Pent 1
History Yr5 – A Local Study: Isaac Newton/Woolsthorpe Manor

Scripture Link:
'By faith, we understand that the universe was created by the word of God so that what is seen was not made out of things that are visible.' Hebrews 11:3

National Curriculum Objective
A local history study

Timeline

	Lesson 1	Lesson 2	Lesson 3
Learning intention for each lesson	I will Know where to place Isaac Newton on a timeline; I will know about Issac Newton's early life, childhood and up until university.		I will Know that Isaac Newton discovered gravity including the story of how this discovery came about.
Recall and Retrieval	The Wright brothers invented the first Aeroplane – 'The Wright Flyer'. The first petrol engine car was invented by Karl Benz. Henry Ford designed the model T car and began to build lots of them in his factories. John Macadam invented tarmac for stronger and smoother road surfaces. The Maglev train is the fastest train in the world. It is electric and hovers above the ground using magnets.	Women of Influence Margaret Thatcher was born and grew up in Grantham. She studied chemistry at oxford university before going on to become a lawyer. 20 yrs after her first attempt of becoming a politician, she became the leader of the conservative party. In 1979, she became the first female prime minister. Isaac Newton was born at Woolsthorpe Manor Lincolnshire (local to us), on the 4th January 1643; Isaac Newton was an English physicist, astronomer and mathematician.	Industrial Revolution - James Watts was a British inventor who made great improvements to the steam engine. This invention allowed production to be faster and produce goods on a larger scale. He loved books about mechanics and technology, inventing an elaborate system of sundials. At the St John Baptist's Church you can see the font that he was baptised in an a carved sundial which he made as a child. Issac Barrow was the first professor of mathematics at the University of Cambridge. He recognised Issac Newton as a new prodigy and tasked him with solving one of the big unsolved problems of the day – Calculus – a way of describing how things change.
Sequence of substantive knowledge throughout the lesson	**By the end of the lesson, children will know-** Isaac Newton was born at Woolsthorpe Manor Lincolnshire (local to us), on the 4th January 1643; Isaac Newton was an English physicist, astronomer and mathematician.	**By the end of the lesson, children will know-** From age 12 to the age 16, Newton lived with William Clarke (who was a medical professional), in Grantham. While living with the Clarke family, Newton was educated at the free grammar school (where his signature can still be seen upon a library windowsill).	**By the end of the lesson, children will know-** In 1666, at the age of 23 Isaac Newton discovered gravity. "he first thought of his system of gravitation which he hit upon by observing an apple fall from a tree". Other accounts state that Newton was sitting in his garden at Woolsthorpe Manor when the event occurred.

	Isaac Newton was born to a widowed mother (his father died three months prior) and was not expected to survive, being tiny and weak. When he was 3yrs old his mother remarried and left him with his grandparents on a farm in Lincolnshire, while she moved to a village a mile and a half away from him. He felt rejected by his family and hated his stepfather, threatening to burn his house down. He was separated from his mother until his stepfather's death in 1653. .	He loved books about mechanics and technology, inventing an elaborate system of sundials. At the St John Baptist's Church you can see the font that he was baptised in an a carved sundial which he made as a child. At Trinity College, Cambridge, Newton found a new father figure, Issac Barrow. Issac Barrow was the first professor of mathematics at the University of Cambridge. He recognised Issac Newton as a new prodigy and tasked him with solving one of the big unsolved problems of the day – Calculus – a way of describing how things change. Calculus would later be crucial for explaining the universe in mathematical terms. When Cambridge University was closed because of the plague, Newton was forced to return home. This was the most productive period of his life.	Newton was driven by the belief that the path to true knowledge lay in making observations rather than reading books. For example, rather than trust texts on optics, he experimented by sticking a bodkin – a blunt needle – in his eye to see its effect. He laid the groundwork for his theories of calculus and laws of motion that would later make him famous. But, naturally secretive, he kept his ideas to himself.
Key Skills/disciplinary knowledge			
Key Vocabulary	Isaac Newton, Grantham, Lincolnshire, Woolsthorpe, laws, MP, discovery, university, Cambridge, inventor, gravity, forces, maths, apple, Moon, orbit, prism, refract, disperse, Westminster Abbey	William Clarke, Grantham, grammar school, mechanics and technology, elaborate, sundials, St John Baptist's Church, Trinity College, Cambridge, Issac Barrow, prodigy, calculus.	Gravity, observing, occurred, accounts, discovery, gravitational pull
Main teaching activity ***If the school has another short term planning format, this does not need to be included.***			
Scaffolding			
Challenge			

