplied year group progression.

| Focus | Year 4 in Saturn | Year 5 in either class | Year 6 in Jupiter |
|---|---|---|---|
| **Design** | Use a shared brief and a scaffolded case sketch; identify essential direction and handling features. | Research use and materials, compare case or CAD options and specify practical criteria. | Interpret the client request, justify criteria and additional functions and compare alternative product concepts. |
| **Make** | Use a model program and supported code changes; prototype a case and test access to controls. | Develop and debug a compass output with increasing independence and model a case using CAD or physical materials. | Independently adapt code and case design, explain material choices and present a functioning programmed concept. |
| **Evaluate** | Check directions and controls against simple criteria with support. | Test code, display and case fit; record a bug or usability problem and a reasoned correction. | Use repeatable checks and user feedback to evaluate the concept; explain limitations and trade offs in the final pitch. |
| **Technical knowledge** | Identify algorithm, input, output and a bug using the shared compass example. | Explain sensor readings and conditional responses; distinguish a simulation from physical device testing. | Explain the magnetometer's role, calibration and practical sources of interference; relate program functions to client needs. |

Key vocabulary: sensor, magnetometer, input, output, algorithm, debug, CAD.

# Saturn Class (Year 4 / Year 5) and Jupiter Class (Year 5 / Year 6) Spring 2

## Structures Bridges

A bridge spans a gap and carries a load. Shape, material, joints and reinforcement affect performance. Triangulation can make a frame more rigid; tests need a specified span, loading method and success criteria.

One shared topic and core demonstration in both classes. The Year 5 column applies equally in Saturn and Jupiter. These are proposed applications of the supplied year group progression.

| Focus | **Year 4 in Saturn** | **Year 5 in either class** | **Year 6 in Jupiter** |
|---|---|---|---|
| Design | Compare beam and frame examples; plan a model using shared criteria and simple diagrams. | Design a stable bridge for an agreed span and load, comparing beam and truss possibilities. | Develop alternative responses to a more detailed brief, balancing material use, load, appearance and construction limits. |
| Make | Measure, join and reinforce a model frame or beam with guidance; check corners and supports. | Measure and mark accurately, select suitable tools and build a controlled truss model with secure joints. | Select and combine methods precisely, organise stages and reinforce weaknesses identified through prototype tests. |
| Evaluate | Test across the agreed gap and identify where a joint or member needs improvement. | Keep span and load placement consistent, record performance and explain the effect of a reinforcement. | Compare repeated tests and design alternatives; explain limitations and justify material and structural trade offs. |
| Technical knowledge | Distinguish strength, stiffness and stability; explain the role of a support or brace. | Explain triangulation and how material properties and joints affect the bridge's load capacity. | Explain how evidence supports the chosen structure and why a successful model does not establish full size performance. |

Key vocabulary: span, load, beam, truss, triangulation, brace, reinforce.

# Saturn Class (Year 4 / Year 5) and Jupiter Class (Year 5 / Year 6) Summer 1

## Mechanical systems Mechanical Cars

The overview leaves the drive unspecified. Proposed application: use a teacher selected gear or pulley transmission in both older classes. It transfers an input to the axle and wheels. Alignment, wheel clearance, friction and secure connections affect movement.

One shared topic and core demonstration in both classes. The Year 5 column applies equally in Saturn and Jupiter. These are proposed applications of the supplied year group progression.

| Focus | Year 4 in Saturn | Year 5 in either class | Year 6 in Jupiter |
|---|---|---|---|
| **Design** | Identify the user and purpose; sketch the selected drive system with support and compare simple layouts. | Research needs, develop criteria and draw annotated alternatives showing the transmission and axle output. | Justify a layout and drive choice against performance, user, material and cost constraints; use detailed diagrams. |
| **Make** | Build the chassis and drive from a demonstrated model, measure parts and adjust a rubbing or misaligned component. | Select and assemble parts accurately, prototype transmission and refine the fit or alignment. | Organise construction independently, adapt the system for a defined intention and diagnose transmission losses or slipping. |
| **Evaluate** | Test whether the car moves as intended and identify one cause of unreliable movement. | Use the same surface and starting input to compare trials, change one feature and explain the effect. | Use repeated measurements, account for variation and justify trade offs in speed, distance, reliability and materials. |
| **Technical knowledge** | Identify input, moving components, axle and wheel output in the chosen system. | Explain how the selected gears or pulleys transmit motion and how a changed arrangement affects the output. | Explain the interacting mechanisms and use evidence to justify changes; recognise that output depends on gearing, friction and available input. |

Key vocabulary: input, output, transmission, gear, pulley, axle, friction.

# Saturn Class (Year 4 / Year 5) and Jupiter Class (Year 5 / Year 6) Summer 2

## Cooking and nutrition Come Dine with Me

A recipe communicates ingredients, quantities, method and timing. A menu responds to users' preferences and dietary requirements. Sensory evaluation and knowledge of food origins can inform a revised recipe.

One shared topic and core demonstration in both classes. The Year 5 column applies equally in Saturn and Jupiter. These are proposed applications of the supplied year group progression.

| Focus | Year 4 in Saturn | Year 5 in either class | Year 6 in Jupiter |
|---|---|---|---|
| Design | Use supported criteria, compare recipes and plan quantities within an agreed budget. | Research recipes and ingredient information and adapt a recipe for the user's needs. | Justify a menu or recipe through research, dietary requirements, cost and timings; communicate precise stages. |
| Make | Measure and prepare using taught methods and follow hygiene routines with supervision. | Organise equipment and preparation, follow or adapt quantities and minimise cross contamination. | Coordinate stages to a timescale and work with greater independence while following supervision arrangements. |
| Evaluate | Describe taste, texture and appearance and suggest a feasible change. | Use structured feedback and recipe information to explain a change to ingredients or method. | Compare feedback against criteria, evaluate production and explain improvements to recipe, timing and hygiene. |
| Technical knowledge | Explain quantities, preparation methods and why hygiene matters. | Explain a food journey and how preparation, nutritional information and dietary needs inform choices. | Explain the chosen ingredients' origins and preparation journey and relate the method and timings to the finished outcome. |

Key vocabulary: recipe, quantity, method, dietary requirement, cross contamination, origin, evaluate.