Clifton Community School

Cross curricular Numeracy Policy.

April 2015

Mission statement

Clifton Community School is committed to raising the standards of numeracy of all of its students; we want our students to be confident and capable in the use of numeracy to support their learning in all areas of the curriculum and to acquire the skills necessary to help achieve success in further education, employment and adult life.

Defining numeracy

Numeracy is a proficiency which is developed mainly in mathematics but also in other subjects. It is more than an ability to do basic arithmetic. It involves developing confidence and competence with numbers and measures. It requires understanding of the number system, a repertoire of mathematical techniques, and an inclination and ability to solve quantitative or spatial problems in a range of contexts. Numeracy also demands understanding of the ways in which data are gathered by counting and measuring, and presented in graphs, diagrams, charts and tables.
(Framework for Teaching Mathematics –– DfES)

A numerate student is able to:

- have a sense of the size of a number and where it fits into the number system;
- recall mathematical facts confidently;
- calculate accurately and efficiently, both mentally and with pencil and paper, drawing on a range of calculation strategies;

- use calculators and other ICT resources appropriately and effectively to solve mathematical problems.

- measure and estimate measurements, choosing suitable units, and reading numbers correctly from a range of meters, dials and scales;

- calculate simple perimeters, areas and volumes,

- understand and use measures of time and speed, and rates such as £ per hour or miles per litre;

- collect data, discrete and continuous, and draw, interpret and predict from graphs, diagrams, charts and tables;

- have some understanding of probability;

- be able to make judgements of solutions and carry checks out;

Calculations policy:

To try and ensure a little consistency within our delivery of basic numeracy skills a calculation policy is to be put in place. This should help when pupils move between groups and between subjects.

If a child is happy in their methods and is correctly using them, do not imply that they must change to these methods.

The agreed methods that we will use for basic calculations involving addition, subtraction, multiplication and division are:

Addition
Column method clearly showing carries.

Subtraction
Column method clearly showing borrowing. (Regrouping)
Check answers by using a column addition or the number line method.

Multiplication
A grid method, either with or without the diagonals.

Division
The bus stop with the times table written at the side in list form.

***If any pupils struggle with the above methods then feel free to introduce them to any other methods that they may find more accessible.**

Calculation Policy

Addition and Subtraction

Use the column method.

3498 + 2457

$$\begin{array}{rcccc} & 3 & 4 & 9 & 8 \\ + & 2 & 4 & 5 & 7 \\ \hline & 5 & 9 & 5 & 5 \\ & & 1 & 1 & \end{array}$$

Answer = 5955

2357 - 1439

$$\begin{array}{rcccc} & {}^{1}\cancel{2} & {}^{1}3 & {}^{4}\cancel{5} & {}^{1}7 \\ - & 1 & 4 & 3 & 9 \\ \hline & 0 & 9 & 1 & 8 \end{array}$$

Answer = 918

Multiplication

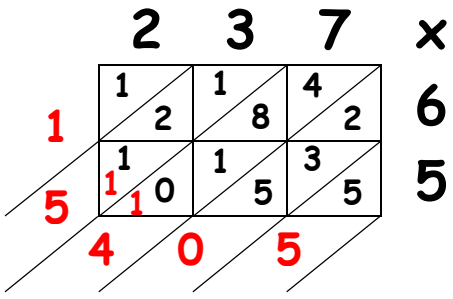
Use one of the grid methods.

237 x 65

x	200	30	7
60	12000	1800	420
5	1000	150	35

$$\begin{array}{rccccc} & 1 & 2 & 0 & 0 & 0 \\ & & 1 & 8 & 0 & 0 \\ & & 1 & 0 & 0 & 0 \\ & & & 4 & 2 & 0 \\ & & & 1 & 5 & 0 \\ + & & & & 3 & 5 \\ \hline & 1 & 5 & 4 & 0 & 5 \\ & & 1 & 1 & & \end{array}$$

237 x 65



Answer = 15405

Division

Use the bus-stop method.

