ROOKS HEATH SCHOOL
Strive to be your best

# NUMERACY POLICY

**Term of policy**: 3 Years
**Approved by:** LGB 10.10.24
**Date ratified:** BoT 15.10.24
**Next Review Date:** Autumn 2027

**Author:** A. Syed
**Sources:** NGA, The Key
**Online location:** Policies

**Consulted with JCC?** Yes ❍ No ●

**Introduction**
This policy replaces any previous policy and follows the DfE regulations.

**As part of our commitment to meet the Public Sector Equality Duty (PSED) requirement, to have due regard to the need to eliminate discrimination, advance equality of opportunity and foster good relations, we have carefully considered the impact of this policy on equality. The school will ensure that this policy is applied fairly to all employees and does not have a negative impact on students or staff with protected characteristics, race, sex, religion and belief, sexual orientation, age, disability, gender reassignment, marriage and civil partnership and pregnancy and maternity.**

Rooks Heath School is committed to improving each student's level of numeracy; we want our students to be competent and confident users of numeracy which will support their learning across the curriculum and to gain the skills required to succeed in further education, employment, and adult life.

**Definition of Numeracy**

Numeracy is the ability to be able to use Mathematics in the real world and apply it to make the best possible decisions.

**Being Numerate implies:**

- An ability to make use of Mathematics skills which enables an individual to cope with the Mathematical demands of everyday life.
- To have an appreciation and understanding of information, which is presented in Mathematical terms, for instance in graphs, charts or tables, or by reference to percentage increase or decrease.
- To appreciate and understand some of the ways in which Mathematics can be used as a means of communication.
- The use of methods of calculation, which are both efficient and effective.
- Confidence and ability in mental methods.
- Selecting the most appropriate method of calculation for a given purpose.
- An awareness of the links between different aspects of the mathematics curriculum.
- Reasoning, justifying and proving results about number.
- Using number to represent Mathematical models of real-life situations.
- To understand and be able to use the language of Mathematics and talk confidently about Mathematical ideas.

**Students learn to become numerate**

- Through purposeful interpersonal activity based on interaction with others.
- Through being challenged to overcome and solve problems.

**Foreword**

Rooks Heath School is a mixed 11 to 18 multicultural comprehensive in the London Borough of Harrow. This policy is formulated by the Numeracy Coordinator, in consultation with staff, and is monitored by other members of the school's Leadership and Management Group. The policy is subject to annual review by the school's Leadership and Management Group and is subject to approval by the Governors of the school.

Since numeracy skills are required across the curriculum, it is the responsibility of all staff within the school to maximise opportunities for students to develop and improve their numeracy and to help them to develop a positive attitude towards mathematics.
This Numeracy Policy has been formulated to sit within the school development plan and reflects the Government's recommended policy.

**Aims**

- To develop, maintain and improve standards in numeracy across the school.
- To recognise the importance of numeracy in learning and improve access to numeracy for students of all abilities.
- To assist the transfer of pupils' knowledge, skills and understanding between subjects.
- To ensure consistency of practice including methods, vocabulary and notation.

**Practice**
**Role of Class Teachers**

- All Class Teachers must share responsibility to maximise opportunities for students to develop and improve their Numeracy and to help them to develop a positive attitude towards mathematics.

- All Class Teachers should ensure that they are familiar with correct mathematical language, notation, conventions and techniques, relating to their own subject, and encourage students to use these correctly.

- All Class Teachers should be aware of appropriate expectations of students and difficulties that might be experienced with numeracy skills.

- All Class Teachers should model good numeracy skills in their subject area and promote a positive 'can do' attitude for mathematics to all students.

- Students can develop their own strategies for calculating and solving problems, but it is their teacher's responsibility to help them to refine their methods.

- Students' misunderstandings need to be recognised, made explicit and worked on.

- All departments within the school should aim to encourage the selective use of the calculator and to promote non-calculator methods when appropriate.
  This will encourage students to develop their mental arithmetic and develop their calculator skills.

**Role of Teachers of mathematics**

- The maths curriculum has been designed to provide students with the opportunity to explore and connect to real-world contexts of Mathematics. For example, they learn how to use percentages to calculate interest rates on bank accounts and work out prices in sales, as well as using ratios to calculate the amount of ingredients needed in a recipe when cooking for different numbers of people.

- Teachers of mathematics should recognise the explicit links between subjects and seek opportunities to use topics and questions from other subjects in mathematics lessons.

- Teachers of mathematics should provide support for all departments within the school to develop Numeracy across the curriculum, and to maximise opportunities for collaboration between departments on issues relating to Numeracy.

