Functional Skills Mathematics standards mapped to Numeracy Core Curriculum and Key Skills Application of Number Standards

Level 2:

Functional Skills Mathematics	Key Skills Application of Number
Process: **Represent ⇒ Analyse ⇒ Interpret**	**Process:** **Collect ⇒ Process ⇒ Interpret**
Skill standards **Learners can:**	**Key Skills Application of Number reference (Part B)**
Represent, ie, • Understand routine and non-routine problems in familiar and unfamiliar contexts and situations • Identify the situation or problems and identify the mathematical methods needed to tackle them • Select a range of mathematics to find solutions	**Collect, ie,** **N2.1 Interpret information from a suitable source.** 2.1.1 choose how to get the information you need to meet the purpose of your activity 2.1.2 obtain relevant information 2.1.3 choose appropriate methods to get the results you need.

Analyse, ie, • Apply a range of mathematics to find solutions • Use appropriate checking procedures and evaluate their effectiveness at each stage	**Process, ie,** **N2.2 Use your information to carry out calculations to do with:** a. amounts or sizes b. scales or proportion c. handling statistics d. using formulae. 2.2.1 carry out calculations, clearly showing your methods and levels of accuracy 2.2.2 check your methods to identify and correct any errors, and make sure your results make sense.
Interpret, ie, • Interpret and communicate solutions to multistage practical problems in familiar and unfamiliar contexts and situations • Draw conclusions and provide mathematical justifications	**Interpret, ie,** **N2.3 Interpret the results of your calculations and present your findings.** 2.3.1 select effective ways to present your findings 2.3.2 present your findings clearly using a chart, graph or diagram and describe your methods 2.3.3 use more than one way of presenting your findings 2.3.4 describe what your results tell you and how they meet your purpose.

Coverage and range	Amplification	Numeracy Core Curriculum reference	Key Skills Application of Number reference (Part A)
Understand and use positive and negative numbers of any size in practical contexts	Read, write, order and compare positive and negative numbers of any size. Understand the meaning of negative numbers in a practical context, for example temperature below zero, loss in trading.	**N1/L2.1** read, write, order and compare positive and negative numbers of any size in a practical context	**L2.A3** read and understand numbers used in different ways, including negative numbers *(eg for losses in trading, low temperatures)*
Carry out calculations with numbers of any size in practical contexts, to a given number of decimal places	Use efficient methods to carry out calculations involving two or more steps, including efficient use of a calculator. Understand multiple and factor, and relate them to multiplication and division facts. Understand primes and know prime numbers up to 20. Know and use strategies to check answers, for example approximate calculation, estimation. Give the level of accuracy of results, for example nearest pound, nearest hundredth, in the context of money 12.458 on the calculator means £12.46.	**N1/L2.2** carry out calculations with numbers of any size using efficient methods	**L2.A8** carry out calculations involving two or more steps, with numbers of any size with and without a calculator **L2.A9** show clearly your methods of carrying out calculations and give the level of accuracy of your results **L2.A18** check your methods in ways that pick up faults and make sure your results make sense.

Understand, use and calculate ratio and proportion, including problems involving scale	Understand ratio written in the form 3:2, sharing £60 in the ratio 3:2. Understand how to work out the number of parts in a given ratio, and the value of 1 part. For example, the total cost for a job is £200. If the ratio between labour and materials is 5:3, how much was the labour? Work out dimensions from scale drawings. For example, the scale of a plan is 1:20. If a room is 12m by 8m, what are the dimensions, in cm, on the plan? Estimate amounts using proportions, for example the length of the room is about three times its width, the stockroom is about two-thirds full.	**N1/L2.3** calculate ratio and direct proportion **MSS1/L2.10** work out dimensions from scale drawings (e.g. 1:20)	**L2.A14** use proportion and calculate using ratios where appropriate **L2.A12** work out areas and volumes *(eg area of an L-shaped room, number of containers to fill a given space)* **L2.A13** work out dimensions from scale drawings *(eg using a 1:20 scale)* **L2.A4** estimate amounts and proportions
Understand and use equivalencies between fractions, decimals and percentages	Understand that fractions, decimals and percentages are different ways of expressing the same thing. Use fractions, decimals and percentages to order and compare amounts or quantities and to solve practical problems. For example, what decimal must I multiply by to find the cost after a reduction of 25%? Choose to use a fraction, decimal or	**N2/L2.2** identify equivalencies between fractions, decimals and percentages **N2/L2.1** use fractions to order and compare amounts or quantities **N2/L2.5** order, approximate and compare decimals when solving practical problems **N2/L2.7** order and compare	**L2.A10** work with and convert between fractions, decimals and percentages