3687 ÷ 5

$$\begin{array}{r} 0\ 7\ 3\ 7 \cdot 4 \\ 5 \overline{)\ 3\ {}^{3}6\ {}^{1}8\ {}^{3}7 \cdot {}^{2}0} \end{array}$$

Answer = 737.4

Roles and Responsibilities

Numeracy Co-ordinator

- To ensure all departments receive appropriate training concerning the mathematical background of our pupils.
- To develop resource material for use within departments.
- To work with all curriculum areas to ensure that the teaching of numeracy becomes consistent across all departments and key stages.

Numeracy teachers

- Ensure numeracy skills are promoted and developed in line with the national curriculum and school policies.
- Lead numeracy classes following the scheme of work.

Teachers - Mathematics

- To ensure numeracy skills are promoted and developed in line with the National Curriculum.
- To take the lead role in developing the numeracy skills of pupils through the Mathematics curriculum.
- To provide information to other subject teachers on appropriate expectations of students and difficulties likely to be experienced in various age and ability group.
- To be aware of the mathematical techniques used in other subjects and provide assistance and advice to other departments, so that a correct and consistent approach is use in all subjects.

Teachers - Other subjects

Teachers in other learning areas share many of these responsibilities. Each area has its own numeracy requirements, and pupils may not always have acquired from their study of mathematics the particular knowledge and skills needed to meet them. Teachers in other areas of study therefore have a responsibility to help pupils attain the level of numeracy their areas demand. In this way all teachers contribute to their pupils' developing numeracy.

Provision for developing numeracy skills through other subjects

There are opportunities for drawing mathematical experience out of a wide range of activities, in most if not all subject areas. Mathematics contributes to many subjects of the curriculum, both in practical and more theoretical ways. These examples are provided to help identify some of these mathematical experiences.

English

The fundamental purpose of Clifton Community School is to provide high quality education for all pupils within a caring environment dedicated to learning in which independence, tolerance and partnership are encouraged.
English lessons can help to develop and support pupils' numeracy skills, for example, by use of mathematical vocabulary and technical terms, by asking children to read and interpret problems to identify the mathematical content, and by encouraging them to explain, argue and present their conclusions to others.

Science

Almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of measuring, classifying, counting, calculating, estimating, and recording in tables and graphs. In science, pupils will, for example, order numbers, including decimals, calculate simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs.

Art & Design, Design & Technology

Measurements are often needed in art and technology. Many patterns and constructions are based on spatial ideas and properties of shapes, including symmetry. A lot of work is also undertaken using estimation of measurements and quantities. Designs may need enlarging or reducing, introducing ideas of multiplication and ratio. When dealing with recipes and cooking, pupils will carry out a great deal of measurement calculations, which include working out times and calculating cost.

ICT

Pupils will apply and use mathematics in a variety of ways when they solve problems using ICT. For example, they will collect and classify data, enter it into data handling software, produce graphs and tables, and interpret and explain their results. Their work in control includes the measurement of distance and angles, using uniform nonstandard then standard measures. When they use computer models and simulations they will draw on their abilities to manipulate numbers and identify patterns and relationships.

History, Geography and Religious Education

In history and geography pupils will collect data by counting and measuring and make use of measurements of many kinds. The study of maps includes the use of coordinates and ideas of angle, direction, position, scale and ratio. The pattern of the days of the week, the calendar and recurring annual festivals all have a mathematical basis. For older pupils, historical ideas require understanding of the passage of time, which can be illustrated on a time line, similar to the number line that they already know.

Physical Education and Music
Athletic activities require measurement of height, distance and time, while ideas of counting, time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics and ball games.

Careers and PSHE
In these two areas numeracy can be directly related to everyday life. Budgeting, paying bills, running a home and other money management issues can be undertaken.

Business Studies
Within this subject there is wide scope for numeracy in relation to real life situations. Also there is scope for handling data with meaningful figures. This can augment work carried out in other departments.

Modern Languages
Looking at a currency within a country. Calculations in a foreign language. A great deal of work that is already undertaken in the mathematics classes and careers can be applied here to learn about different countries.

Monitoring and evaluation

Monitoring & evaluation processes include:

- Pupil interviews
- Interviews with staff
- Lesson observations
- Work sampling
- Identification of mathematic elements in subject areas' schemes of work.

Assessment should:

- Inform planning and have an impact on teaching and learning
- Inform target-setting