- Teachers of mathematics must ensure students are familiar with key mathematical vocabulary Key Stage 3 maths teachers have access to booklets containing the key vocabulary that should be understood in year 7,8 and year 9 for them to use in their lessons

Key Stage 4 teachers have access to command words with examples as well as lists of keywords for each topic for them to use in their lesson.
Maths dictionaries are available for reference.

**Role of the Numeracy Coordinator**

- To raise the profile of Numeracy across the whole school curriculum.

- To provide opportunities for students to improve their Numeracy skills and have a positive approach to mathematics.

- To Monitor the impact of the Numeracy Policy on standards of Numeracy across the school curriculum.

**Promoting Numeracy throughout the school**

- **Tutor Time Activities**
  Activities for use in tutor time have been provided in the staff shared area. Years 7-9 have activities which are aimed at improving Numeracy skills and years 10 and 11 have activities which are aimed at revising topics for their forthcoming GCSE exams.
  Numeracy Activities take place on a designated day every fortnight interchanging with Literacy activities.

- **National Numeracy Day**
  National Numeracy Day Activities and competitions for KS3 take place in Tutor Groups.

- **Numeracy resources**
  Numeracy resources are available to all departments to borrow if required while teaching a topic involving numeracy. Resources such as cubes for counting, 3-d shapes, coins and clocks are kept centrally in the Maths storeroom.

- **Numeracy Mats**
  Teachers will have access to three A3 laminated Numeracy Mats to be kept in their classrooms. There will be one with Numeracy tips on Number, Data Handling and Shape Space and Measure (see Appendix 1). Teachers can refer to them in lessons and this will encourage consistency in the cross curricular use of numeracy. It will also help students realise that the same numeracy skills are required across the curriculum.

- **Keystage3 Maths Club** Numeracy activities are available for students to use in KS3 Maths club after school on Thursdays. Activities such as card matching games and problem-solving cards can help students improve their numeracy skills. There is also the opportunity to get help from maths teachers on maths problem that they may find challenging.

## Appendix 1 - Numeracy Mats

# Numeracy Tips. Shape, Space and Measure

## Conversions

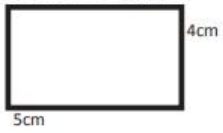
| | |
|---|---|
| 10*mm* = 1*cm* | 60 Seconds = 1 Minute |
| 100*cm* = *1m* | 60 Minutes = 1 Hour |
| 1000*m* = *1km* | 24 Hours = 1 Day |
| 1000g = 1kg | 12 Months = 1 Year |
| 1000ml = 1l | |

## Perimeter

Is the distance around the shape.

Add the lengths of the sides together.

e.g: P = 5+4+5+4= 18cm

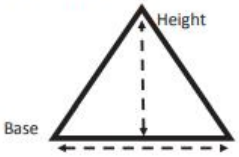



## Area

Is the space covered by a shape.

Area of **Rectangle** = Length X Width

Area of **Triangle** = ½ base X Height




## Nets

Unfolded 3D shapes. The surface area is the area of each face added together.

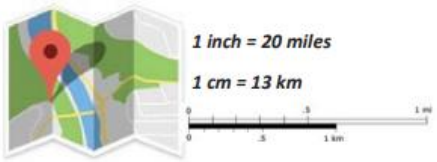

## Scales & Enlargement

Scale Factor is what you multiply every length by.

Scale Factor of 2 – double each length

Scale Factor of 3 – multiply each length by 3

Scale Factor of ½ - halve each length




For this map this would mean 2cm = 26km and 10 inches = 200 miles.

Multiply the length you measure by the appropriate miles or km.

## Triangular Prism

Volume of prism = Area of Base X Length

$$V + BL$$


## Algebra

**Substitution into formulas**

Swap the letters for the numbers you know.

E.g. If ***x*** = 3 what is **y** when y = 2***x*** + 4

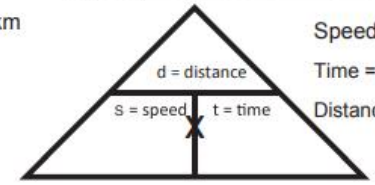
***y*** = (2 x 3) + 4

***y*** = 6 + 4

***y*** = 10

| | |
|---|---|
| ***ab*** = ***a*** x ***b*** | |
| $a^2$ = a x a | |
| $\frac{a}{b} = a \div b$ | |

**Speed, Distance and Time Formulas**




Speed = Distance ÷ Time

Time = Distance ÷ Speed

Distance = Speed x Time

# Numeracy Tips. Number.

## Percentages

Percent stands for parts per 100.

