Oakwood Academy Scheme of Work – Unit overview	Unit Title/Topic: Inventors	Year: Foundation A (5,6,7)	Duration: 6 Weeks

Inspire	Impact	Independence
How will pupils be inspired? • Pupils will engage with a topic based curriculum which will cross into all subjects. • Pupils will be inspired through a "hook day" at the beginning of the topic to engage, inspire and excite them. • Pupils will learn about a local inspiration – Alan Turing as well as female inventors to inspire STEM opportunities and a love of science and technology in our female pupils. • Pupils will create their own inventions at the end of the topic. They will then be given the opportunity to showcase and "sell" their invention to their peers and teacher in a *Dragon's Den* style presentation.	As this topic is cross curricular, the language, terminology and other new learning will be applied into other areas of pupils' learning such as report writing in English. What is the focus of the unit? This topic is mainly humanities focused, but has strong cross curricular links to all aspects of the curriculum including Science, Computing, Design and Technology and English. What skills, knowledge or content is revisited from previous schemes of work? Pupils are mostly new to Oakwood and so many skills are unknown or under developed. This topic will build on basic Literacy and Speaking and Listening skills. Pupils will also develop their sentence writing skills, knowledge of non-fiction (in particular, reports) and basic maths knowledge such as place value numeracy skills. What new learning will take place? Pupils will learn how to use an atlas. Pupils will develop new writing skills and strategies which they will implement cross curricularly throughout their pieces of work. Pupils will gain knowledge of new facts, key dates, vocabulary, inventions and inspirational people. Pupils will know why the person is inspirational.	How is independence promoted in this unit? Pupil independence is promoted through: • Pupils creating their own invention. • Pupils presenting their work to the class. • Pupils will peer and self-assess each other's work throughout the topic, but will also do this during our *"Dragon's Den"*.

British Values Democracy • What democracy means, how was this invented? How different people have rights that have changed over time e.g Alan Turing and women and their right to vote. • Pupils create their own class rules. Rule of law • Pupils follow the class rules. • Pupils learn about the laws across Britain and how this affects what can be invented. Mutual respect and tolerance • There will be a focus on mutual respect when pupils are presenting their invention. • Pupils will have respect for individuals with SEND • Pupils will have respect for people from different faiths and communities. • Pupils will have respect and understanding of those in the LGBT community. Individual liberty • Pupils will be encouraged to share their thoughts and opinions about inspirational inventors. • Pupils will share their own thoughts when presenting their own invention.	**Spiritual, Moral, Social and Cultural Development:** • Pupils will develop their understanding of British society and culture through studying Alan Turing. This will also allow pupils to explore local culture, Autism and SEND and LGBT. • Pupils will gain empathy and an understanding of people from the past, and will accept that people's cultures and opportunities change depending on where they live and what era they were born in.	**Key vocabulary** Vocabulary will depend on the abilities of pupils and staff are advised to edit and choose suitable vocabulary for their classes. Below are some vocabulary examples that staff may want to use: invention, inventor, create, science, technology, plan, design, scientist, idea, prototype, trial, error, compare, contrast, predict, edit, modify, evidence, calculate, justify, support, predict, locate, measure, inspire, inspirational, concave, convex, device, hardware, software…

Subject specific links to the National Curriculum		
English **Links to KS2 Curriculum:** • be able to prepare readings, with appropriate intonation to show their understanding • pupils' confidence, enjoyment and mastery of language should be extended through public speaking, performance and debate. • choosing the writing implement that is best suited for a task. • using a wide range of devices to build cohesion within and across paragraphs • using further organisational and presentational devices to structure text and to guide the reader [for example, headings, bullet points, underlining] **Links to KS3 Curriculum:** • writing for a wide range of purposes and audiences, including: notes and polished scripts for talks and presentations • plan, draft, edit and proof-read through: considering how their writing reflects the audiences and purposes for which it was intended • amending the vocabulary, grammar and structure of their writing to improve its coherence and overall effectiveness	**Science** **Links to KS2 Curriculum:** • identifying scientific evidence that has been used to support or refute ideas or arguments. • They should use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time. • find out about the significance of the work of scientists **Links to KS3 Curriculum:** • Understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review. • ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience. • make predictions using scientific knowledge and understanding.	**Maths** **Links to KS2 Curriculum:** •interpret and construct simple pictograms, tally charts, block diagrams and simple tables •ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity •recognise and name common 2-D and 3-D shapes •identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line •read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. measure and record the following: lengths and heights, mass/weight, capacity and volume **Links to KS3 Curriculum:** •understand and use place value for decimals, measures and integers of any size •use standard units of mass, length, time, money and other measures, including with decimal quantities •consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value

