DESIGN AND TECHNOLOGY

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery (EYFS)	Topic	**My local area**	**Our Community**	**Family and Community**	**Wider World**	**Wider World**	**Wider World**
	Enquiry Question	I wonder who I will become?	I wonder what is important to my community?	I wonder who I will become?	I wonder who shares our home?	I wonder how the world needs me?	I wonder who shares our world?
	Key Knowledge and skills	• To make models of themselves that stay connected. To create faces.	• To make a range of food from different cultures and religions.	• To create an emergency vehicle that moves (split pins).	To create a habitat suitable for an animal of choice.	To create a salad with produce grown by themselves.	To create a container for Handa to carry her fruit.
	End Point	Safely use and explore a variety of materials, tools, and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used. Make use of props and materials when role playing characters in narratives and stories. Use a range of small tools, including scissors, paintbrushes, and cutlery.					
Reception (EYFS)	Topic	**My local area**	**Our Community**	**Family and Community**	**Wider World**	**Wider World**	**Wider World**
	Enquiry Question	I wonder who I will become?	I wonder what is important to my community?	I wonder who I will become?	I wonder who shares our home?	I wonder how the world needs me?	I wonder who shares our world?
	Key Knowledge and skills	• To use split pins to create a moving person. • To create a stop motion picture using split pin people that represent their families. • To design, test and evaluate.	• To taste test Indian spices. • To prepare and cook traditional Indian food. • To design, test and evaluate.	• To explore a variety of mechanisms. • To create a moving vehicle. • To design, test and evaluate.	• To understand what birds, need to survive in our local area. • To understand what bugs, need to survive. • To build a bird house or a bug hotel. • To design, test and evaluate.	• To grow produce to be prepared and eaten at snack time. • To design, test and evaluate.	• To design and create a boat that floats.
	End Point	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used. Make use of props and materials when role playing characters in narratives and stories. Use a range of small tools, including scissors, paintbrushes and cutlery.					
KS1 Cycle A	Topic	**Mechanisms Sliders (animated scene)**	**Cooking and Nutrition (Cold savoury) Based on The Tiger Who Came to Tea**	**Mechanisms Levers (animated character)**	**Structures Horizonal**	**Puppets Animals**	**Puppets Animals**
	Enquiry Question	How can we use mechanisms to attract attention?	How does design make food appealing?	Why does animation make a product more exciting?	How and why do engineers strengthen structures?	Why do children enjoy watching puppet shows?	Why do children enjoy watching puppet shows?
	Key Knowledge and skills	• To understand how to use scissors safely to cut round a shape. • To produce simple annotated designs and mark and cutting materials. • Assembling components to recreate plans. Evaluate the product and how well it works. • To include one horizontal and one vertical slider in their design. They will need to think about the positioning and shape of the slots.	• To use principles of a healthy and varied diet, pupils will design and create a sandwich. • To evaluate existing products and select from a range of ingredients. • To learn how to hygienically and safely prepare food including spreading and chopping. Evaluating ideas and products against the design criteria. • Pupils will safely prepare food using the grating, slicing and chopping method.	• To build on knowledge and skills gained in making sliders, pupils will attach a pivot to create a lever. • To use their lever to animate the Gruffalo in a scene from the cannon text. They will choose which part of the Gruffalo to animate and learn how to attach the lever. • To learn how moving the pivot point and the length of the lever affects the movement. • To add a slider mechanism to another part of the scene. They will need to think about the placement of each mechanism and its suitability to the movement needed.	• To learn to use joining and shaping skills to create a free-standing horizontal bridge. • To research different types of bridges and what makes them strong and stable. • To select from a range of materials to design and create a bridge. Producing annotated sketches. • To use a range of tools to assemble, join and combine materials. Testing and evaluating bridges for stability and strength. • To use a range of tools to assemble, join and combine materials including elements to strengthen the design. • To test and evaluate bridges for stability and strength and looking for ways to improve the product.	• To use textiles to create an animal hand puppet. • To explore and evaluate a range of existing products. • To learn that a hand puppet can be assembled from two identical fabric shapes. • To select from a range of fabrics thinking about the properties of each material and how to fix different materials together safely and securely using fabric glue and simple sewing techniques. • To discuss how closely the finished product resembled the plan. • To create a template by drawing around their own hand shape. • learn how to fix different materials together safely and securely using simple sewing techniques.	• To use textiles to create an animal hand puppet. • To explore and evaluate a range of existing products. • To learn that a hand puppet can be assembled from two identical fabric shapes. • To select from a range of fabrics thinking about the properties of each material and how to fix different materials together safely and securely using fabric glue and simple sewing techniques. • To discuss how closely the finished product resembled the plan. • To create a template by drawing around their own hand shape. • learn how to fix different materials together safely and securely using simple sewing techniques.
	End Point	To design, make and evaluate a slider, which animates a scene from the book to reinforce a rule.	To design, make and evaluate a range of different healthy sandwiches for a tiger tea party.	To design, make and evaluate an animated character with a lever mechanism.	To design, make and evaluate a freestanding bridge that can support a predetermined load.	To design, make and evaluate a hand puppet, which can be used to entertain children in EYFS.	To design, make and evaluate a hand puppet, which can be used to entertain children in EYFS.
KS1 Cycle B	Topic	**Mechanisms Levers**	**Structure Vertical**	**Cooking and Nutrition Hot Food - Soup**	**Mechanisms Wheels and Axels**	**Cooking and Nutrition Kenyan produce Fruit Kebabs and dip**	**Structures Making a shelter**
	Enquiry Question	How can we use mechanisms to attract attention?	How and why do tall structures stay upright?	How does what we eat make us feel?	Why are wheels so important in production?	What dishes are traditional in Kenya?	What factors affect the performance of a shelter?

