curriculum for excellence:
numeracy
experiences and outcomes

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Numeracy
Experiences and outcomes

My learning in numeracy enables me to:

- develop essential numeracy skills which will allow me to participate fully in society
- understand that successful independent living requires financial awareness, effective money management, using schedules and other related skills
- interpret numerical information appropriately and use it to draw conclusions, assess risk, make reasoned evaluations and informed decisions
- apply skills and understanding creatively and logically to solve problems, within a variety of contexts
- appreciate how the imaginative and effective use of technologies can enhance the development of skills and concepts.

Number, money and measure

	Early	First	Second	Third	Fourth
Estimation and rounding	I am developing a sense of size and amount by observing, exploring, using and communicating with others about things in the world around me. **MNU 0-01a**	I can share ideas with others to develop ways of estimating the answer to a calculation or problem, work out the actual answer, then check my solution by comparing it with the estimate. **MNU 1-01a**	I can use my knowledge of rounding to routinely estimate the answer to a problem, then after calculating, decide if my answer is reasonable, sharing my solution with others. **MNU 2-01a**	I can round a number using an appropriate degree of accuracy, having taken into account the context of the problem. **MNU 3-01a**	Having investigated the practical impact of inaccuracy and error, I can use my knowledge of tolerance when choosing the required degree of accuracy to make real-life calculations. **MNU 4-01a**
Number and number processes including addition, subtraction, multiplication, division and negative numbers	I have explored numbers, understanding that they represent quantities and I can use them to count, create sequences and describe order. **MNU 0-02a**	I have investigated how whole numbers are constructed, can understand the importance of zero within the system and can use my knowledge to explain the link between a digit, its place and its value. **MNU 1-02a**	I have extended the range of whole numbers I can work with and having explored how decimal fractions are constructed, can explain the link between a digit, its place and its value. **MNU 2-02a**		

Number, money and measure (continued)

	Early	First	Second	Third	Fourth
Number and number processes including addition, subtraction, multiplication, division and negative numbers (continued)	I use practical materials and can 'count on and back' to help me to understand addition and subtraction, recording my ideas and solutions in different ways. **MNU 0-03a**	I can use addition, subtraction, multiplication and division when solving problems, making best use of the mental strategies and written skills I have developed. **MNU 1-03a**	Having determined which calculations are needed, I can solve problems involving whole numbers using a range of methods, sharing my approaches and solutions with others. **MNU 2-03a** I have explored the contexts in which problems involving decimal fractions occur and can solve related problems using a variety of methods. **MNU 2-03b**	I can use a variety of methods to solve number problems in familiar contexts, clearly communicating my processes and solutions. **MNU 3-03a** I can continue to recall number facts quickly and use them accurately when making calculations. **MNU 3-03b**	Having recognised similarities between new problems and problems I have solved before, I can carry out the necessary calculations to solve problems set in unfamiliar contexts. **MNU 4-03a**
			I can show my understanding of how the number line extends to include numbers less than zero and have investigated how these numbers occur and are used. **MNU 2-04a**	I can use my understanding of numbers less than zero to solve simple problems in context. **MNU 3-04a**	

Number, money and measure (continued)

	Early	First	Second	Third	Fourth
Fractions, decimal fractions and percentages including ratio and proportion	I can share out a group of items by making smaller groups and can split a whole object into smaller parts. **MNU 0-07a**	Having explored fractions by taking part in practical activities, I can show my understanding of: • how a single item can be shared equally • the notation and vocabulary associated with fractions • where simple fractions lie on the number line. **MNU 1-07a** Through exploring how groups of items can be shared equally, I can find a fraction of an amount by applying my knowledge of division. **MNU 1-07b**	I have investigated the everyday contexts in which simple fractions, percentages or decimal fractions are used and can carry out the necessary calculations to solve related problems. **MNU 2-07a** I can show the equivalent forms of simple fractions, decimal fractions and percentages and can choose my preferred form when solving a problem, explaining my choice of method. **MNU 2-07b**	I can solve problems by carrying out calculations with a wide range of fractions, decimal fractions and percentages, using my answers to make comparisons and informed choices for real-life situations. **MNU 3-07a** I can show how quantities that are related can be increased or decreased proportionally and apply this to solve problems in everyday contexts. **MNU 3-08a**	I can choose the most appropriate form of fractions, decimal fractions and percentages to use when making calculations mentally, in written form or using technology, then use my solutions to make comparisons, decisions and choices. **MNU 4-07a** Using proportion, I can calculate the change in one quantity caused by a change in a related quantity and solve real-life problems. **MNU 4-08a**