	percentage to work out VAT. Know how to change fractions to equivalent fractions with a common denominator. Identify equivalences between fractions, decimals and percentages. Evaluate one number as a fraction or percentage of another. Understand that quantities must be in the same units to evaluate and compare.	percentages (**and understand percentage increase and decrease-** *Parts in bold do not appear to be in the functional skills elements.)* Part of **N2/L2.1** use fractions to order and compare amounts or quantities **N2/L1.3** recognise equivalencies between common fractions, percentages and decimals (e.g. 50% = $^1/_2$ or 0.25 = $^1/_4$) and use these to find part or whole-number quantities **N2/L2.3** evaluate one number as a fraction of another **N2/L2.9** evaluate one number as a percentage of another	
Understand and use simple formulae and equations involving one or two operations	Understand that words and symbols in expressions and formulae represent variable quantities (numbers) **not** things, so 2a + 2b cannot be explained as 2 apples and 2 bananas.	**N1/L2.4** evaluate expressions and make substitutions in given formulae in words and symbols to produce results	**L2.A17** understand and use given formulae *(eg for calculating volumes, areas such as circles, insurance premiums, V=IR for electricity)*

	Understand that the contents of brackets must be worked out first. Understand that when there is no operator between a number and a variable, two variables, or a bracket, multiplication is implied. Make substitutions in given formulae in words and symbols.		
Recognise and use 2D representations of 3D objects	Recognise and use common 2D representations of 3D objects, for example in maps and plans. Solve problems involving 2D shapes and parallel lines, for example laying carpet tiles.	**MSS2/L2.1** recognise and use common 2-D representations of 3-D objects (e.g. in maps and plans) **MSS2/L2.2** solve problems involving 2-D shapes and parallel lines (e.g. in laying down carpet tiles)	**L2.A2**read and understand tables, charts, graphs and diagrams **L2.A12** work out areas and volumes *(eg area of an L-shaped room, number of containers to fill a given space)*
Find area, perimeter and volume of common shapes	Know what is meant by perimeter, circumference, diameter and radius. Understand and use given formulae for finding perimeters and areas of common and composite shapes, circumference and area of circular surfaces, for example rooms or plots of land. Understand the symbol for pi and know its approximate value	**MSS1/L2.7** understand and use given formulae for finding perimeters and areas of regular shapes (e.g. rectangular and circular surfaces) **MSS1/L2.8** understand and use given formulae for finding areas of composite shapes (e.g. non-rectangular rooms or plots of land)	**L2.A17** understand and use given formulae *(eg for calculating volumes, areas such as circles, insurance premiums, V=IR for electricity)* **L2.A13** work out dimensions from scale drawings *(eg using a 1:20 scale)*

	Understand and use given formulae for finding volumes of common shapes, for example cuboid or cylinder. Know that measurements must be in the same units when calculating perimeters, areas or volumes.	**MSS1/L2.9** understand and use given formulae for finding volumes of regular shapes (e.g. a cuboid or cylinder)	
Use, convert and calculate using metric and, where appropriate, imperial measures	Calculate with sums of money and convert between currencies, understanding buying and selling rates, and that exchange rates are not fixed. Calculate, measure and record dates and times in different formats and know the relationship between units of time, for example second, minute, hour, day, week, month and year. Estimate, measure and compare length, distance, weight, capacity and temperature, including reading celsius and fahrenheit scales and conversion tables. Know common imperial units, for example yard, foot, inch, mile, ton, pound, ounce, pint, gallon, and metric measures, for example mm, cm, m, km, mg, g, kg, tonne, ml, l.	**MSS1/L2.1** calculate with sums of money and convert between currencies **MSS1/L2.2** calculate, measure and record time in different formats **MSS1/L2.3** estimate, measure and compare length, distance, weight and capacity using metric and, where appropriate, imperial units **MSS1/L2.4** estimate, measure and compare temperature, including reading scales and conversion tables	**L2.A10**work with and convert between fractions, decimals and percentages **L2.A11**convert measurements between systems *(eg from pounds to kilograms, between currencies)*

