St Margaret Mary's Medium Term Planning

Subject: Design Technology **Topic:** Mechanisms – pulleys or gears		**Year group:** 5 **Term:** Autumn
Prior learning: Children will have looked at mechanisms in Year 3 and will have some understanding about how mechanisms work and the notion of an input and output.		
Main focus of the unit: Children to gain an understanding about how pulleys and gears work. Children should be able to create an item **End of unit task:** Children will make a toy vehicle to be sold in toy stores at Christmas time.		
Key Objectives	**Vocabulary**	**Lesson sequence:**
Gain an understanding of how gears work and understand the relationship between gears and ratio.		Children to watch a short video clip on gears and answer a short quiz afterwards. https://www.bbc.co.uk/teach/class-clips-video/science-physics-ks2-ks3-will-gears-let-children-pull-a-piano-uphill-with-their-bikes/zmcpy9q
Recognise and evaluate existing products that require mechanisms to work e.g. toy cars.	pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, mechanical system, input, process, output user, purpose, aesthetics, functionality, evaluation	**1. Investigating existing products.** Children will explore a variety of toy cars that require gears and/or pulleys in order to work. Children to complete a page recording what they like/dislike about a variety of the products, which will then inform their own designs.
Discuss the relationship between forces acting on the input and energy generated from the output.	pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, mechanical system, input, process, output make, functionality, purpose, evaluation	**2. Exploring gears (ratio)** Children will explore a variety of different sized gears considering how the size of the gear relates to the number of rotations. Children to be taught about ratio of gears.
Generate a range of design ideas after collecting information considering the requirements. Use scientific knowledge of the transference of forces to help aid the choosing of appropriate mechanisms for a product.	mechanical system, input, process, output annotated diagrams user, purpose, aesthetics, design specification, functionality, innovation, user, purpose,	**3. Design specification and creating designs** Children to identify the end user they will design the product for and the purpose of the money container e.g. to be sold in toy stores at Christmas time. Children will then create several designs for their product based upon their research from lesson 1.
Describe the design using an accurately labelled diagram and some technical vocabulary. Use scientific knowledge of the transference of forces to help aid the choosing of appropriate mechanisms for a product.	gear, spindle, axle, mechanical system, input, process, output annotated diagrams, user, purpose, aesthetics, design specification, design brief, design, functionality, innovation, authentic, evaluation	**4. Final design** Children choose a final design from their previous designs from lesson three. Children should be encouraged to use a clear, accurately labelled diagram of the toy car they intend to make.
Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Measure, mark out, cut and join card and wood with accuracy.	names of materials, names of tools, gear, rotation, spindle, transmit, axle, mechanical system, input, process, output, annotated diagrams, user, purpose, aesthetics, design specification, designs, make, functionality,	**5. Making the product** Children create their toy vehicles using their final design from lesson 4 as a guide.
Identify and explain what could be changed to make the design even better. Consider the views of others, including intended users, to improve their work.	gear, rotation, spindle, driver, follower, ratio, transmit, axle, mechanical system, input, process, output user, purpose, aesthetics, design specification, design brief, designs,	**6. Evaluating the final product** Children use their design specification from lesson 3 and their final design from lesson 4 to evaluate their end product considering the design, functionality and aesthetics.

Evaluate and test the product by discussing how well it works in relation to the purpose.	functionality, innovation, authentic, evaluation	