HEADLANDS SCHOOL
SINCE 1965

Numeracy Policy

Written by	Numeracy Co-ordinator		
Creation date	June 2021		
Adopted by Governors	Summer 2021		
Reviewed by	Director of Maths	Date	Spring 2024
Next Review Date	Spring 2025		

Headlands School

Headlands School Numeracy Policy

Policy aims

- To raise the profile of Numeracy across the school.
- To ensure a collaborative and consistent approach to the delivery of both Numeracy and Maths across the curriculum in order to support student progress and promote successful outcomes.

Definition: Numeracy

Numeracy is a proficiency that involves confidence and competence with numbers and measures. It requires an understanding of the number system, a repertoire of computational skills and an inclination and ability to solve number problems in a variety of contexts. Numeracy also demands a practical understanding of the ways in which information is gathered by counting and measuring, and is presented in graphs, diagrams, charts and tables. (Framework for Teaching Mathematics – years 7 to 9 – DfES)

Rationale: why Numeracy is important

We use maths in every aspect of our lives at work and in practical everyday activities at home and beyond. We use maths when we go shopping or plan a holiday, decide on a mortgage or decorate a room. Decisions in life are so often based on numerical information; to make the best choices, we need to be numerate. (Why is Numeracy important? – Nationalnumeracy.org.uk)

Being numerate is, clearly, an essential life skill that will enable our students to maximise their opportunities for success in life beyond their secondary school education. The initiatives driving Numeracy and Maths across the curriculum at Headlands School echo the wider Mission Statement of the Maths department whereby:

The ambition of the Maths department is, quite simply, for students at Headlands School to develop a love for our subject! This ambition is at the heart of our curriculum offer and, in aiming to achieve it, we enable our students to leave Headlands as confident and numerate "can do" problem solvers. (Intent, Implementation and Impact – RFR)

Definition: Maths across the curriculum

Maths across the curriculum refers to curriculum content whereby the application of specific Maths skills is an explicit requirement for success within a given subject.

Rationale: why Maths across the curriculum is important

Subject leaders and teachers of mathematics and science should work together to understand how and when knowledge taught in their respective subjects is similar and different. Where there are good reasons for differences, it is important that these are made clear to students, including any rationale for this. Students will then be clear on what knowledge to use and when. (Ofsted research review series: Science)

Although the above quotation refers to the subject of Science, there are a number of other subject areas across the curriculum, for example Design & Technology and Geography, that have a similar reliance on students' confidence and competence with key Maths skills. It is

essential, therefore, that we consider the implications of Maths across the curriculum as part of our ongoing curriculum development.

Roles and Responsibilities

Numeracy Co-Ordinator

- To drive Numeracy as a whole school priority and to ensure a high profile for both Numeracy and Maths across the curriculum.
- To monitor and review the effectiveness of strategies for improving both Numeracy and Maths across the curriculum.
- To monitor collaboration between subject link persons supporting the promotion of both Numeracy and Maths across the curriculum.
- To ensure that all training and resource needs are met.

Maths department

- Nominated link person for each subject area to support the promotion of Numeracy and the delivery of Maths, where applicable, within that subject.
- To embed cross-curricular Numeracy and Maths links within the delivery of the Maths curriculum.

All staff

- To promote and celebrate Numeracy within their subject areas.
- Nominated link person within each subject to be responsible for collaborative input into initiatives supporting both Numeracy and Maths links within their subject areas.
- To model confidence and interest in Maths, irrespective of subject specialism or level of responsibility.
- Consistent use of correct mathematical language by all staff (see Appendix 2).
- Encourage students to read and write numbers and clearly (see Appendix 3).

Initiatives and Strategies

- Y7 cohort identified for Numeracy specific intervention within the Maths curriculum - staff to deliver via Numeracy Ninjas programme (see Appendix 4).
- Creation of display material promoting Numeracy across the curriculum (see Appendix 5).
- Ongoing delivery of CPD to all staff regarding Numeracy as required.
- Creation of individual subject maps identifying where and when Maths appears within their respective curricula (see Appendix 6).
- Ongoing collaboration between the Maths department and other subject areas involving the use of Maths within their respective curricula (see Appendix 7).

