

Workshop	Science of Rollercoasters
Recommended Year Groups	5-9
Subject	Science (Physics), Design and Technology
Workshop Description	<p>Discover and investigate how gravity, friction and air resistance can affect the speed of Rollercoasters. Pupils will work in groups to design and build their own LEGO® model Rollercoaster.</p> <p>The science covered within this workshop can be tailored to suit the age and prior learning of your students.</p>
Duration	45 minutes
Equipment	LEGO® track and bricks
Capacity	30 students
Lesson Aims and Objectives	<ul style="list-style-type: none"> ✓ Identify the effects of gravity, air resistance and friction ✓ Understand the forces being needed to cause objects to stop (potential) or start moving (kinetic), or to change their speed or direction of motion, change depending on direction of force and its size ✓ Identify and solve their own design problems and understand how to reformulate problems given to them ✓ Apply their understanding of how to strengthen, stiffen and reinforce more complex structures ✓ Critique, evaluate and test their ideas and products



Workshop	Science of Rollercoasters – Secondary Edition
Recommended Year Groups	7-10
Subject	Science (Physics), Design and Technology
Workshop Description	<p>Discover and investigate what energy transfers occur during a rollercoaster cycle. Discussion on the forces involved including gravity, friction, air resistance and centripetal force during a loop-the-loop. Pupils will work in groups to design and build their own LEGO® model Rollercoaster.</p> <p>The science covered within this workshop can be tailored to suit the age and prior learning of your students.</p>
Duration	45 minutes
Equipment	LEGO track (including loops) and 2x2 bricks and 2x2 plates
Capacity	30 students
Lesson Aims and Objectives	<ul style="list-style-type: none"> ✓ Identify the effects of gravity, air resistance, friction and centripetal forces ✓ Understand how gravitational potential energy stores are transferred to kinetic energy stores and others that then dissipate ✓ Identify and solve their own design problems and understand how to reformulate problems given to them ✓ Apply their understanding of how to strengthen, stiffen and reinforce more complex structures ✓ Critique, evaluate and test their ideas and products