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LKS2 Cycle A

Key Knowledge and skills	• To use lever mechanisms to conceal a fact in an animated scene. • To choose appropriate materials for the lever and position it so that it has the best movement possible. • To produce simple annotated designs. Marking out and cutting materials to size. Assembling components to recreate plans. • To evaluate the product and how well it works. • To produce annotated designs containing multiple levers. Pupils will measure, mark out and cut materials to size.	• To use joining and shaping skills to create a free-standing bridge. • To research different types of bridges and what makes them strong, stable, and select from a range of materials to design and create a bridge. Producing annotated sketches. • To use a range of tools to assemble, join and combine materials. Testing and evaluating bridges for stability and strength ensuring that their bridge is vertical.	• To produce a vegetable soup. Researching where different vegetables are grown and how they get to our table. • To explore local ingredients, choosing ingredients based on flavour and texture to design a soup. • To learn how to combine ingredients and follow a simple recipe. Evaluating products and changes that could be made.	• To create a working vehicle incorporating 4 wheels and 2 axels. • To explore existing wheeled toys and evaluate how wheels are attached to a chassis to allow for movement. • To explore wheels and axels before making decisions about the best equipment to use for their task. • To draw a labelled diagram of their design and evaluate their vehicles against a set of class design criteria. • To test their vehicles on a slope and evaluate their performance against performance criteria.	• To design and make a healthy, dessert using products traditionally found in Kenya. • To create a fruit kebab by cutting ingredients using a variety of knife skills. • To research which fruits are traditionally grown in Kenya and explore the tastes and textures of these ingredients. • To consider the aesthetics of the dish and how it could be made more appealing. They will explore the concept food advertising and how food is sold.	• To create a shelter for the characters in the story, ensuring it is freestanding. • To join materials using glue, tape, staples, string and recap knowledge of knot-tying covered in Art and Design. • To explore and evaluate materials such as Lego, paper, lolly sticks, cardboard, fabric, and explore how to make these materials stronger, stiffer, and more stable. • To explore how to make their shelter waterproof, by evaluating different materials, making choices about their suitability.
End Point	To create an animated fact file containing one of the sayings from the cannon text disguised in an underwater scene.	To design, make and evaluate a vertical structure ensuring it stays upright and correct materials are used.	To design, make and evaluate a vegetable soup dish.	To design, make and evaluate a new vehicle for Mrs Armitage.	To design, make and evaluate a dish based in Kenyan culture and produce.	To design, make and evaluate a simple prototype shelter which they have tested against the elements.
Topic	**Levers**	**Electrical circuits**	**Cams**	**Cooking and nutrition**	**Cooking and Nutrition**	**Structures**
Enquiry Question	How do we create a mechanism which will help George keep his distance from Grandma?	How do we create an electrical circuit which will deter a burglar?	How do we create an animated character to bring our canon text, Homework on Pluto, to life?	How do we create chocolate like the Maya did?	How do we create an Egyptian dish which can be consumed as part of a heathy diet?	How do we create a strong raft which could help Fred and his friends sail to safety?
Key Knowledge and skills	• To learn about the history of prosthetics and explore a range of different lever and linkage mechanisms and the movement they produce, naming the components. • To produce annotated diagrams of the designs. • To build on previous knowledge of assembling a mechanism including accurate measuring and cutting make a prototype of the design. • To evaluating the product both during and at the end of the project. • To evaluate the suitability of each of the levers.	• To understand the origins of electrical discovery (e.g. Benjamin Franklin). • To explore simple series circuits that incorporate switches, buzzers, bulbs and motors. • To produce annotated designs and test prototypes. • To evaluate the product against their own design criteria.	• To learn how to produce annotated plans with labelled components and to follow plans to assemble by measuring, marking out, cutting and joining parts. • To evaluate the product against their own design criteria and consider the views of others to improve their work. • To explore how different shaped cams, produce different movements.	• To learn how chocolate is produced and the sustainability of chocolate production. • To explore/evaluate different flavours of chocolate and understand that the taste of chocolate can be influenced by the amount of other ingredients that are present. • To select ingredients to enhance the flavour of their hot chocolate and create their product. • To complete taste-tasting at the end once they have made this and they will evaluate their finished product. • To market and distribute their now flavour of hot chocolate for the masses, making a healthy and viable drink.	• To learn about the impact of immigration of UK food. • To research seasonality and where and how some ingredients are grown. Produce annotated design sketches which take account of taste and aesthetics. • To learn techniques such as peeling, chopping, slicing, grating and kneading. • To evaluate the product thinking of both appearance and taste. • To research and consider differing dietary requirements.	• To learn about technology which is being used to save the rainforest. Research which materials and shapes are buoyant and float and what makes structures strong and stable. • To select from a range of materials to design, create a raft and produce detailed annotated sketches. • To select from a wider range of tools to make the product. • To evaluate the product by carrying out appropriate tests and modifying if needed. • To suggest improvements and assess the product thinking of both appearance and how the product worked.
End Point	To create an extendable lever.	To use electrical systems to create a burglar alarm. To present to UKS2 pupils and gain consumer feedback.	To create an animated scene of their canon text, Homework on Pluto, using cams. This will be filmed and posted on Twitter.	To create a new and exciting flavour of hot chocolate which be based on the old Maya chocolate recipe.	To apply the principles of a healthy and varied diet to create an Egyptian dish.	To create a model of a raft by combining materials and components accurately. To test their rafts to see which one will hold the most weight.