		Literacy and Numeracy links • Reading, writing and performing/speaking and listening throughout the unit. • Use of Vocabulary board to develop understanding of key vocabulary. • Communicate in Print used where necessary • Many scientific inventors from the past were also mathematicians – look at famous mathematicians and sequences (Fibonacci sequence) Pupils will use an abacus to count and for multiplications. Pupils will investigate Base 10 and use it to understand place value.

Geography, History, Computing

Links to KS2 Curriculum:

Geography: • name and locate counties and cities of the United Kingdom
• identifying human and physical characteristics, key topographical features (including hills, mountains, coasts and rivers), and land-use patterns; and understand how some of these aspects have changed over time • describe and understand key aspects of: distribution of natural resources including energy, food, minerals and water • describe and understand key aspects of physical geography, including: climate zones, biomes and vegetation belts, rivers

History: • a study of an aspect or theme in British history that extends pupils' chronological knowledge beyond 1066: a significant turning point in British history, for example, the first railways • the achievements of the earliest civilizations including the Roman Empire and its impact on Britain, 'Romanisation' of Britain and the impact of technology.

Computing
• understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Links to KS3 Curriculum:

Geography: • extend their locational knowledge and deepen their spatial awareness of the world's countries using maps of the world to focus on Africa, Russia, Asia (including China and India), and the Middle East, focusing on their environmental regions, including polar and hot deserts, key physical and human characteristics, countries and major cities
• human geography relating to: population and urbanisation; international development; economic activity in the primary, secondary, tertiary and quaternary sectors; and the use of natural resources

History: the study of an aspect or theme in British history that consolidates and extends pupils' chronological knowledge from before 1066 • ideas, political power, industry and empire • Britain, 1745-1901: Britain as the first industrial nation – the impact on society
the Enlightenment in Europe and Britain, with links back to 17th-Century thinkers and scientists.
• Understand historical concepts such as continuity and change
• Know and understand the history of these islands as a coherent, chronological narrative, from the earliest times to the present day: how people's lives have shaped this nation and how Britain has influenced and been influenced by the wider world
• Know and understand significant aspects of the history of the wider world: the nature of ancient civilisations; achievements and follies of mankind

Computing
• understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems • undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users • create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability • understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns

Pupil outcomes: (This is based on pupils' ability and OLS stage. This is just a starting point. Class Teachers will need to edit this based on the differing needs of the classes within the Foundation Base)

Humanities

• Pupils will develop their understanding of the importance of inventions, a history of inventions through time and will develop and understanding of how inventions have changed our lives throughout history.
• Pupils will be able to locate the homes of famous inventors on a map by gaining atlas reading skills.
• Pupils will look at inventions which are being made currently to help the environment, and inventions that are eco-friendly and already made (such as solar panels). Pupils will know where these are being used and how they are making an impact on our planet.
• Pupils will know an inspirational person from their local area, some will be able to name other inspirational/important people from the past. They will be able to say what they are famous for or what their impact was.

English

• Pupils will make a report on inventions through the ages or about an invention they find inspirational.
• Pupils will know what non-fiction writing is and will be able to name reports as a sub category of non-fiction.
• Pupils will know what makes a report successful.
• Pupils will use grammar and punctuation appropriate for their ability and OLS stage.