Number, money and measure (continued)

	Early	First	Second	Third	Fourth
Money	I am developing my awareness of how money is used and can recognise and use a range of coins. **MNU 0-09a**	I can use money to pay for items and can work out how much change I should receive. **MNU 1-09a** I have investigated how different combinations of coins and notes can be used to pay for goods or be given in change. **MNU 1-09b**	I can manage money, compare costs from different retailers, and determine what I can afford to buy. **MNU 2-09a** I understand the costs, benefits and risks of using bank cards to purchase goods or obtain cash and realise that budgeting is important. **MNU 2-09b** I can use the terms profit and loss in buying and selling activities and can make simple calculations for this. **MNU 2-09c**	When considering how to spend my money, I can source, compare and contrast different contracts and services, discuss their advantages and disadvantages, and explain which offer best value to me. **MNU 3-09a** I can budget effectively, making use of technology and other methods, to manage money and plan for future expenses. **MNU 3-09b**	I can discuss and illustrate the facts I need to consider when determining what I can afford, in order to manage credit and debt and lead a responsible lifestyle. **MNU 4-09a** I can source information on earnings and deductions and use it when making calculations to determine net income. **MNU 4-09b** I can research, compare and contrast a range of personal finance products and, after making calculations, explain my preferred choices. **MNU 4-09c**

Number, money and measure (continued)

	Early	First	Second	Third	Fourth
Time	I am aware of how routines and events in my world link with times and seasons, and have explored ways to record and display these using clocks, calendars and other methods. **MNU 0-10a**	I can tell the time using 12 hour clocks, realising there is a link with 24 hour notation, explain how it impacts on my daily routine and ensure that I am organised and ready for events throughout my day. **MNU 1-10a** I can use a calendar to plan and be organised for key events for myself and my class throughout the year. **MNU 1-10b** I have begun to develop a sense of how long tasks take by measuring the time taken to complete a range of activities using a variety of timers. **MNU 1-10c**	I can use and interpret electronic and paper-based timetables and schedules to plan events and activities, and make time calculations as part of my planning. **MNU 2-10a** I can carry out practical tasks and investigations involving timed events and can explain which unit of time would be most appropriate to use. **MNU 2-10b** Using simple time periods, I can give a good estimate of how long a journey should take, based on my knowledge of the link between time, speed and distance. **MNU 2-10c**	Using simple time periods, I can work out how long a journey will take, the speed travelled at or distance covered, using my knowledge of the link between time, speed and distance. **MNU 3-10a**	I can research, compare and contrast aspects of time and time management as they impact on me. **MNU 4-10a** I can use the link between time, speed and distance to carry out related calculations. **MNU 4-10b**

Number, money and measure (continued)

	Early	First	Second	Third	Fourth
Measurement	I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others. **MNU 0-11a**	I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments and units. **MNU 1-11a** I can estimate the area of a shape by counting squares or other methods. **MNU 1-11b**	I can use my knowledge of the sizes of familiar objects or places to assist me when making an estimate of measure. **MNU 2-11a** I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems. **MNU 2-11b** I can explain how different methods can be used to find the perimeter and area of a simple 2D shape or volume of a simple 3D object. **MNU 2-11c**	I can solve practical problems by applying my knowledge of measure, choosing the appropriate units and degree of accuracy for the task and using a formula to calculate area or volume when required. **MNU 3-11a**	I can apply my knowledge and understanding of measure to everyday problems and tasks and appreciate the practical importance of accuracy when making calculations. **MNU 4-11a**