Appendix 1

Department	Examples of Numeracy opportunities and specific mathematical content
Art	Symmetry; transformations; paint mixtures as a ratio.
Geography	Representing data; finding averages; statistical analysis.
History	Timelines; sequencing events.
MFL	Dates; counting in other languages.
PE	Collecting real data; timing; measuring.
Science	Use of formulae, including rearranging; calculating means and percentages; calculating with positive, negative and decimal numbers; substitution; collecting and representing data.
D&T	Measurement; properties of shape; scaling and ratio.
English	Identifying important information in a text to improve students interpretation of "worded" problem solving questions.
Performing Arts	Sequencing in performance.
IT/ CS/ BS	Number bases (binary); collecting data; percentages.
RS	Timelines.
PSHE	Calculations in context e.g. finance, budgets, nutrition.

Appendix 2

Consistent use of correct mathematical language by all staff. Examples include:

- When referring to decimals say "three point one four" rather than "three point fourteen".
- Read numbers out in full e.g. 3400 reads as "three thousand, four hundred" rather than "three, four, zero, zero".
- It is important to use the correct mathematical term for the types of average being used, i.e. mean, mode or median.
- Highlight word sources e.g. quad meaning "four" in order to support students' etymological understanding of Mathematical language.
- Highlight and discuss words that have different meanings in Maths to their everyday meaning e.g. take away, product, similar.

Appendix 3

Encourage students to read and write numbers simply and clearly.

Most students are able to read, write and say numbers up to a thousand, but often have difficulty with larger numbers. It is now common practice to use spaces rather than commas between each group of three digits. For example, 34 000 instead of 34,000. The use of commas will still be found in many textbooks, however, and is not to be considered incorrect.

When reading large numbers, students should know that the final three digits are read as they are written i.e. as hundreds, tens and units. The next group of three digits are thousands and the next group of three digits are millions.

For example, 3 027 251 is to be read as "three million, twenty seven thousand, two hundred and fifty one".

Appendix 4

(i) Numeracy Ninjas example – regular retrieval practice. Students aim to work their way through a "belt" system by improving their Numeracy skills

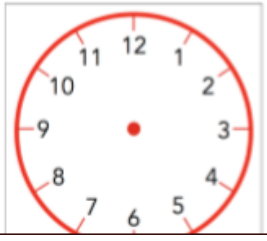
WEEK 9 SESSION 1 - Answer as many questions as you can in 5 mins

MENTAL STRATEGIES - do these in your head

Q	Question	Answer
1	□ + 12 = 20	
2	What is double 94?	
3	168 + 10	
4	45 – 20	
5	9 = 3 + □	
6	14 – 6 = 14 – 4 – □	
7	39 = 39 × □	
8	Draw hands on the clock face showing 11:10 pm	
9	63 – 10	
10	197 + 40	
	Total out of 10	

TIMESTABLES – do these in your head

Q	Question	Answer
1	7 × 3 = □	
2	80 ÷ 10 = □	
3	3 × □ = 9	
4	16 ÷ □ = 8	
5	10 × 2 = □	
6	16 ÷ 8 = □	
7	□ × 9 = 9	
8	□ ÷ 7 = 7	
9	4 × 8 = □	
10	20 ÷ 4 = □	
	Total out of 10	