LKS2 Cycle B

Topic	**Textiles**	**Structures**	**Levers and linkages**	**Cooking and Nutrition**	**Structures**	**Electrical circuits**
Enquiry Question	How do we create a bag for Lila which she can use to carry her Royal Sulphur in?	How do we create a sledge that the White Witch could use to travel across Narnia?	How do we enhance the characters of a puppet show using levers and linkages?	How do we create a nutritionally balanced meal for the accidental Prime Minister?	How do we create tall, sturdy scaffolding, capable of supporting the Iron Man?	How do we create a lighthouse which could be used to guide our WW2 warships to safety?
Key Knowledge and skills	• To learn about the evolution of bags and fashion design. They will communicate ideas through discussion, create annotated sketches and produce detailed plans through CAD. • To accurately measure, marking out, cutting and stitching, using suitable stitching techniques to produce a final product. • To apply a range of finishing techniques including those from Art and Design. Evaluating products against a set list of criteria. • To consider the aesthetical properties of their stitching patterns.	• To learn about the impact of technology on the race to the South Pole. • To explore different materials and understand they can be folded, layered, twisted, or rolled to increase their strength. • To learn that a sledge needs to be able to retain its shape and stability while in motion. They will make detailed planning drawings. • To increase stability, they will fold, roll, twist and layer materials. • To join materials using tape, glue and staples and use scissors to accurately cut materials.	• To learn about the advancement of film animation of registration. • To understand that a lever is connected using a pivot and that these work in a circular motion. • To understand that a linkage connects two levers and that both levers and linkages can create circular or part-circular movements. • To use a ruler to accurately measure levers and components and use a pencil to mark the position of components before building commences.	• To learn about the history and impact of refrigeration. • To understand what a healthy diet consists of, the nutrients each food group provides and how this helps our bodies. • To understand why hands must be washed after handling raw meat and fish and why raw meats must be kept separate to other foods. • To use a knife and other kitchen equipment safely to prepare vegetables, including grating, dicing, and peeling.	• To review the history of the world's tallest buildings. • To learn that triangles are a stable base structure that can be combined and built upon to make bigger structures. • To understand that materials can be manipulated to make them stronger. • To learn that different joining methods have differing levels of strength.	• To learn about the invention of the lightbulb and how Black inventors have been treated historically. • To understand that a bulb needs a complete circuit and power to light up – this will be new learning for Year 3 pupils. • To design and incorporate working, electrical systems as part of the product.

