

Great British Scientists : Science : Year 5/6

	Learning Objective	Overview	Assessment Questions	Resources
Lesson 1	To investigate and explain Newton's three laws of motion.	Children are introduced to Sir Isaac Newton and the three laws of motion which he wrote to describe how forces interact with various objects. They begin by discussing different examples of each law and are then challenged to use models, diagrams and/or demonstrations to aid them in presenting and explaining each law.	<ul style="list-style-type: none"> • Can children name at least one of Newton's three laws? • Are children able to explain at least one of Newton's three laws of motion using scientific vocabulary? • Are children able to use a model or diagram to exemplify or describe one of the three laws of motion? 	<ul style="list-style-type: none"> • Slides • Tennis balls (or similar), toy cars, balloons, string, cups, weights, sticky tac, tape and other modelling materials • Three Laws Sheet 1A • Worksheet 1A (FSD? activity only)
Lesson 2	To explore the phenomena of light and colour.	Children revisit Newton's achievements and focus on his study on light and colour. They explore how prisms and water can split light into colours and think about where they have seen this happen. Children then investigate the mixing of coloured light using coloured filters and how this affects the colours we see.	<ul style="list-style-type: none"> • Can children describe what white light is? • Can children name the seven colours Newton identified within white light? • Are children able to use scientific vocabulary in their explanations and descriptions? 	<ul style="list-style-type: none"> • Slides • CDs and/or prisms (optional) • Worksheet 2A/2B/2C • Bright light sources and colour filters • Brightly coloured objects (e.g. multilink cubes, coloured paper) • Instruction Sheet 2A (FSD? activity only) • Colour Wheel Template (FSD? activity only) • Worksheet 2D (FSD? activity only)
Lesson 3	To investigate the effects of gravity.	Children will learn about the studies of Stephen Hawking and his work on black holes. The children focus on the gravitational pull of the black holes and use this concept to learn about weight, gravity and mass. They use force meters to explore the relationship between weight and mass on Earth or alternatively build and calibrate their own force meter to use.	<ul style="list-style-type: none"> • Can children define the words mass, weight and gravity? • Are children able to describe the effects of gravity and how it changes in different places in our solar system? • Can children calculate the weight of an object on Earth in Newtons? 	<ul style="list-style-type: none"> • Slides • Worksheet 3A/3B/3C and Graph Paper 3A • Weights, force meters and scales • Plenary Notes 3A • Instruction Sheet 3A (FSD? activity only) • Worksheet 3D (FSD? activity only) • Materials outlined on Instruction Sheet 3A (FSD? activity only)
Lesson 4	To explore the work of Anning, Wallace and Darwin on evolution.	Children will discuss and study the works of Anning, Wallace and Darwin on evolution and natural inheritance. They will think carefully about how the different scientists contributed to scientific discovery in this area. They explore the process of natural selection and how this has led to changes and variations in different species because of advantageous traits.	<ul style="list-style-type: none"> • Can children describe the works of Anning, Darwin and/or Wallace and how their work contributed to science? • Are children able to describe the process of natural selection? • Can children name an advantageous and disadvantageous characteristic or feature of a living organism? 	<ul style="list-style-type: none"> • Slides • Worksheet 4A/4B • Prehistoric Cards 4A • Modern Relative Cards 4A • Habitat Cards (FSD? activity only) • Worksheet 4C (FSD? activity only)
Lesson 5	To plan an investigation considering the variables and measurements taken.	Children investigate antibiotics and the scientist who discovered them: Alexander Fleming. They explore what antibiotics do and discuss why this was such an important discovery. The children then take on the role of Fleming and plan an experiment to test his theory that mould can kill bacteria.	<ul style="list-style-type: none"> • Can children plan an investigation to test a hypothesis? • Can children identify control variables in an investigation? • Are children able to identify the dependent and independent variables in an investigation? 	<ul style="list-style-type: none"> • Slides • Worksheet 5A/5B/5C • Information Sheet 5A (FSD? activity only) • Worksheet 5D (FSD? activity only)
Lesson 6	To explore the movement of gears in relation to their size and number.	Children will investigate how gears and wheel sizes affect speed and distance travelled. They explore the design of a penny-farthing and are introduced to the inventor of the Rover safety bicycle: John Kemp Starley. They observe the changes the size of gears can make and how they work together in a chain drive to make a bike move. The children are challenged to calculate the gear ratios for different gear chains.	<ul style="list-style-type: none"> • Can children make and record detailed observations of a mechanism? • Can children describe how using smaller or larger gears to power another gear will affect the movement? • Can children calculate the gear ratio for a train of two gears? 	<ul style="list-style-type: none"> • Slides • Gear Cards 6A or modular construction kits with gears and pulleys • Worksheet 6A/6B/6C • Image Cards 6A • Wheel Cards 6A/different sized cylinders • A geared bike per group (FSD? activity only) • Worksheet 6D (FSD? activity only)