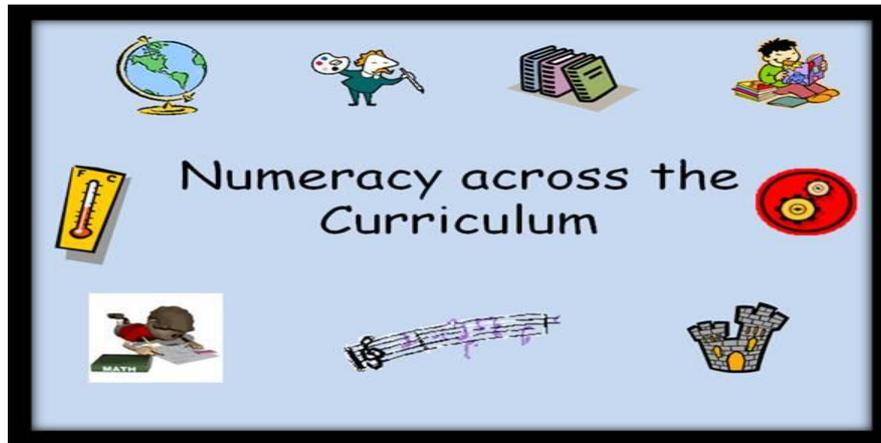


Maths and Numeracy across the curriculum at Ratcliffe



ICT

data handling - creating surveys, bias of information, creating and interpreting graphs and pictograms

databases - creating, types of data, searching, sorting, validation of data

control/programming - logic, directions - logo type controls,

spreadsheets - calculations, algebra type formulas

computer science - binary number system,

data logging - reading graphs created from data loggers

English

In English lessons, we use mathematical vocabulary and technical terms. This can support students when they have to read and interpret problems.

In non-fiction tasks, students are encouraged to explain, argue and present their conclusions to others.

We also use sequential/chronological vocabulary, which helps to place things in a timescale, e.g. next, simultaneously etc.

What knowledge, skills and techniques:

- at word level
- at sentence level
- at text level

can be developed in English / language lessons that will help pupils to:-

- use mathematical vocabulary correctly?
- explain and justify their methods and conclusions?
- interpret and discuss results?
- solve word problems?
- communicate the results of a statistical enquiry or other in-depth piece of mathematics?

To what extent do we support the words involved in reasoning and proof (for example, if then, therefore it follows that Etc)

Draw attention to and use dual (multi) meanings in maths and English.

Nurture/PSHE

Generally, we encounter maths in science; interpreting and recording data in graphs and tables etc... We also use this for Geography and possibly History.

History also involves timelines, reading dates, putting events in order etc...

Work experience investigations / maths at work

Wages, VAT, tax, interest payments, mortgage types, market research.

The most efficient way for students to evacuate the school building in an emergency.

Key Stage 1

For key stage 1, we plan short topics across all subject areas, usually based on a book - for example, we have just finished 'Man on the Moon' by Simon Bartram. We then try to find as many good links as possible to all subjects.

We have just done shape, and Bob (the man from the moon)! sent them some challenges, to design a spacesuit with certain shapes, lines of symmetry, etc.

PE

Plot the records of one sport against time on a graph. Can you use the graph to make a prediction?

Plot men's and women's results on the same graph.

-scoring in a variety of games and sports.

-measuring heart rate and breaths per minute (Health Related Fitness.)

-measuring for distance and timing in athletics.

-metres in laps and distances in sports events eg. Sport Relief Mile

-measuring for height and length in high jump/long jump..

-number/sets/repetition in circuit training

French/BV

Days of the week, months of the year and time in general.

Counting and considering how the French number system relates to the English number system.

Ability to place events in order, use time lines and sequence events.

CDT

All forms of measuring and conversions, nets and 2d /3d shape construction. A range of graph work, collecting data and interpreting results.

There are different thicknesses of paper. What are they called, what are they for?

What does paper weigh?

Compare petrol consumption for different types of car.

Measure the spark plug gaps using a feeler gauge. What are the tolerances for different cars?

Name the shapes of different engine parts.

Investigate car registration plates.

Design of packages.

History/Geography

With regards to History it would be most likely related to dates, length of time periods and numbers of casualties of a battle.

Investigate the range and type of diseases prevalent during a particular period, the rate of spread, mortality rates, affects on different ages.

Compare population statistics for a particular location today with 100 years ago.

Geography lends itself more because we use graphs to represent data, hydro graphs in relation to flooding, maps using co-ordinates and scales.

Hypothesis Testing

Example Hypotheses:

Housing density decreases as distance from the town centre increases.

Quality of housing increases as distance from the town centre increases.

Quality of the environment improves as distance from the town centre increases.

Possible application areas for maths:

Area, ratio of areas

Basic calculation

Compound measure, scales

Statistical measures

Statistical diagrams

Variation

Hypothesis testing

Modelling

Food Technology

Weighting ingredients

Scaling up recipes when developing their product

Annotated Diagrams with dimensions (estimate)

Taste panel using ratings scale 1 - 5 & Star Diagram

Simple surveys

Ratio

Taste panel using ratings scale 1 - 5

Star Diagrams looking at results

Taking Results of questionnaires and analysing using graphs, excel.

Nutrients ICT programme (data Handling)

Modify pizza ingredients

Jenny Ridgewell nutrition Programme

Product Analysis

Handling data (questionnaires)

Creating results, tables, pie charts using excel

Annotating diagrams with measurements

Fair testing products, for sensory analysis using results

Product/ manufacturing specification using measurements

Music

The frequency of a note doubles as you go up an octave - investigate.

What is the fret spacing on a - guitar - violin etc . . . give some reasons?

How are the lengths of notes represented in manuscript?

In what ways has manuscript evolved over the centuries?

Can rhythm patterns, represented either symbolically or numerically, be seen to have parallels in mathematical sequences?

How can music contribute to the development of pupils' skills in organisation, logical thought, problem solving, collaborative working, listening to and sharing opinions?

Can pupils' knowledge of time and speed enhance their understanding of musical time, e.g. when considering beats per second and the differences between certain types of music e.g. pop, techno, garage etc?

Science

How does science help develop pupils' understanding of numbers in context, particularly large numbers, fractions and decimals, indices and the relationships between different metric units?

Do we encourage pupils to estimate answers to calculations, make sense of an answer, check the reasonableness of a number and use mental methods and jottings as appropriate?

How do we support methods and approaches to written calculation that are used in maths lessons?

To what extent is the approach to the manipulation of algebraic expressions and the solution of equations in the Framework for teaching mathematics compatible with the needs of science?

Can we adopt a consistent approach to problem solving, investigations and enquiry-based approaches?

Lots of application of maths skills with graphs, equations, analysing results and numbers, measurements, reading scales...