Information handling

	Early	First	Second	Third	Fourth
Data and analysis	I can collect objects and ask questions to gather information, organising and displaying my findings in different ways. **MNU 0-20a** I can match objects, and sort using my own and others' criteria, sharing my ideas with others. **MNU 0-20b** I can use the signs and charts around me for information, helping me plan and make choices and decisions in my daily life. **MNU 0-20c**	I have explored a variety of ways in which data is presented and can ask and answer questions about the information it contains. **MNU 1-20a** I have used a range of ways to collect information and can sort it in a logical, organised and imaginative way using my own and others' criteria. **MNU 1-20b**	Having discussed the variety of ways and range of media used to present data, I can interpret and draw conclusions from the information displayed, recognising that the presentation may be misleading. **MNU 2-20a** I have carried out investigations and surveys, devising and using a variety of methods to gather information and have worked with others to collate, organise and communicate the results in an appropriate way. **MNU 2-20b**	I can work collaboratively, making appropriate use of technology, to source information presented in a range of ways, interpret what it conveys and discuss whether I believe the information to be robust, vague or misleading. **MNU 3-20a**	I can evaluate and interpret raw and graphical data using a variety of methods, comment on relationships I observe within the data and communicate my findings to others. **MNU 4-20a**

Information handling (continued)

	Early	First	Second	Third	Fourth
Ideas of chance and uncertainty		I can use appropriate vocabulary to describe the likelihood of events occurring, using the knowledge and experiences of myself and others to guide me. **MNU 1-22a**	I can conduct simple experiments involving chance and communicate my predictions and findings using the vocabulary of probability. **MNU 2-22a**	I can find the probability of a simple event happening and explain why the consequences of the event, as well as its probability, should be considered when making choices. **MNU 3-22a**	By applying my understanding of probability, I can determine how many times I expect an event to occur, and use this information to make predictions, risk assessment, informed choices and decisions. **MNU 4-22a**

Appendix – Explanations

MNU 1-10a

Developing a child's understanding of 12 hour time in depth takes place through first level. Young learners will become familiar with 24 hour notation in their surroundings through TV listings, computers, cookers, DVD players and videos. They will naturally make links with 24 hour notation and the routines in their day. The next stage of development, the formal manipulation of 24 hour time, is included in MNU 2-10a – understanding and using timetables.

MNU 4-03a

The ability to apply and transfer familiar concepts to solve problems is fundamental for mathematical developments. As one example, young people will be familiar with the fact that 2.5 is a quarter of 10 and will know how to find 10% of a quantity. When asked to consider a less familiar calculation e.g. 2.5% of £840 the combination of these previously-acquired skills could lead them to suggest 1/4 of £84 to be a possible solution.

MNU 3-07a, MNU 4-07a

MNU 3-07a develops skills that allow learners to carry out calculations involving fractions, decimal fractions and percentages and then make decisions and choices. For example: which is the better buy, 3 for the price of 2 or a 30% discount?

MNU 4-07a develops the skills that allow learners to use their knowledge of interrelationships between fractions, decimal fractions and percentages to choose an elegant route to the solution. As an example, when asked to evaluate a discount of 12.5% on an item costing £800, an elegant solution would involve the understanding that 12.5% is 1/8, and that calculating 1/8 of £800 will provide the answer to the size of the discount.

MNU 4-10a

Using time efficiently is necessary in the workplace, in lifelong learning, leisure time and all other aspects of daily life. The ability to estimate how long different tasks take and then build a programme of sequential tasks is a critical numeracy skill which is fundamental to effective time management.

MNU 4-01a, MNU 4-11a

MNU 4-01a and MNU 4-11a are closely related. MNU 4-01a develops the concept of tolerance within estimating and rounding whereas MNU 4-11a is the practical application within measurement.   The ability to work to the appropriate degree of accuracy is an essential numeracy skill. The degree of accuracy demanded varies of course according to the task. For example, the degrees of accuracy needed for measuring the dimensions of a room before buying a new carpet, measuring the opening when fitting a new door or machining a moving part within a combustion engine will be quite different. Or again, when a 4 metre length of wood is cut into 7 equal pieces, should each length be 0.57142 metres or will 0.57 metres be acceptable? The ability to handle spurious precision and report using an appropriate degree of accuracy should always be encouraged.

MNU 4-20a

This experience and outcome relates to a learner's developing skills in interpreting a data set or the information contained in, for example, box plots, stem and leaf diagrams, line graphs, bar graphs, histograms and pie charts. Having considered this information it is important for learners to understand key features of these different ways of presenting information in order to be able to select appropriate forms and communicate findings to others.

MNU 4-22a

MNU 4-22a is intended to develop the link between simple probability and expected frequency. Having gained an understanding of these two concepts, the ability to assess the impact of a particular course of action based on risks and benefits is a very important skill for life.