



Bloodhound Rocket Experience KS3 duration: 3 hours

Bloodhound LSR is a supersonic car and global engineering adventure aiming to set a new land speed record of over 1000mph and inspire the next generation with science, technology, engineering and maths. A studio show introduces the record and the science behind designing a land speed record breaking car, followed by a workshop in which students design and, using real tools, shape their own rocket-powered model car (in pairs), including attaching axles and wheels. The day concludes with a rocket-powered race – with cars reaching speeds of up to 60mph!

Key Words:

Engineering. Design. Speed. Acceleration. Thrust. Air resistance. Drag. Friction. Rocket. Jet. Streamlining. Sound barrier.

Learning objectives

Learn about the science and technology behind the Bloodhound project

Be inspired, and recognise STEM as helping students to gain work in rewarding careers such as engineering

Understand the scientific principles that influence and limit high speed travel in a rocket-powered car

Understand how forces are responsible for speeding up and slowing down a rocket powered car

Gain an insight into how teams of engineers work collaboratively to solve problems and be innovative

Apply scientific ideas to design and shape a model rocket car using various workshop tools

Use real rockets to test their cars over a 25m track with data-logging timer gates to measure speed

Test their cars and analyse performance using data from the speed trial

Content: Example Timetable

The exact timings of the day will vary based on scheduled arrival time, but will include:

10:00—Arrival and Welcome

10:15—Studio Show: Introducing students to the Bloodhound project and the exciting science behind it

11:00—Workshop: Students craft their very own rocket-powered model car (in pairs*)

12:00—Lunch break and time to explore We The Curious

12:45—Rocket Car Testing: On a 25m guide wire, cars can reach speeds of up to 60mph

13:15—End of Theme Day activities – with more time to explore We The Curious (venue closes at 5pm)

Curriculum Links:

Working scientifically

Use appropriate techniques, apparatus and materials, paying attention to health and safety

Interpret observations and data, including identifying patterns and draw conclusions. Present reasoned explanations, including explaining data in relation to predictions and hypotheses

Physics

Motion and forces

Speed and the quantitative relationship between average speed, distance and time (speed = distance ÷ time)

Forces as pushes or pulls, arising from the interaction between two objects

Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces

Forces: associated with rubbing and friction between surfaces; resistance to motion of air and water

Forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only)

Change depending on direction of force and its size.

we the curious

Theme Day



Design and Technology

Design

Identify and solve their own design problems and understand how to reformulate problems given to them
Develop and communicate design ideas

Make

Use specialist tools and techniques precisely. Test, evaluate and refine their ideas and products against a specification

Evaluate

Understand developments in design and technology, its impact on individuals, society and the environment

Technical knowledge

Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions.

Understand how more advanced mechanical systems used in their products enable changes in movement and force.

Potential Hazards

The workshop involves using hand-tools and students will be provided with appropriate instructions for using them safely.

The rocket cars use real rockets and will be launched using strict procedures and guidelines at all times.