Diversity Links			
Catholic Social Teaching Principles	**Human Dignity:** With gifts come responsibility and accountability.	**Human Dignity:** With gifts come responsibility and accountability.	**Human Dignity:** With gifts come responsibility and accountability.
British Values			
Wider links			

Pent 1 History Yr5 – A Local Study: Isaac Newton/Woolsthorpe Manor		
Timeline		
	Lesson 4	Lesson 5
Learning intention for each lesson	I will Know about Isaac Newton's other major discoveries	Enrichment – Trip to Woolsthorpe and follow-up lesson on his achievements.
Recall and Retrieval	Industrial Revolution – During the Industrial revolution, children were cheap to employ as their small hands were able to effectively operate machinery. The workers sort to win improved conditions and wages through labour unions which helped create laws that protected workers. In 1666, at the age of 23 Isaac Newton discovered gravity. "he first thought of his system of gravitation which he hit upon by observing an apple fall from a tree". While living with the Clarke family, Newton was educated at the free grammar school (where his signature can still be seen upon a library windowsill). He loved books about mechanics and technology, inventing an elaborate system of sundials.	Apple from Tree - Other accounts state that Newton was sitting in his garden at Woolsthorpe Manor when the event occurred. Isaac Newton was born at Woolsthorpe Manor Lincolnshire (local to us), on the 4th January 1643;
Sequence of substantive knowledge throughout the lesson	**By the end of the lesson, children will know-** Newton proposed that white light was actually a combination of light of all colours of the rainbow. Newton designed a telescope solve the problem and proved that he was actually correct. Following Newton's apple insight, he developed three laws of motion: 1. Newton's Law of Inertia: link to gravity 2. Newton's Law of Acceleration: the rate of momentum is directly and proportional to the force applied to the object and takes place in the direction in which force is applied. 3. Newton's Law of Action and Reaction: For every action, there is an equal and opposite reaction. Forces are found in pairs *(For example Think about the time you sit in a chair. Your body exerts a force downward and that chair needs to exert an equal force upward or the chair will collapse).*	**Woolsthorpe Manor** Woolsthorpe Manor is where Isaac Newton saw an apple fall from a tree, experimented with refracted light, and tried to solve the system of the universe - all before he was 24 years old. Since his death it's been a place of pilgrimage for scientists from around the globe. Discover the manor house where he was born, visit the science centre and immerse yourself into the world of scientific discovery. **Science Centre** In our Science Centre, children of all ages - even grown-up ones - can get hands-on with some of Isaac's most famous experiments. Have fun observing, experimenting and discovering. The centre invites you to learn about the principles of Newton's work and how it resonates today. There are mysteries to unravel, problems to solve and questions that need answering. **Testing Newton's theories** The distorted mirrors offer a chance to play with light, testing refraction and reflection. There's also a chance to peer at one of the blackest blacks and try to grab a holographic apple.

		Newton was driven by the question, 'what keeps a planet in orbit or an object on the ground?'. You can ask this question too while testing his theory of universal gravitation with the elliptical orbits in the gravity well. **St John the Baptist's Church** Walk in the footsteps of Isaac Newton by taking a short stroll from Woolsthorpe Manor to St. John the Baptist's Church, his parish church in Colsterworth. Newton walked from Woolsthorpe Manor to worship at St John the Baptist's Church every week, passing the brook on Water Lane and then crossing the River Witham. By the end of the lesson, children will revisit learning from the trip using experiences faced and photographs taken.	
Key Skills/disciplinary knowledge			
Key Vocabulary	Proposed, white light, telescope, Newton's three laws of motion		
Main teaching activity ***If the school has another short term planning format, this does not need to be included.***			
Scaffolding			
Challenge			
Diversity Links			
Catholic Social Teaching Principles	**Human Dignity:** With gifts come responsibility and accountability.	**Human Dignity:** With gifts come responsibility and accountability.	
British Values			

Wider curriculum links			Link with English piece of wrting as a follow-up.