**Percentages of an Amount**

| | | |
|---|---|---|
| **10%** Divide by 10 | **5%** Half 10% | **1%** Divide by 100 |
| **20%** Double 10% | **25%** Half 50% | **50%** Half 100% |

**Finding the Percentage**

**Example**

*"There are 200 people in year 7and 126 girls. What percentage are girls?"*

$\frac{126}{200}$ x 100 = 63%

Write as fraction ___out of ___

What to put into the Calculator?

126 ÷ 200 = 0.63
0.63 x 100 = 63%

**Percentages Increase or Decrease**

**INCREASE** Add the percentage amount on (Inflation, interest rise etc.)

**DECREASE** Subtract the percentage amount (Sale, deflation, fall, depreciation etc.)

## Addition and Subtraction

When adding and subtracting remember to keep your numbers lined up.

Borrowed numbers

Carried numbers

11
369
+ 631
1000

6 1
7 2
- 5 6
1 6

## Division

**Example**

360 ÷ 8 = 45

0 4 5
8 | 3 6 0
3 4

Carry reminders

3 ÷ 8 = 0 *r* 3
36 ÷ 8 = 4 *r* 4
40 ÷ 8 = 5

## Multiplication

**Example 1**

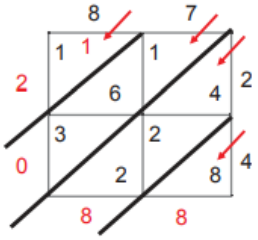
37 x 5 =

| X | 30 | 7 |
|---|---|---|
| 5 | 150 | 35 |

37 x 5 = 150 + 35
37 x 5 =185

**Example 2**

87 x 24 = 2088




## Ratio

Example

*"Bart and Lisa share £35 in the ratio 3:4. How much money do they get each."*

35 ÷ 7 = £5

Ratio is in the order the names/ objects appear in the Question.

BART : LISA
3 : 4


£15 : £20

## Fractions of Amounts

**Divide** by the **bottom**, **times** by the **top**.

$\frac{3}{5}$ of £35 is £21

35 ÷ 5 = 7
7 x 3 = 21

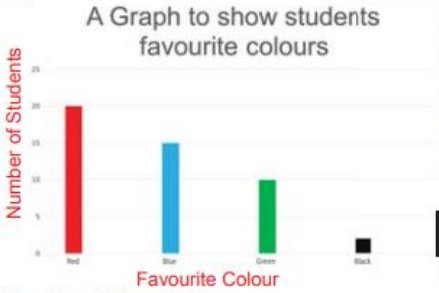
Bottom = Denominator  Top = Numerator

# Numeracy Tips. Data Handling

## Surveys/Questionnaires

| DO | DON'T |
|---|---|
| ☒ Give time frames when appropriate. E.g. How many times do you go to the gym in a week? | ☒ **Ask a biased question. E.g. *"Your favourite team is Man U isn't it?"*** |
| ☒ Group figures ☒ together. E.g. 0-15 yrs, 16-25 yrs | ☒ Overlap categories. E.g. 0-15 yrs, 15-25 yrs |
| ☒ Use simple language | ☒ Be vague |
| ☒ Use closed questions | ☒ Be too personal |

## Drawing Graphs




**Bar Chart Checklist**

Title. Labelled axes. Suitable Scale. Plotted accurately. Key (if required). All bars must be the same width and distance apart.

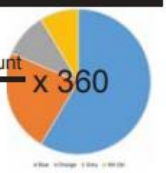
**Discrete Data**
Can only take certain values. E.g. shoe size, hair colour and mode of transport. The bars should have gaps between them.

**Continuous Data**
Can take any value within ranges. E.g. height, weight and time.
There should be no gaps between bars.

## Pie Charts

360° in a circle.

$$\text{Degrees} = \frac{\text{Category amount}}{\text{total}} \times 360$$



## Averages

*Hey diddle diddle!*
*The **Median's** in the middle.*
*You add, then divide for the Mean.*
*The Mode is the most common*
*one that you see,*
*And the range is the difference between.*

Median
2,2,7,9,10

Mode
2,2,7,9,10

Mean
(2 + 2 + 7 + 9 + 10)÷ 5
= 30 ÷ 5 = 6

Range
2, 2, 7, 9,10
10 - 2 = 8

## Reading From Graphs

You will often need to draw a line of best fit. This is a line that follows the trend of the points and has roughly the same number of points on each side.


Positive Correlation


Negative Correlation