

## Key Stage 5 – Functional Maths Overview

	Term One						Term Two							
Week	1	2	3	4	5	6	1	2	3	4	5	6	7	8
Autumn	Money						Capacity/Weight							
	Term Three					Term Four								
Week	1	2	3	4	5	1	2	3	4	5	6			
Spring	Time					Money								
	Term Five						Term Six							
Week	1	2	3	4	5	6	1	2	3	4	5	6	7	8
Summer	Statistics						Time							

Maths at Fitzwaryn School is there to help our pupils become fluent in the fundamentals of mathematics; ensure that pupils develop confidence and mental fluency which is essential to everyday life, critical to science, technology and engineering and necessary for financial literacy and most forms of employment.

This is done by:

- Solving problems by helping students to apply their mathematics to a variety of routine and non-routine problems, including breaking down problems into a series of simpler steps and persevering in seeking solutions.
- Reasoning mathematically by following a line of enquiry, developing an argument, justification or proof using mathematical language.
- Most importantly making maths fun and linked to real life.

### Functional Skills

Functional Maths is embedded throughout the curriculum, in practical real-life situations. These include, but are not limited to:

- Weekly shopping and budgeting
- Weekly cooking experiences for the pupils
- Enterprise projects

We have weekly Functional Skills lessons where students recap the specific maths skills and transfer them to real life situations. The topics that we cover can be seen in the KS5 overview. Other elements of mathematics are covered through starters and plenaries.

Functional Skills are practical skills in Maths that enable our students to deal with practical problems and challenges. They allow them to work confidently, effectively, and independently in everyday life. For example, they help us recognise good-value deals when making purchases. Functional Skills are the key to success when pupils are becoming to be as independent as possible.

### Teaching for Mastery

#### **Concrete – Pictorial – Abstract**

We believe that all pupils, when introduced to a new concept, should have the opportunity to build competency by taking this approach.

**Concrete** – pupils should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

**Pictorial** – alongside concrete, pupils should use pictorial representations. These representations can then be used to help reason and solve problems.

**Abstract** – both concrete and pictorial representations should support pupils' understanding of abstract methods.

	<b>Intent</b>	<b>Implementation</b>	<b>Impact</b>
Personal Progress	Students will work on mathematical concepts to support them in their journey for life after school enabling greater independence.	Students will experience this through personalised learning units to encourage maths in the world around them e.g. early number, measure and sequence and pattern.	Students will be able to engage mathematically with the world around them by noticing patterns, numbers and more within the community.
Students working towards EL1	Students will further develop their skills in number, time, money, measure and data with a focus on real-life contexts.	Students will develop their maths skills in explicit lessons and will then apply them in a wide range of real-life contexts. Learning outcomes will be matched to promote independence and confidence.	Students, with support, will be able to apply their maths skills to begin to live independently within the community, to care for themselves and to make choices about their lives.
Students working between EL1 – EL3	Build on gaps in mathematical knowledge. Give students greater independence with number, time, money, measure and data.	Students will be working on their Functional Skills qualifications from Entry Level 1 – Entry Level 3. Learning outcomes will be matched to promote independence and confidence.	Students will have gained maths skills to live independently in the community, to care for themselves and to make choices about their lives. They will have had the opportunity to have their achievements formally recognised through the Open Awards Functional Skills tests.
Students working at Level 1	Making sure students are secure and can understand and use mathematical information confidently to help them function independently in life after school.	Units that are at Level 1, give our students the best opportunity to explore courses at a higher level. Units are specifically selected to support independence and further study opportunities.	Students will develop a positive attitude to possible courses available to them after sixth form. They will have gained an ability to use some of their key maths skills in their daily lives. They will have a greater understanding of careers and courses available to them linked to their Level 1 qualification. They will have the confidence and independence to use and apply their mathematical skills consistently in their daily lives.

