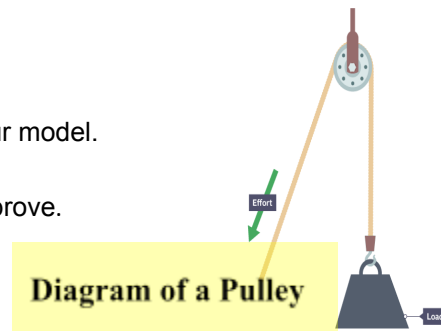| Our Lady and St Edward's Knowledge Organiser	Year 6- Design and technology	Summer	Mechanisms: Winches and Pulleys

Outcome: Look at winches and pulleys to move cargos on and off ships. Design and make their own mechanism to move items from place to another.

| Key Knowledge	Key Vocabulary
- To understand how pulleys function. - To define different types of pulleys. - To understand the function of a winch in a pulley system. - To explore how a pulley system can make the movement of cargo easier and more efficient for the crew of a ship. - To design a model pulley system. - To create a model pulley system. - To evaluate your model pulley system. - To choose appropriate materials for your model. - To test the efficiency of your model. - Reflect on your work and adapt it to improve. Effort **Diagram of a Pulley** Load	Pulley: A wheel with a grooved rim around which a cord passes, which acts to change the direction of a force applied to the cord and is used to raise heavy weights Winch: A hauling or lifting device consisting of a rope or chain winding round a horizontal rotating drum, turned typically by a crank or by motor. Cargo: Goods carried on a ship, aircraft, or motor vehicle System: A set of things working together as parts of a mechanism or an interconnecting network; a complex whole Model: A three-dimensional representation of a proposed structure, typically on a smaller scale than the original. Materials: The matter from which a thing is or can be made. Evaluate: Decide if your design or structure meets its purpose. Design: A plan or drawing to show the look and function of a building or other object before it is made. Force: In physics, a force is an influence that can change the motion of an object. Load: A heavy or bulky thing that is being carried or is about to be carried. Newtons: The amount of force required to move a mass of 1 KG. Axles: A rod or spindle (either fixed or rotating) passing through the centre of a wheel or group of wheels. Belt: A rod or spindle (either fixed or rotating) passing through the centre of a wheel or group of wheels. Spool: A cylindrical device on which film, magnetic tape, thread, or other flexible materials can be wound; a reel. Tension: The state of being stretched tight.

Key Information about Winches and Pulleys	Health and Safety
What is a winch? A winch is a mechanical device that is used to pull in or let out or otherwise adjust the tension of a rope or wire rope. In its simplest form, it consists of a spool attached to a hand crank**.** **What is a pulley?** A pulley is a wheel that carries a flexible rope, cord, cable, chain, or belt on its rim. Pulleys are used individually or in combination to transmit power and motion. Pulleys with grooved edges are called sheaves. In belt drives, pulleys are attached to shafts at their axles, and power is transmitted between the shafts by endless belts running over the pulleys.	Pupils should be taught to work safely when using sharp tools and equipment, such as scissors, knives and solvents. Output Input Pulleys rotate in the same direction.
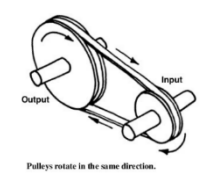
What I should already know:	By the end of this unit, I will know:
- Give an example of something that uses a pulley or winch - To plan and design their winch or pulley - To know how the pulley system and a winch works.	Understand and use mechanical systems in their product. Apply knowledge of how to strengthen and reinforce more complex structures Design a structure with mechanisms to control movement Generate ideas using sketches and labelled diagrams. Design a structure with moving mechanical parts. Generate design ideas through discussion with peers, sketches, diagrams, proto-types and computer aided design. Select from a range of materials and components for their functional properties. Measure, mark and cut components accurately with a ruler test and adapt design.