Science

• Pupils will find plants in the local area; give the names of people who brought new plants to Britain; design a new plant and answer questions about it.
• Pupils will know facts about Marie Curie's life and work; identify bones in x-ray images;
• Pupils will know the names of other scientists and what they are famous for inventing.
• Pupils will identify concave and convex mirrors as curved mirrors; participate in an investigation into convex and concave mirrors; identify devices and inventions that use curved mirrors; describe how the first electromagnets were developed and name a scientist who worked on them; recognise that inventions and discoveries come from all over the world and give an example of how some things are invented to make people's lives easier.

Maths

• Pupils will know that numbers can be written in different forms such as data in graphs and charts, and Roman Numerals.
• Pupils will identify units of measure and begin to measure a range of objects.
• Pupils will gain new knowledge of Place Value and consolidate knowledge from primary school. Staff will identify gaps in pupils' knowledge and focus on helping pupils gain a concrete understanding of place value before moving on to number and operations.

Computing

• Pupils will identify different uses for computers at home and school
• Pupils will identify and select Hardware and Software
• Pupils will use ICT to communicate.
• Pupils will understand safety when using ICT
• Pupils will recognise inappropriate conduct, content and contact and will know how to report concerns.
• Pupils will know who Alan Turing is and why he is important to computing.
• Pupils will use a recording device.
• Pupils will use some Microsoft applications (Word, PowerPoint, Publisher)

Assessment

Summative assessment:

Assessments will be added into SIMS.

Lower ability or Working Towards pupils using Stepping Stones

Formative Assessment:

Teacher and TA questioning.

TA feedback.

Pupils will complete a KWL grid at the beginning and end of each topic to show what they have learned throughout the topic.

Application of SPaG in isolation and writing. Grammar assessed throughout unit and also in isolation.

Reading comprehension through reading, asking and answering questions both verbally and in books.

Spoken language through performance of poems and discussion of poems.

Week 1 Week commencing Monday 9th September	Week 2 Week commencing Monday 16th September	Week 3 Week commencing Monday 23rd September	Week 4 Week commencing Monday 30th September	Week 5 Week commencing Monday 7th October	Week 6 Week commencing Monday 14th October
English Research information texts and reports.	**English** Create an information text (report).	**English** Look at a range of persuasive writing and adverts. Create a success criteria for making an advert.	**English** Create an advertisement for an invention.	**English** Write a script for presenting inventions.	**English** Showcase and sell their invention.
Maths <u>Introduction to place value and number</u> Pupils understand why numbers were invented and why we need numbers. Some pupils introduced to how numbers have changed over time (Roman Numerals). Pupils understand what place value is and how it helps mental maths. Pupils introduced to Base 10, abacus and other hands on maths resources (inventions).		**Maths** <u>Length</u> All pupils know some standard units of measure. Most pupils can measure an object using a standard unit of measure. Some pupils can convert measure.	**Maths** <u>Properties of shape</u> Introduce 2D shapes. All pupils can identify some to all common 2D shapes. Most pupils can identify the properties of a range of 2D shapes. Some pupils can identify lines of symmetry.		**Maths** <u>Statistics</u> Introduce tally and bar charts. Some pupils can read different scales on the axis and interpret the data. Link to data collection (Computing)
Science Introduction to scientific inventors and inventions. Introduce Alan Turing, a female inventor and a B/EM inventor.	**Science** Discuss how scientific ideas have changed over time.	**Science** Focus on one invention e.g lightbulb, lego, rain gauges etc. Discuss it's uses, why we need it, how it has changed things for us, who invented it, facts about the inventor.		**Science** Create (or recreate) an invention. e.g make a rain gauge out of plastic bottles, make a lego creation, or make something brand new.	
Humanities/Topic Introduce inventors as discussed in Science. Learn facts, including key dates about different inventors. Discuss what barriers they had that they overcome. Use maps to locate where the inventors or inventions came from. Possibility to create a report on one or more inventors and inventions. Use knowledge from the previous two weeks.			**Humanities/Topic** Compare the past and present using historical sources. What similarities and differences can pupils see? Pupils identify how time has changed since these inventions were invented? Pupils identify what difficulties people have in the past before these inventions? What invention would you like to see in the future? How would your invention help people or the earth?		