Emmaus Primary School

#### Maths:

#### Throughout the Curriculum Policy

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Church of England and Catholic

Primary School

*Travelling together with Jesus*

**Intent**

**Intention, Implementation and Impact**

When pupils have opportunities to apply and develop mathematical skills across the curriculum, the impact is to consolidate and enhance those skills. This policy should be read in conjunction with the Maths Policy, where the intent, implementation and impact are dealt with more fully, and is intended as additional guidance.

In producing this policy, the intention is to:

* celebrate the breadth of maths used across the curriculum
* demonstrate how maths intertwines with and underpins some activities in other curriculum areas
* identify key activities that each year group undertakes in the course of teaching other subjects, that rely upon maths appropriate to that year group

**Aims:**

These aims are taken directly from the maths policy, and are no less relevant when maths skills are implemented in other curriculum areas. It is intended that children will:

· enjoy maths through practical activity, exploration and discussion

· understand the importance of mathematics in everyday life

· become confident and competent with numbers and the number system

· become fluent in the fundamentals of mathematics

· develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately

· reason mathematically by following a line of enquiry,

· spot relationships across domains, make generalisations and express an opinion using mathematical language,

· solve problems by applying their mathematics to a variety of routine and non-routine problems, including breaking down problems into a series of simpler steps

· keep persevering in seeking solutions collectively and individually

 · be aware that there are often many or even no solution

· develop an appreciation of the creative aspects of maths; be aware of its aesthetic appeal

· see the historic context and present day relevance of mathematics

**Mathematics cross-curriculum planning**

There should be elements of maths being applied across the curriculum in every term, and when this occurs, it should be planned for and clearly noted on the science or topic planning forms, as appropriate.

**Teaching and learning**

Maths may be evident in other subjects:

* at a level below age equivalent
* at a level that is age equivalent
* at a level above age equivalent

If it is below age equivalent, then the maths should be applied appropriately and be seen as a chance to revise and apply previous learning. Examples of this could be noting dates in history, recording experimental data in science, or looking at statistical information in geography.

Maths that is above age equivalent may be mentioned and appropriate language used, as an opportunity to introduce terminology without any expectation that the children will fully understand or remember. Some children may well recall the information when the topic is introduced later that year, or in following years. Examples may be the use of parallel lines in some forms of art or discussion of scale in art or geography.

The purpose of this policy is to focus more on age equivalent maths.

**Age Equivalent Maths**

Maths is taught in maths lessons. In other lessons - be that science, geography or PE - the maths element may be seen as being applied not necessarily taught. However, some level of revision may be required and teachers may even choose to organise the maths curriculum in such a way that the maths is taught in the maths lesson, specifically to aid the work in another subject. This maths should be in line with the expectations of the year group, or of the previous year if the lesson is taught early on in the year. (Specific details are in appendix 1)

**Assessment and recording**

Teachers can use evidence of maths being applied in another subject, to support their view as to whether a maths target has been achieved.

**Marking**

Marking should focus upon the learning objective of that lesson, not the maths. A comment about the maths used is not anticipated, but can be made if a teacher judges that it is helpful in supporting, or commending, a child’s understanding or application.

**Display**

Where a display includes some element of maths, this should be highlighted: eg if children have applied *measuring* skills when completing a DT project.

**Nursery/Reception**

The approach advocated within this policy is already being taken within nursery and reception classes, where maths is taught and used constantly through topics with a maths element - such as in growing - and in play activities and areas of the classroom such as the construction area, a doctor’s surgery or a café. The use of mathematical vocabulary relating to number, pattern and measures is encouraged.

**The linking of mathematics within other curriculum areas**

Overleaf, in appendix 1, is a year by year analysis of when maths has been used and applied by children at an age appropriate level, produced by staff in 2019, and scheduled for review in 2022/23.

In appendix 2 is a more general review showing examples of when maths is evident in subjects, though not necessarily applied at an age appropriate level.

It is not intended to be a complete review, or a minimum requirement, but guidance. The curriculum constantly changes as new advice, new resources and new technologies become available. Teachers should use their professional judgement to ensure that when they plan they seek out mathematical opportunities whenever possible, and whenever relevant, to support both the learning objective of the lesson and the teaching of maths.