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			• To suggest improvements and assess product thinking of both appearance and how the product worked.	• To use fixed and free pivots to produce a range of motion and attach guides to levers to ensure its stability.			
	End Point	Pupils will use CAD to design a small, fashionable bag which they will then create using a selection of materials and different stitching patterns. They will test how effective their designs are at holding different sizes of materials (e.g. rocks/sand).	Pupils will create a sledge capable of carrying objects and test it on different surfaces to see which of the pupils' designs works most effectively across all surfaces.	Pupils will create a moving dragon puppet facilitated by levers and linkages. This will be filmed and posted on Twitter.	Pupils will design and cook a nutritionally balanced, savoury dish using a range of cooking practices and utensils and with regard to safety and hygiene. Pupils will consider the presentation of their dish and take a photo of it. Pupils from across school will judge the presentation of their dishes and decide upon a winner from each class.	Pupils will create tall, sturdy scaffolding for 'The Iron Man'. Pupils will test the scaffolding using small weights.	Pupils will design and make a lighthouse with a working light. The best lighthouse design will be selected from each school. The winner from each school will attend a finals competition with those from other Trust primaries.
UKS2 Cycle A	Topic	**Programmable Products and CAD**	**Programmable Products and CAD**	**Structures**	**Structures**	**Mechanisms**	**Mechanisms**
	Enquiry Question	Can we make our toys think for themselves?	Can we make our toys think for themselves?	How can you house two hundred (thousand) people in a day?	How can you house two hundred (thousand) people in a day?	How do you make a clockwork orange? How can we make our drawings/designs move (come alive)?	How do you make a clockwork orange? How can we make our drawings/designs move (come alive)?
	Key Knowledge and skills End Point	• To use a class design criterion to inform the design of an innovative, functional, and appealing programmable toy which is fit for purpose. • To generate their ideas through sketches using a computer aided design. • To input a logical algorithm using coding software and link a programming chip with a control app. • To investigate a range of existing products, evaluate their ideas against these and apply their knowledge of computing to program, monitor and control their toy.	• To use a class design criterion to inform the design of an innovative, functional, and appealing programmable toy which is fit for purpose. • To generate their ideas through sketches using a computer aided design. • To input a logical algorithm using coding software and link a programming chip with a control app. • To investigate a range of existing products, evaluate their ideas against these and apply their knowledge of computing to program, monitor and control their toy.	• To consider different materials in terms of durability and fit for purpose and select from and use a wide range of materials and components, including construction materials and textiles according to their functional properties and aesthetic qualities. • To research examples of existing famous structures and landmarks to identify, compare and evaluate different materials. Considering which are most suitable for extreme weather conditions and force. • To use testing to explore different materials, simulating different extreme weather conditions. Producing a step-by-step detailed planning sheet. • To assemble the shelter using techniques such as cutting, sticking, shaping building and joining. framework. To evaluate and test whether the product is successful and fit for purpose.	• To consider different materials in terms of durability and fit for purpose and select from and use a wide range of materials and components, including construction materials and textiles according to their functional properties and aesthetic qualities. • To research examples of existing famous structures and landmarks to identify, compare and evaluate different materials. Considering which are most suitable for extreme weather conditions and force. • To use testing to explore different materials, simulating different extreme weather conditions. Producing a step-by-step detailed planning sheet. • To assemble the shelter using techniques such as cutting, sticking, shaping building and joining. framework. To evaluate and test whether the product is successful and fit for purpose.	• To learn about gears and why they are used. • To explore the use of gears and handles in existing products and how they can be used to produce movement. Developing design criteria to inform the design of innovative and appealing products. • To evaluate how successful the gears and handles are in creating movement Producing annotated sketches and plans detailing the mechanisms used and movement created. • To evaluate the product against a set list of criteria and seeking out the opinions of others.	• To learn about gears and why they are used. • To explore the use of gears and handles in existing products and how they can be used to produce movement. Developing design criteria to inform the design of innovative and appealing products. • To evaluate how successful the gears and handles are in creating movement Producing annotated sketches and plans detailing the mechanisms used and movement created. • To evaluate the product against a set list of criteria and seeking out the opinions of others.
