

Mathematics

At Beecroft Academy, we recognise that the personal development of pupils, spiritually, morally, socially and culturally plays a significant part in their ability to learn and achieve. We endeavour to provide all children, from Early Years to Year 6, different opportunities to explore and develop their own values and beliefs, spiritual awareness, social and cultural traditions. We are delighted to offer our children the opportunity to become financially aware during their Financial Education lessons which complement our real-world maths experiences.

Spiritual Development in Mathematics

EYFS

Knowledge and understanding of the world around them (Continuous Provision)

- Encouraging appreciation of nature – e.g. spider webs (symmetry), watching ladybirds (counting spots, doubling)
- Encouraging awe and wonder for the environment – e.g. lying looking at clouds in the sky (counting clouds)
- Encouraging awe and wonder for objects including 2-d and 3-d shapes
- Pupils will begin to recognise and identify pattern sequences using shapes. They will begin to predict the next pattern to follow.
- Pupils will learn the numbers 1-10, then 11-20, and match representations of the numbers.

KS1 and KS2

There is a sense of wonder in the exactness of mathematics as well as a sense of personal achievement in solving problems. Spiritual education provides the opportunity to experience the awe and wonder of mathematics that is shown to and/or investigated by pupils.

- Mathematics can be used to explain the world and the mathematical patterns that occur in nature such as the symmetry of snowflake patterns or the stripes of a tiger, Fibonacci sequence and tessellations.
- The investigations that enable pupils to find the missing piece of information required to find the area of a circle (π). (Pi Day is celebrated on or as close to 14th March each year.)
- Further mathematics can also be used to consider the idea of infinity, this can occur as a discussion in conjunction with Pi Day, as pi is an infinite number.
- The use of ICT and the *Nrich* website provide pupils with opportunities to develop further investigative skills within mathematics.

Moral Development in Mathematics

EYFS

Knowledge and understanding of the world around them (Continuous Provision)

- Making comparisons between sizes using appropriate vocabulary such as bigger, smaller, more, less.
- Staff modelling values e.g. being honest when someone has made a mistake with change in role play.

KS1 and KS2

Pupils are given the opportunity to be aware of the use and misuse of data in all issues including those supporting moral argument.

- Pupils spend time on various projects where they try to use maths in real life contexts, applying and exploring the skills required in solving various problems. (Link FEd – fraud crime scene, planning a party, making smoothies)
- Rounding in context when dealing with living things
- Understanding the role of percentages when calculating increase / decrease in interest when saving, borrowing or paying taxes. (link FEd)
- Respecting other people's viewpoints when problem solving.
- Use logic to explain one's viewpoint before jumping to conclusions.
- Using measurement to reinforce eating healthily (link science).

Social Development in Mathematics

EYFS

Knowledge and understanding of the world around them (Continuous Provision)

- Pupils are encouraged to learn positional and directional instructions, such as left, right, in front, behind and next to.
- Staff support the development of social skills and development throughout play and learning experiences e.g. role play in shops.

KS1 and KS2

Social education in maths concerns pupils being given the opportunity to work together.

Experimental and investigative work provides an ideal opportunity for pupils to work collaboratively. Mathematics also allows pupils to apply their own intuitive feelings and check these against what they have learnt in order to make more sense of the world.

- Promote opportunities to develop skills when working with others such as 'Nrich' tasks.
- Pupils can look at their local environment or that of a city such as London and investigate the buildings and bridges, their shape(s), structure and consider which shape is the strongest. The children can work together and use resources to make a structure to test their theory (Link DT).
- Discuss and debate the use and abuse of statistics in the media (which of these might the Government use when they look at average salaries – is it fair? The children should provide reasons and suggest the correct 'average: mean, mode and median.) (Link FEd and PSHE)
- Understand the importance of money, including saving and spending, and learning to understand the difference between needs and wants. (Link FEd and PSHE)
- The pupils can attend an online lesson to look at the need to budget for events such as a birthday party. (Link FEd)
- The pupils can conduct an opinion survey on a moral issue such as bringing back hanging. By representing the data collected, using graphs and pie charts, a display could be produced to show how the children voted. (Link PSHE)
- The pupils can begin to develop their functional skills through financial education.

- Enrichment opportunities after school – learning strategies and developing social skill through the game of chess.

Cultural Development in History

EYFS

Knowledge and understanding of the world around them (Continuous Provision)

- Pupils will begin to appreciate that coins have a value by using coins in role play for shopping. They talk about Euros, Sterling and Dollars.

KS1 and KS2

Cultural education concerns the wealth of mathematics in all cultures and the opportunities pupils are given to explore aspects of personal culture and identity through mathematics.

- Recognition that the foundation of modern mathematics has roots in many cultures.
- Recognition is given to symmetrical patterns (tessellations) and are used in Islamic geometric patterns in the architecture of mosques and Rangoli designs, number systems and mathematical thinking from other cultures (Link R.E. and art).
- Use the 10Ticks resources to use different methods of multiplication: Egyptian, Russian and Chinese methods (Culture Day).
- Link to numbers and how they work and the patterns therein including Roman numerals.
- Mathematics is used to communicate climate change and represent these using graphs (link geography).
- Use mathematics to describe movement using four and six grid references (link geography).
- Allowing discussion on the cultural and historical roots of mathematics.
- Pupils investigate different number sequences and where they occur in the real world.
- Explain the history of maths – universal application. Conduct a research project on a famous mathematician e.g. Alan Turing, Fibonacci.
- Consider time: Gregorian calendar/Mayan calendar/MYA including telling the time using both 12/24 hour analogical and digital time.
- Key Stage 1 pupils visit their 'Snack Shack' and pretend to pay for their fruit using plastic money, and develop the ability to predict their change. (Link FEd)
- Key Stage 2 pupils use their 'Snack Shack' to buy healthy snacks. They will be able to recognise the coins being used to pay for their item of food. (Link FEd)
- Pupils are encouraged to look at exchange rates in preparation for their holidays abroad and 'swap' Sterling for other currencies; this is also reinforced with the use of line graphs to show the 'exchange' rate. They compare and contrast holiday destinations and their value for money (Link FEd and Cultural Day).