

Storyline

<p>Investigation One</p> <p>Levers</p>	<p>Part One How can levers make work easier?</p> <p>Introduction to Levers Students are introduced to levers as devices that lift weight and overcome resistance.</p>	<p>Part Two What happens to the effort needed to lift a load as the position where the effort is applied to lift a required load changes?</p> <p>Lever Experiment A Students conduct a lever experiment, keeping the load stationary, to discover the relationship among the load, fulcrum, and effort.</p>	<p>Part Three What happens to the effort needed to lift a load as the position of the load changes?</p> <p>Lever Experiment B Students conduct another lever experiment, this time applying the effort in the same position every time to see what happens to the amount of effort needed as the load moves to different positions on the lever arm.</p>	
<p>Investigation Two</p> <p>More Leverage</p>	<p>Part One How many ways can you arrange the fulcrum, load, and effort in a lever system?</p> <p>Lever Classes Students use lever-system components to explore the possible arrangements of the fulcrum, effort, and load on the lever arm.</p>	<p>Part Two What conventions can be used so we can communicate in the same language and have an efficient way to record the lever systems we build?</p> <p>Lever Diagrams Students explore the advantage that can be gained by using each class of lever.</p>	<p>Part Three What classes of levers can we find in the real world?</p> <p>Real-World Levers Students investigate common tools to determine that they are applications of the three classes of levers.</p>	<p>Part Four What other levers do we find around us?</p> <p>Lever Pictures Students analyze pictures of familiar tools, identify them by lever class, and diagram the lever systems.</p>

<p>Investigation Three</p> <p>Pulleys</p>	<p>Part One How much effort is needed to lift a load in a one-pulley system?</p> <p>One Pulley Systems Students discover two ways to set up a one-pulley system to lift a load: single fixed pulley and single movable pulley.</p>	<p>Part Two How many ways can two pulleys be assembled? Can two pulleys give more advantage than one pulley?</p> <p>Two-Pulley Systems Students investigate how two pulleys can be used together.</p>	<p>Part Three How many pulley systems can you set up?</p> <p>Pulley Game Students play a game of setting up different pulley systems to practice what they have learned in the first two parts.</p>	
<p>Investigation Four</p> <p>Pulleys at Work</p>	<p>Part One How can we predict the effort needed to lift the load in a pulley system?</p> <p>Effort in Pulley Systems Students systematically investigate four different pulley systems.</p>	<p>Part Two What is the relationship between the mechanical advantage and the distance the load and effort move in a pulley system?</p> <p>Measuring Distance Students measure the distance over which the effort must be applied to lift a load 5cm.</p>	<p>Part Three What other lever and pulley systems can you design?</p> <p>Choosing Your Own Investigation Students choose a topic to investigate in greater depth.</p>	