






Year 5 Mechanical systems (pulleys or gears)

**Prior Learning:** Experience of axles, axle holders and wheels that are fixed or free moving. Basic understanding of electrical circuits, simple switches and components. Experience of cutting and joining techniques with a range of materials including card, plastic and wood. An understanding of how to strengthen and stiffen structures.

Facts	Vocabulary
<p><b>Pulleys</b></p> <p>◇ Pulleys do not touch but the wheels are joined by a drive belt. They can be used to change the speed, direction or force of a movement.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Driver      Follower</p>  </div> <div style="text-align: center;"> <p>The pulleys rotate in the same direction.</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;"> <p>Driver      Follower</p>  </div> <div style="text-align: center;"> <p>The pulleys rotate in different directions.</p> </div> </div>	<ol style="list-style-type: none"> <li>1. Pulley— a grooved wheel over which a drive belt can run.</li> <li>2. Drive belt— the belt which connects and transfers movement between two pulleys.</li> <li>3. Gear— a wheel with teeth around its circumference.</li> <li>4. Driver— the gear or pulley that provides the input movement to the system.</li> <li>5. Follower— the gear or pulley that provides the output movement to the system.</li> <li>6. Motor spindle— the rod on the end of the motor onto which a gear or pulley is attached.</li> <li>7. Gearing up or down— changing the rotational speed of a product by the use of pulleys or gears. When a small pulley or gear is used to drive a larger one the rotational speed is reduced and the product has been geared down.</li> </ol>
<p><b>Gears</b></p> <p>◇ Gears are toothed wheels that lock together and turn one another.</p> <p>◇ The wheels are usually different sizes so that one gear speeds up to slow down the next gear. Gears are also used to change the direction of movement.</p> <div style="text-align: center; margin: 20px 0;">  </div> <p>◇ If the first gear wheel is smaller (and has fewer teeth) than the second one, then the second (bigger) gear doesn't have to move as quickly to keep up with the smaller gear. So the second gear wheel turns more slowly than the first.</p>	<p><b>Gears and Pulleys</b></p> <div style="text-align: center; margin: 20px 0;">  </div> <p>* Hoisting a flag up a flagpole uses a pulley.</p> <div style="text-align: center; margin: 20px 0;">  </div> <p>* Clocks and watches use a system of gears to move the different hands at the correct speed.</p> <p>* They are also used to move the hands to change the time on the clock if necessary.</p>
<p>Youtube:</p> <p><a href="https://www.youtube.com/watch?v=r3Ru1zZjvug">https://www.youtube.com/watch?v=r3Ru1zZjvug</a>—Pulleys explained.</p> <p><a href="https://www.youtube.com/watch?v=odpsm3ybPsA">https://www.youtube.com/watch?v=odpsm3ybPsA</a> - Gears explained.</p>	