	End Point	Pupils will design, create, and program a digital toy.	Pupils will design, create, and program a digital toy.	Pupils will use structural understanding and knowledge of materials to create a refugee shelter.	Pupils will use structural understanding and knowledge of materials to create a refugee shelter.	Pupils will learn to use gears to create a rotating mechanism – An animal from Cogheart.	Pupils will learn to use gears to create a rotating mechanism – An animal from Cogheart.
UKS2 Cycle B	Topic	**Mechanisms – Pulleys and Electrical Systems**	**Mechanisms – Pulleys and Electrical Systems**	**Cooking and Nutrition**	**Cooking and Nutrition**	**Mechanism - Cams**	**Mechanism - Cams**
	Enquiry Question	Why and how can one person lift 5 (or 2,3)?	Why and how can one person lift 5 (or 2,3)?	How do you make the most with the least?	How do you make the most with the least?	Why and how could a mechanised animal model be used to support WWF?	Why and how could a mechanised animal model be used to support WWF?
	Key Knowledge and skills	• To use a class design criterion to inform the design of a pulley. • To investigate a range of existing products to inform the design of an appealing and functional product that is fit for purpose. • To understand pulleys and a range of tools and equipment to create a pulley system. • To research one key event or individual in Design Technology, who have helped shape the world and generate and develop ideas through discussion.	• To use a class design criterion to inform the design of a pulley. • To investigate a range of existing products to inform the design of an appealing and functional product that is fit for purpose. • To understand pulleys and a range of tools and equipment to create a pulley system. • To research one key event or individual in Design Technology, who have helped shape the world and generate and develop ideas through discussion.	• To understand the principles of a healthy and varied diet and investigate a range of products that existed during WW2. • To understand seasonality and know where and how a variety of ingredients are grown, reared, caught, and processed. • To design and create a savory dish using ingredients and recipes available during rationing (carrot scones, butter, bread, Lord Woolton Pie). • To use a range of cooking techniques such as frying, baking, using ovens and cooking equipment safely. To evaluate ideas and products against their own design criteria and consider the views of others to improve their work.	• To understand the principles of a healthy and varied diet and investigate a range of products that existed during WW2. • To understand seasonality and know where and how a variety of ingredients are grown, reared, caught, and processed. • To design and create a savory dish using ingredients and recipes available during rationing (carrot scones, butter, bread, Lord Woolton Pie). • To use a range of cooking techniques such as frying, baking, using ovens and cooking equipment safely. To evaluate ideas and products against their own design criteria and consider the views of others to improve their work.	• To understand how cam mechanisms, turn rotary motion into linear reciprocal motion. • To use different shaped cams, which will allow different types of motion to be produced and matched to the product. • To design and create an automaton. • To measure, saw and join wood to create or strengthen a frame. To evaluate ideas and products against their own design criteria and consider the views of others to improve their work.	• To understand how cam mechanisms, turn rotary motion into linear reciprocal motion. • To use different shaped cams, which will allow different types of motion to be produced and matched to the product. • To design and create an automaton. • To measure, saw and join wood to create or strengthen a frame. To evaluate ideas and products against their own design criteria and consider the views of others to improve their work.

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	End Point	Pupils will create a pulley system which lifts a heavy load of predetermined criterion (Greek Statue?)	Pupils will create a pulley system which lifts a heavy load of predetermined criterion (Greek Statue?)	Pupils will create a healthy dish, which uses a variety of ingredients available during rationing.	Pupils will create a healthy dish, which uses a variety of ingredients available during rationing.	Pupils will create an animated animal.	Pupils will create an animated animal.

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	Topic						
	Enquiry Question						
	Key Knowledge and skills						
	End Point						
Year 8	Topic						
	Enquiry Question						
	Key Knowledge and skills						
	End Point						
Year 9	Topic						
	Enquiry Question						

PONTEFRACT ACADEMIES TRUST

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	Key Knowledge and skills						
	End Point						
Year 10 GCSE	Topic						
	Enquiry Question						
	Key Knowledge and skills						
	End Point						
Year 11 GCSE	Topic						
	Enquiry Question						
	Key Knowledge and skills						
	End Point						
Year 10 BTEC	Topic						
	Enquiry Question						
	Key Knowledge and skills						
	End Point						
Year 11 BTEC	Topic						
	Enquiry Question						
	Key Knowledge and skills						
	End Point						