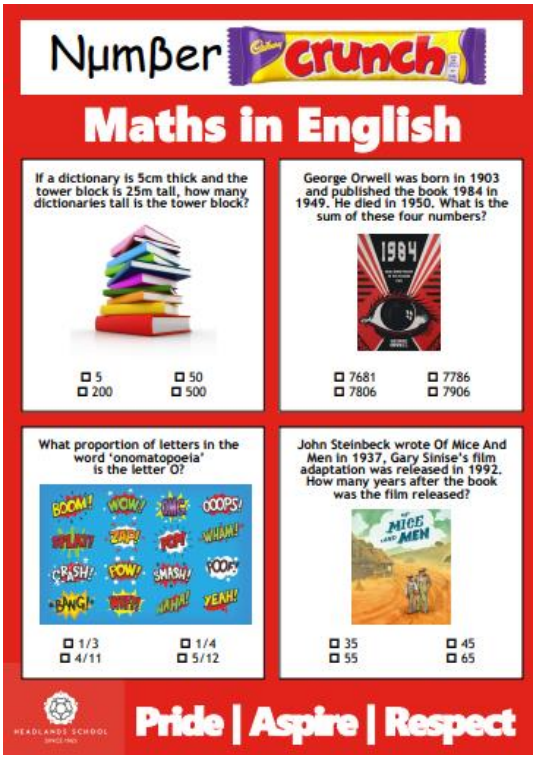


KEY SKILLS – you may use written calculations for these questions

Q	Question	Answer
1	What is the value of 4^3?	
2	1/5 = 9/□	
3	3903 + 6770	
4	(8 + 3) × 5	
5	Write 881034 in words. (Use the opposite page for your answer)	
6	0.98 ÷ 100	
7	(-5) × (-8)	
8	Round 6.5893 to 2 d.p.	
9	5 + (-8)	
10	Round 423 to 2 s.f.	
	Total out of 10	

Appendix 5

Example of display material promoting cross-curricular Numeracy



Appendix 6

Examples of cross-curricular mapping in Science and History.

Science Year 7		
	Autumn	Spring
Autumn 1	• Temp changes including negatives (2)	• Convert milli to micro (2)
Autumn2	•Using rulers and protractors for measuring angles of reflection (5)	
Spring 1	• Calculating averages (8) • Round to appropriate decimal places (7)	

Science Year 8			
	Autumn	Spring	Summer
Autumn 1	•Rearranging density equation (density (ρ (greek Rho) = mass (m) / volume (V) (3) •Rearrangingin pressure equation (pressure (P) = Force (F) / area (A) (3)	• Rearranging equations (distance travelled (s) = speed (V) x time (t)) (3) •Rearranging equation moment of force (M) = Force (F) x distance (d) (3)	
Autumn2			
Spring 1	•Calcualting mean, median and mode (8) • Estimations and trends from data (like estimating a melting point given others in the group) (8)	• Interpreting trends of graphs and correlation doesn't necessarily mean causation (for example looking at carbon dioxide levels and world temperatures and comparing) (8)	• Continuous and discontinuous data and how to represent on an appropriate graph (8)

Science Year 9			
	Autumn	Spring	Summer
Autumn 1	• Rearranging magnification equation (3) • Convert between units (2) • Rearranging formula effciency = useful output energy transfer / total input energy transfer (3) • Rearranging and using kinetic energy equation Kinetic energy = 0.5 x mass x (speed)2 or KE = ½ mv2 (3) • Rearranging and using gravitation potential energy = mass x gravitational field strength x height (Ep = m g h) (3)	• Rearranging equation and deriving units from equation Power = (current)2 x resistance (P = I2R) with units of power J/s (3) • Rearranging equation Power = potential difference x current (P=VI) (3)	• Rearranging equations Work done = force x distance (W=Fs) (3) • Rearranging equations (distance travelled (s) = speed (V) x time (t)) (3)

History Year 7						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Autumn 1						
Autumn2		• How did castles change? Shapes - square to concentric and why (5) • Fuedal system (how society was divided - percentages) (4)			• The Black Death - percentages/number of deaths (4)	
Spring 1		• Data collection (how much land, value of towns etc. Statisitcal diagrams to anaylse historical data) (8)				
Spring 2						
Summer 1						
Summer 2	• Why did William win the Battle of Hastings? Venn diagram (causes miliarty, economic, tactical, leadership) (16)				• The Black Death - ratio of deaths before to after (16)	

Appendix 7

Examples of resources that are used within the delivery of the Maths curriculum to support students' progress within Science - at Headlands School we place particular emphasis on Science as an "asymmetrically dependent" core subject (the delivery of Science requires Maths but the delivery of Maths does not require Science). We also focus on "methodology" as part of collaborative department CPD and in the delivery of our lessons.