## What knowledge is needed for the Functional Skills?

### Using numbers and the number system – whole numbers

#### Entry Level 1

- Read, write, order and compare numbers up to 20
- Use whole numbers to count up to 20 items including zero
- Add numbers which total up to 20, and subtract numbers from numbers up to 20
- Recognise and interpret the symbols, +, - and = appropriately

#### Entry Level 2

- Count reliably up to 100 items
- Read, write, order and compare numbers up to 200
- Recognise and sequence odd and even numbers up to 100
- Recognise and interpret the symbols +, -, x, ÷ and = appropriately
- Add and subtract 2-digit numbers
- Multiply whole numbers in the range 0x0 to 12x12 (times tables)
- Know the number of hours in a day and weeks in a year. Be able to name and sequence
- Divide two-digit whole numbers by single-digit whole numbers and express remainders
- Approximate by rounding to the nearest 10, and use this rounded answer to check results
- Recognise simple fractions (halves, quarters and tenths) of whole numbers and shapes
- Read, write and use decimals to one decimal place

#### Entry Level 3

- Count, read, write, order and compare numbers up to 1000
- Add and subtract using three-digit whole numbers
- Divide three-digit whole numbers by single- and double-digit whole numbers and express remainders
- Multiply two-digit whole numbers by single- and double-digit whole numbers
- Approximate by rounding numbers less than 1000 to the nearest 10 or 100 and use this rounded answer to check results
- Recognise and continue linear sequences of numbers up to 100
- Read, write and understand thirds, quarters, fifths and tenths including equivalent forms
- Read, write and use decimals up to two decimal places
- Recognise and continue sequences that involve decimals

#### Level 1

- Read, write, order and compare large numbers (up to one million)
- Recognise and use positive and negative numbers

- Multiply and divide whole numbers and decimals by 10, 100 and 1000
- Use multiplication facts and make connections with division facts
- Use simple formulae expressed in words for one or two-step operations
- Calculate the squares of one-digit and two-digit numbers
- Follow the order of precedence of operators
- Read, write, order and compare common fractions and mixed numbers
- Find fractions of whole number quantities or measurements
- Read, write, order and compare decimals up to three decimal places
- Add, subtract, multiply, and divide decimals up to two decimal places
- Approximate by rounding to a whole number or to one or two decimal places
- Read, write, order and compare percentages in whole numbers
- Calculate percentages of quantities, including simple percentage increases and decreases by 5% and multiples thereof
- Estimate answers to calculations using fractions and decimals
- Recognise and calculate equivalences between common fractions, percentages and decimals
- Work with simple ratio and direct proportions

### Using common measures, shape and space

#### Entry Level 1

- Recognise coins and notes and write them in numbers with the correct symbols (£ and p), where these involve numbers up to 20
- Read 12 hour digital and analogue clocks in hours
- Know the number of the days in a week, months, and seasons in a year. Be able to name and sequence
- Describe and make comparisons in words between measures of items including size, length, width, height, weight and capacity
- Identify and recognise 2D and 3D shapes including circle, cube, rectangle (incl. square) and triangle
- Use everyday positional vocabulary to describe position and direction including left, right, in front, behind, under and above.

#### Entry Level 2

- Calculate with money with pence up to one pound and in whole pounds of multiple items and write the correct symbols (£ and p)

- Read and record time in common date formats, and read time displayed on analogue clocks in hours, half hours and quarter hours, and understand hours from a 24-hour digital clock
- Use metric measures of length including millimetres, centimetres, metres and kilometres
- Use measures of weight including grams and kilograms
- Use measures of capacity including millilitres and litres
- Read and compare positive temperatures
- Read and use simple scales to the nearest labelled division
- Recognise and name 2D and 3D shapes including pentagons, hexagons, cylinders, cuboids, pyramids and spheres
- Describe the properties of common 2D and 3D shapes including numbers of sides, corners, edges, faces, angles and base
- Use appropriate positional vocabulary to describe position and directions including between, inside, outside, middle, below, on top, forwards and backwards