Date: September 2022 Review: March 2023

**Appendix 1 – Specific studies**

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| --- | --- | --- | --- |
| Year Group | Main area of focus | Objective | Age Related Maths  |
| **Year 1** |
| Aut | French | Numbers 1-50 | To work with the numbers to 50 and beyond |
| Aut | History | Understanding time | Sequencing events in chronological order/old and new |
| Aut | Science/Geog | Reporting the weather | Days of the week, creating a chart, terms like temperature  |
| Aut | PE  | Dance and Gym | Use bodies to make 2D shapes, and understand the language of time  |
| Spr  | History | Transport | Changes over time – sequencing events |
| Spr | Science | Growing a bean plant | Measuring lengths |
| Spr | Computing | Coding | Describe position, movement and direction |
| Spr | Art | Repeated pattern | Shape and pattern |
| Sum | Computing | Spreadsheets | Simple inputs and calculations |
| Sum | DT | Create a fruit kebab | Use language of more than / less than / most / least |
| Sum  | PE | Athletics | Running faster, jumping further, throwing further |
| Sum | Science | Weather | Seasons, measuring rainfall, and noting the direction of the sun |
| **Year 2** |
| Aut | Science  | Food groups / diet | Sorting, recording data, results: pictograms, Venn diagram, bar charts |
| Aut | Science | Pulse rates | Use of time and recording rates per minute |
| Aut | Science  | Animal classification | Grouping and classifying facts and data |
| Aut  | Science | Life cycles | Sequencing and ordering |
| Spr | French | Numbers  | Counting |
| Spr | Geography | Mapwork – where is Liverpool? | Compass points, position and directional language |
| Spr | History | Timelines (GFOL) | Sequencing, ordering numbers, intervals of time |
| Sum | History | Timelines (John Lennon) | Recording and counting back in 10s and 100s |
| Sum | History | Comparison | Venn diagram comparing 60s to now |
| Sum | Art | Sculpture | Shape, space, measurement, 3d language |
| Sum | Computing | Programming  | Position and directional vocabulary, spreadsheet |

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| Year Group | Main area of focus | Objective | Age Related Maths  |
| **Year 3** |
| Aut  | Science | Rocks | Present data using charts, pictograms or tables |
| Aut | History | Cradles of civilisation timeline | Compare durations of events  |
| Aut | Music | Counting beats | Estimation, pattern, sequence |
| Spr | DT | Design a soup for the homeless | Measurement, including combining masses |
| Spr  | Science | Animals including humans | Comparing measurements of carbs |
| Spr  | Science | Animals including humans | Comparing distances (cm) – bar chart recording distances |
| Sum | Geography | Lines of latitude and longitude | Comparing lengths and understand their purpose |
| Sum | History | Roman numerals | Understanding Roman numerals |
| **Year 4** |
| Aut | Science | States of matter  | Measurements in experiments |
| Aut | History | Romans | Timeline – chronology, duration |
| Aut | Art | Doodles | Geometry, 2d shapes |
| Aut | Computing | Coding | Coordinates, sequencing, debugging |
| Spr | Science | Sound | Line graph |
| Spr | Geography | Tourism | Changes in tourism bar chart |
| Spr | Science | Living things and their habitats | Venn diagram |
| Sum | Geography | Earthquakes | Richter scale – line graph |
| Sum | Geography | Deserts | Temperature scales – Gobi desert |

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| Year Group | Main area of focus | Topics | Maths Opportunities |
| Year 5 |
| Aut | Geography | World Food - Maritime trade | Work out air miles and distances from suppliers to the UK |
| Aut | Geography | Chocolate is made from cocoa | Percentages/Comparing weights and measures |
| Aut  | History | Bagdad  | Comparison of dates |
| Aut | Art | Adinkra pattern | 2D shape, pattern, symmetry, etc and the language of shape |
| Aut | DT | Cultural food | Weights and measures/reading scales |
| Spr | Geography | Population / Migration | Line and bar charts |
| Spr | Science | Forces | Data collection, measuring, reading scales |
| Spr | French | Time | Reading clocks |
| Sum | Geography | Local area sketch map | Grid references, OS symbols, scale |
| Sum | PE | Athletics – long and high jump | Measurement in m and cm, using decimals and converting  |
| Sum | PE | OAA | Angles, measurement, distance |
| Year 6 |
| Aut | Geography | North America | Time/Time zones/interpreting line graphs |
| Aut | History | World War II | Timelines, length of events, dates and sequencing |
| Aut | DT | Make do and mend | Measuring and organising a bag |
| Aut | Art | Sue Averill – Cityscapes | 3d Design |
| Aut | Science | Heart | Line graph of heart ratePie chart of blood components |
| Aut | Science | Light | Averages  |
| Spr | DT | Mexican meal | Weighing ingredients |
| Sum | DT | Frame | Cutting wood to sizes; angles of 45° |
| Sum | Science | Light | Use of angle; explanation of line graphs  |
| Sum | Geography | Mapwork  | Grid referencing |

**Appendix 2 – General opportunities**

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| Main area of focus | Topics | Maths Opportunities |
| Literacy | Instructions/recountsInformation textsIssues and dilemmas | Numerical language, sequencing events, vocabulary of measureReading information shown in tables, graphs and chartsReading graphs eg related to global warming, falling numbers of endangered animals |
| Science | Experimental workReading off scales | Reading and recording results in charts and graphsUsing large numbers and decimal numbers; negative numbersClassifying data |
| Geography | ClimatesLocal areaPlacesPhysical featuresMapwork | Temperature/Scales Planning routes and using directional languageUsing compasses; distances between countriesLengths, heights, using and comparing large numbers, Scale and co-ordinates |
| History | Events/objects from the pastTimelines BC /ADCivilisations | Ages and datesDates, sequencing, scale, patternAcross zeroNumber systems |
| Art / DT |  | Measuring sizes Measures and scales2D and 3D language |
| Music |  | Pattern, sequences  |
| PE |  | Using directional languageRecording times/measuring performance |
| Computing |  | Sequencing , directional language , Recording data, debugging,  |