

**Subject:** Design Technology

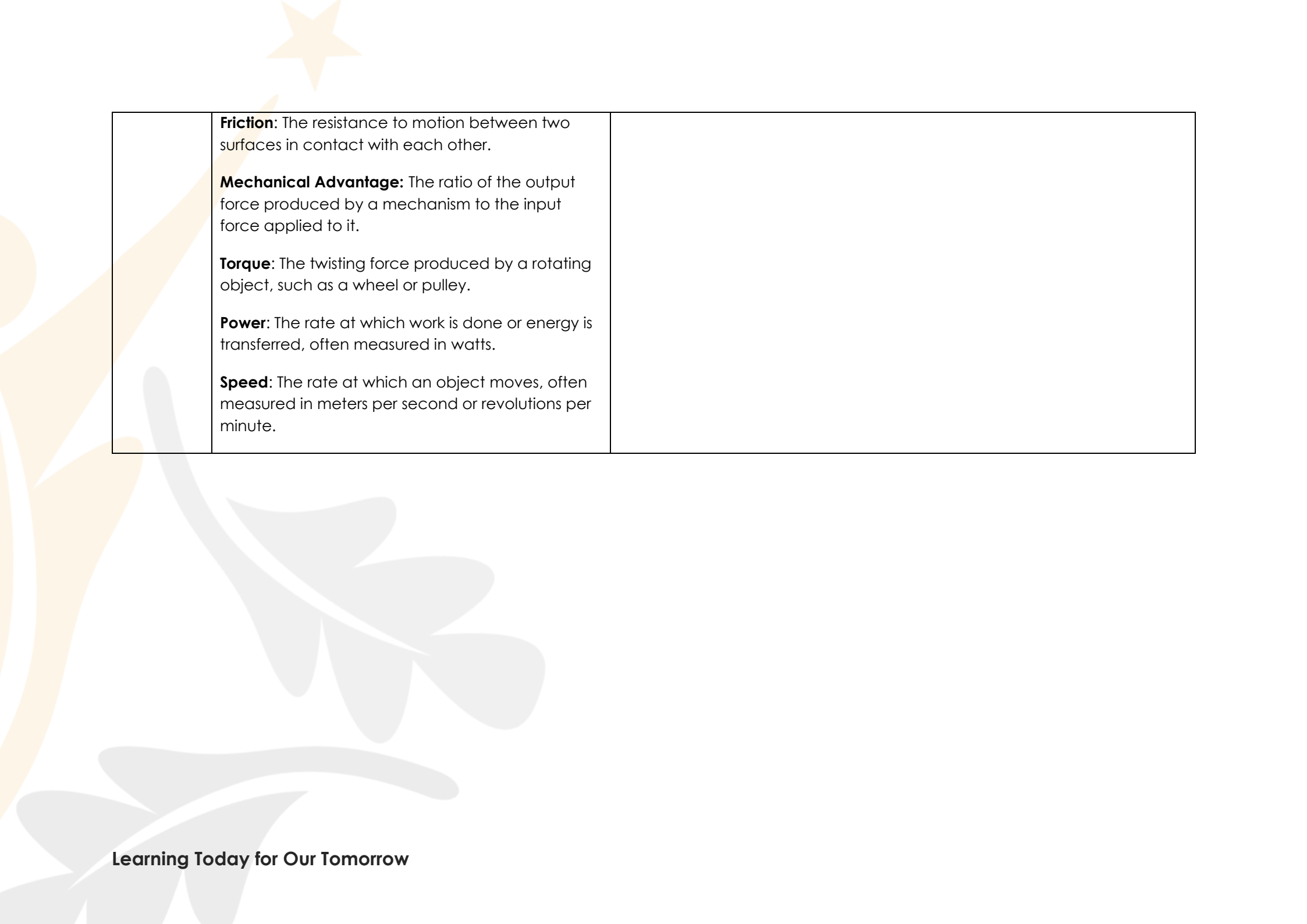
**Key Stage:** 3

**Year:** 7

Curriculum Intent		
Term	Topic	Key knowledge and skill
1  NC link	<p><b>Focus:</b></p> <p>Unit 1 – Investigation of wood types and their properties</p> <p><b>Key Vocabulary</b></p> <p><b>Hardwood:</b> A type of wood that comes from deciduous trees, which are trees that lose their leaves each year. Examples include oak, maple, and mahogany.</p> <p><b>Softwood:</b> A type of wood that comes from evergreen trees, which are trees that keep their leaves all year round. Examples include pine, spruce, and cedar.</p> <p><b>Grain:</b> The pattern of growth in wood that creates distinctive patterns and lines. The grain can be straight, wavy, or interlocked, and affects the strength, appearance, and workability of the wood.</p> <p><b>Density:</b> The weight of a given volume of wood. Dense woods are generally stronger and more durable than less dense woods.</p> <p><b>Moisture Content:</b> The amount of water contained within the wood. Wood that is too wet or too dry can be difficult to work with and may not be as strong or durable as wood with a proper moisture content.</p> <p><b>Sawing:</b> The process of cutting wood into pieces using a saw. There are several different sawing techniques, including rip sawing, crosscut sawing, and quarter sawing.</p>	<p><b>Key Knowledge</b></p> <ul style="list-style-type: none"> <li>Types of wood: There are two main categories of wood - hardwood and softwood. Examples of hardwoods include oak, maple, and walnut, while examples of softwoods include pine, cedar, and spruce.</li> <li>Grain patterns: Wood has different grain patterns, which can impact its appearance and strength. Some common patterns include straight, wavy, and curly.</li> <li>Density: The density of wood can affect its strength and durability. Hardwoods are generally denser than softwoods.</li> <li>Moisture content: Wood contains moisture, and the amount of moisture can impact its strength and stability. Wood with high moisture content is more prone to warping and cracking.</li> <li>Workability: Different woods have different workability characteristics, meaning they can be easier or harder to shape and cut. For example, some woods may be prone to splintering or splitting.</li> <li>Sustainability: It is important to consider the sustainability of the wood used in design projects. Some woods are more sustainable than others, and choosing sustainably sourced materials can help reduce the impact on the environment.</li> <li>Finishing: The type of finish applied to wood can impact its appearance and durability. Common finishes include varnish, oil, and paint.</li> </ul>