	Use mixed units of measure within the same system, for example m and cm, giving answer in m. Calculate with units of measure between systems, using conversion tables and scales, and know how to use approximate conversion factors, for example a kilogram is a bit more than 2lb, I lb is approximately 450g, a litre is less than 2 pints, a gallon is about 4.5 litres, a metre is a bit more than a yard, an inch is about 2.5cm, a foot is about 30cm, 5 miles is about 8km.	**MSS1/L2.5** calculate with units of measure within the same system **MSS1/L2.6** calculate with units of measure between systems, using conversion tables and scales, and approximate conversion factors	
Collect and represent discrete and continuous data, **using ICT where appropriate**	Get relevant information from different sources, for example written and graphical material, first-hand by measuring or observing. Know how to extract discrete and continuous data from tables, spreadsheets, bar charts, pie charts and line graphs with more than one line. Draw conclusions from scatter diagrams, understanding that	**HD1/L2.2** collect, organise and represent discrete and continuous data in tables, charts, diagrams and line graphs **HD2/L2.1** identify the range of possible outcomes of combined events and record the information using diagrams or tables **HD1/L2.1** extract discrete and continuous data from tables,	**L2.A1** get relevant information from different sources *(eg from written and graphical material, first-hand by measuring or observing)* **L2.A2** read and understand tables, charts, graphs and diagrams **L2.A5** read scales on a range of equipment to given levels of accuracy *(eg to the nearest 10mm or nearest inch)* **L2.A6** make accurate observations *(eg count the*

	correlation does not imply causality. Understand how to use scales in diagrams, charts and graphs. Know how to choose a suitable format and scale to fit the data and ensure all charts, graphs and diagrams are labelled.	diagrams, charts and line graphs	*number of customers per hour)* **L2.A7** select appropriate methods to get the results you need, including grouping data when this is appropriate *(eg heights, salary bands)*. **L2.A13** work out dimensions from scale drawings *(eg using a 1:20 scale)* **L2.A19** select effective ways to present your findings
Use and interpret statistical measures, tables and diagrams for discrete and continuous data, **using ICT where appropriate, statistical measures, tables and diagrams**		**New?**	**L2.A20** construct and use tables, charts and graphs and label with titles, scales, axes, and keys as appropriate **L2.A21** highlight the main points of your findings and describe your methods **L2.A22** describe what your results tell you and how they meet your purpose.
Use statistical methods to investigate situations	Find the mean, median and mode and understand that each average is useful for different purposes.	**HD1/L2.3** find the mean, median and mode, and use them as appropriate to	**L2.A15** compare sets of data of an appropriate size such as 20 items each *(eg using*

	Use the range to describe the spread within a set of data, for example sales results. Use the average and range to compare two sets of data.	compare two sets of data **HD1/L2.4** find the range and use it to describe the spread within sets of data	*percentages, using mean, median, mode)* **L2.A16** use range to describe the spread within sets of data
Use probability to assess the likelihood of an outcome	Understand that probability is an expression of likelihood and can be written as a fraction, decimal or percentage. Understand that probability is expressed as the number of ways an event can happen compared with the number of possible outcomes, for example the probability of choosing a red card from a pack of cards is 26/52 – ½ a club 13/52 = ¼ and an ace 4/52 = 1/13. Identify the range of possible outcomes of combined events and record the information in tree diagrams or tables. For example, one bag of 10 balls contains six red balls. A spinner divided into five equal sections has two red sections. In which situation is red most likely?		**NEW** **Not in current AoN standards**

		These elements do not appear to be covered in functional skills at this level **N2/L2.7** order and compare percentages (**and understand percentage increase and decrease-** *Parts in bold do not appear to be in the functional skills elements.)* **N2/L2.8** find percentage parts of quantities and measurements **N2/L2.10** use a calculator to calculate efficiently using whole numbers, fractions, decimals and percentages **In functional skills Level 1** **MSS1/L2.10** work out dimensions from scale drawings (e.g. 1:20)	