

Bloodhound

Recommended year group: Year 5

Theme focus: STEM

Suggested term: Autumn



Theme introduction

Bloodhound is a STEM-based theme that is focused on the land speed record and the cars that are created to attempt the challenge. The theme also incorporates history, geography and PSHE. Pupils will learn about the land speed records that have taken place, and where and why they were held in certain places around the globe. They will focus on the Bloodhound car, which hopes to break the record in 2022. Pupils will look at how and why the Bloodhound has been built as it is, and carry out their own investigations into air resistance and friction. They will also look at propulsion and the rise of the electric car. The theme ends with pupils designing, building and then racing their own cars against one another to see which team becomes their school's land speed record champions.

Driving Question

Is there a need for speed?

Switch on Science Unit

Let's get moving

Switch on Computing Unit

We are web developers

Linked Reading Texts

The Story of the Car by Giles Chapman

A range of theme park leaflets including: *Test Track* at Epcot Florida, *Legoland – L-Drivers*, Alton Towers, Thorpe Park

Atlas of Record-Breaking Adventures by Emily Hawkins

Writing Outcomes

Poems to create atmosphere

Poems on the theme of speed / racing / race day and excitement

Persuasive leaflet

Persuasive leaflet to attract people to visit a Formula One theme park

Curriculum Coverage

Geography – Location and maps, physical geography, environment

DT – Technical knowledge: electricity, mechanisms; design: design criteria, representing design ideas; make: tools, materials; evaluate: existing products, own products, impact

History – Chronology, significant individuals

Science – Forces, properties and changes of materials

PSHE – Living in the wider world

Excite

Let pupils drive radio-controlled cars or car track racing games to generate an atmosphere of excitement about racing cars around a space.

Explore

There are fourteen explore sessions:

Explore 1: Land speed records

Explore 2: The Bloodhound Project

Explore 3: Geographical locations

Explore 4: Desert climate

Explore 5: Fuel

Explore 6: The effects of air resistance

Explore 7: The effects of friction

Explore 8: Does the size of wheels matter?

Explore 9: Exploring electrical circuits and motors

Explore 10: The rise of the electric car

Explore 11: Designing an electric vehicle

Explore 12: Constructing an electric vehicle

Explore 13: Race day

Explore 14: Winning and losing

Theme essential vocabulary:

aerial, aesthetics, air resistance, average, axle, battery, benefit, biome, Bloodhound, brakes, car, champion, charging,, circuit, climate, combustion, compacted, crocodile clip, desert, design, distance, drag, electric, electrical wire, evaluate, fastest, force, friction, fuel, gravity, Hakskeen Pan, heat, hybrid, land speed record, lose, modification, motor, mph, parachute, powered, propel, rainfall, reflect, rocket, streamlined, surface, switch, temperature, testing, travel, wheel, win, world record

Essential knowledge/concepts

1. The land speed record was first set in 1898 by Gaston de Chasseloup-Laubat in France.
2. The current land speed record belongs to Andy Green OBE. He achieved a speed of 763 mph in October 1997.
3. Bloodhound is the name of the car that is aiming to break the land speed record by going 1000 mph.
4. Most land speed records take place in the desert because this is where the ground tends to be both hard and flat.
5. The speed of a vehicle can be limited by air resistance.
6. Air resistance is the force that is pushing against an object as it moves.
7. Cars can be stopped by using a parachute as well as brakes.
8. Brakes alone will not stop a land speed record car – they will burn due to the heat created.
9. The speed of a vehicle can be restricted by friction.
10. Friction is the force exhibited as two surfaces try to move over one another.
11. Wheels help to reduce the friction between a vehicle and the road surface.
12. Normal tyres are ineffective on a land speed record car – they will burn and explode at high speeds.
13. Electricity can be used to power cars.
14. There are three main types of electric vehicles: plug-in electric, plug-in hybrid and hybrid electric.

Excel

The key assessment outcomes of this unit are:

Explore 3: Geographical locations

Explore 6: The effects of air resistance

Explore 7: The effects of friction

Explore 12: Constructing an electric vehicle

Exhibit

A race day event where electric cars are raced against one another to see who will be crowned 'electric car land speed record champion' (linked to Explore 13)

Possible wider experiences:

Visit various transport museums around the country, for example

- Coventry Transport Museum
- Lakeland Motor Museum
- British Motor Museum
- Aston Martin Heritage Trust

Flipped learning opportunities

1. Find out about the invention of the motor car.
2. Learn about the water speed record on Coniston Water, and Donald Campbell.
3. Conduct a car survey and find out which makes of car actually make an electric version.

Family learning suggestion

Pupils could build a model battery-powered car. The car needs to work, and the wheels must be built using axles.

Cultural awareness

Key piece of music

Mustang Sally by Wilson Pickett

Fun, Fun, Fun by The Beach Boys

Drive My Car by The Beatles

Key piece of art

Old Car by Seth Johnson

Key poem

The Highwayman by Alfred Noyes