

Gears, mechanisms, forces and control

Year 8

Date July 2007	Subject Gears, mechanisms, forces and control
Objectives Students should <ul style="list-style-type: none"> • Understand what a mechanism is and be aware of various mechanisms – such as gears and levers • Be able to measure force using a Newton meter • Understand mechanical advantage and moments • Understand how this theory may be applied in engineering • Be able to work effectively as part of a team 	
Related QCA Science Units 7K Forces and their effects 9L Pressure and moments	
Introduction Welcome students to the Land Rover Partnership Centre. Set out plan for the day's activities.	Time 9.45 am
Self propelled vehicle Fun activity – students to work in teams of three to design and make a self propelled vehicle. Students will have three measured attempts to find out which one is the most successful. Ten minutes planning time. Twenty minutes build time. Fifteen minutes for testing.	Time 10.00 am
Break	Time 10.45 am
Mechanical Advantage Students to build a simple pulley system designed to lift a small aluminium block. Using three or five pulleys, measure the force needed to lift the load.	Time 11.00 am
Calculating Moments Students to build a simple see saw to demonstrate and calculate moments of force.	Time 11.45 am
Lunch Half an hour for lunch. Students may picnic outside if the weather is suitable.	Time 12.15 pm

<p>Controlling mechanisms</p> <p>Students to connect simple motors and other models to the computer via the interface.</p> <p>Demonstrate how to use Logicator.</p> <p>Students to write programs on the computer to control these models and study the gears and other mechanisms being used.</p>	<p>Time 12.45 pm</p>
<p>Site Visit</p> <p>Explain Health & Safety and Confidentiality Rules.</p> <p>Visit Teardown where the students will be able to see gear boxes, differentials and many other mechanisms.</p>	<p>Time 1.30 pm</p>
<p>Final Session</p> <p>Return to the Partnership Centre where students will have the opportunity to go on the 4x4 ride at the Heritage Motor Centre, look at the Land Rover Discovery parked outside and continue using the computers in this final session.</p>	<p>Time 2.00 pm</p>
<p>Plenary</p> <p>Quick review of the day with opportunity for question and answer session.</p> <p>Return to school for 3.40pm</p>	<p>Time 3.00 pm</p>