	<p><b>Planing</b></p> <p>: The process of removing thin layers of wood from the surface of a piece of wood to smooth it out or reduce its thickness.</p> <p><b>Joinery:</b> The process of joining two or more pieces of wood together using various techniques, such as mortise and tenon joints or dovetail joints.</p> <p><b>Sanding:</b> The process of using abrasive materials to smooth out the surface of wood.</p> <p><b>Finishing:</b> The process of applying various coatings, such as paint, stain, or varnish, to wood in order to protect it and enhance its appearance.</p> <p><b>Woodworking Tools:</b> Various hand and power tools used to work with wood, including saws, chisels, planes, routers, and sanders</p>	<p><b>Key Skills</b></p> <p><b>Projects</b></p> <p>Phone desk holder made in hardwood and softwood for comparison</p>
<p>2</p> <p>NC link</p>	<p><b>Focus</b></p> <p>Unit 2 – Mechanism – Wheels and pulleys</p> <p><b>Key Vocabulary</b></p> <p><b>Mechanism:</b> A system of parts that work together to perform a specific function.</p> <p><b>Wheel:</b> A circular device that rotates around an axle, often used to transmit motion or force.</p> <p><b>Pulley:</b> A type of wheel with a groove around the circumference used to transmit motion or force by means of a rope or belt passing over it.</p>	<p><b>Key Knowledge</b></p> <ul style="list-style-type: none"> <li>• Types of wheels: There are different types of wheels, including spoked wheels, solid wheels, and pneumatic wheels. Each type of wheel has its own advantages and disadvantages, depending on the intended use.</li> <li>• Axles: Wheels rotate around an axle, which is a rod or shaft that holds the wheel in place. Axles can be stationary or rotating, depending on the design.</li> <li>• Bearings: Bearings are used to reduce friction between moving parts. They can be found between the wheel and axle or inside the wheel itself.</li> <li>• Types of pulleys: There are two main types of pulleys - fixed pulleys and movable pulleys. Fixed pulleys change the direction of force, while movable pulleys increase the mechanical advantage.</li> <li>• Mechanical advantage: The mechanical advantage of a pulley system is the ratio of the output force to the input force. The number of pulleys in a system can increase the mechanical advantage.</li> </ul>

<p><b>Axle:</b> A shaft that supports a wheel or pulley and allows it to rotate.</p> <p><b>Gear:</b> A mechanical component consisting of toothed wheels that mesh with each other to transmit motion or force.</p> <p><b>Teeth:</b> The projections on a gear wheel that mesh with the teeth of other gears to transmit motion or force.</p> <p><b>Drive Wheel:</b> A wheel or pulley that is powered by a motor or other source of energy.</p> <p><b>Driven Wheel:</b> A wheel or pulley that is rotated by the motion of a drive wheel.</p> <p><b>Belt:</b> A loop of flexible material used to transmit motion or force between pulleys.</p> <p><b>Chain:</b> A series of interconnected links that transmit motion or force between gears or sprockets.</p> <p><b>Sprocket:</b> A gear with teeth that mesh with a chain, used to transmit motion or force.</p> <p><b>Idler Wheel:</b> A wheel or pulley that is used to change the direction of a belt or chain.</p> <p><b>Tensioner:</b> A device used to adjust the tension of a belt or chain.</p>	<ul style="list-style-type: none"> <li>• <b>Load capacity:</b> It is important to consider the load capacity of a wheel or pulley system when designing a mechanism. This is the maximum weight that the system can support.</li> <li>• <b>Friction:</b> Friction can impact the efficiency of a wheel or pulley system. Lubrication and the use of ball bearings can reduce friction and improve performance.</li> </ul> <p><b>Key Skills</b></p> <p><b>Project</b></p> <p>Car with pulley operated car lift</p>
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**Friction:** The resistance to motion between two surfaces in contact with each other.

**Mechanical Advantage:** The ratio of the output force produced by a mechanism to the input force applied to it.

**Torque:** The twisting force produced by a rotating object, such as a wheel or pulley.

**Power:** The rate at which work is done or energy is transferred, often measured in watts.

**Speed:** The rate at which an object moves, often measured in meters per second or revolutions per minute.