### Entry Level 3

- Calculate with money using decimal notation and express money correctly in writing in pounds and pence
- Round amounts of money to the nearest £1 or 10p
- Read, measure and record time using am and pm
- Read time from analogue and 24 hour digital clocks in hours and minutes
- Use and compare measures of length, capacity, weight and temperature using metric or imperial units to the nearest labelled or unlabelled division
- Compare metric measures of length including millimetres, centimetres, metres, and kilometres
- Compare measures of weight including grams and kilograms
- Compare measures of capacity including millilitres and litres
- Use a suitable instrument to measure mass and length
- Sort 2D and 3D shapes using properties including lines of symmetry, length, right angles, angles including in rectangles and triangles
- Use appropriate positional vocabulary to describe position and direction including eight compass points and including full/half/quarter turns

### Level 1

- Calculate simple interest in multiples of 5% on amounts of money
- Calculate discounts in multiples of 5% on amounts of money
- Convert between units of length, weight, capacity, money and time, in the same system
- Recognise and make use of simple scales on maps and drawings

- Calculate the area and perimeter of simple shapes including those that are made up of a combination of rectangles
- Calculate the volumes of cubes and cuboids
- Draw 2D shapes and demonstrate an understanding of line symmetry and knowledge of the relative size of angles
- Interpret plans, elevations and nets of simple 3D shapes
- Use angles when describing position and direction, and measure angles in degrees

### Handling Information and data

#### Entry Level 1

- Read numerical information from lists
- Sort and classify objects using a single criterion
- Read and draw simple charts and diagrams including a tally chart, block diagram/graph

#### Entry Level 2

- Extract information from lists, tables, diagrams and bar charts
- Make numerical comparisons from bar charts
- Sort and classify objects using two criteria
- Take information from one format and represent the information in another format including use of bar charts

#### Entry Level 3

- Extract information from lists, tables, diagrams and charts and create frequency tables
- Interpret information, to make comparisons and record changes, from different formats including bar charts and simple line graphs
- Organise and represent information in appropriate ways including tables, diagrams, simple line graphs and bar charts

#### Level 1

- Represent discrete data in tables, diagrams and charts including pie charts, bar charts and line graphs
- Group discrete data and represent grouped data graphically
- Find the mean and range of a set of quantities
- Understand probability on a scale from 0 (impossible) to 1 (certain) and use probabilities to compare the likelihood of events
- Use equally likely outcomes to find the probabilities of simple events and express them as fraction

## Solving mathematical problems and decision making

### Level 1

Learners are expected to be able to use the knowledge and skills listed in the Functional Skills Mathematics Level 1 Subject Content to recognise and obtain a solution or solutions a straightforward problem. A straightforward problem is one that requires learners to either work through one step or process or to work through more than one connected step or process. Individual problems are based on the knowledge and/or skills in the mathematical content areas (number and the number system; common measures, shape and space; information and data).

At this level it is expected that the learner will be able to address individual problems, some of which draw upon a combination of any two of the mathematical content areas and require learners to make connections between those content areas.

Attributes, of which one or more may be present in a single task to consider it as problem solving, are listed below:

- Tasks that have little or no scaffolding: there is little guidance given to the learner beyond a start point and a finish point. Questions do not explicitly state the mathematical process(es) required for the solution. 9 of 18
- Tasks that provide for multiple representations, such as the use of a sketch or a diagram as well as calculations.
- The information is not given in mathematical form or in mathematical language; or there is a need for the results to be interpreted or methods evaluated, for example, in a real-world context.
- Tasks have a variety of techniques that could be used.
- The solution requires understanding of the processes involved rather than just application of the techniques.
- The task requires two or more mathematical processes or may require different parts of mathematics to be brought together to reach a solution.

Learners are expected to be able to:

- Read, understand and use mathematical information and mathematical terms used at this level;
- Address individual problems as described above;
- Use knowledge and understanding to a required level of accuracy;
- Analyse and interpret answers in the context of the original problem;
- Check the sense, and reasonableness, of answers; and
- Present results with appropriate explanation and interpretation demonstrating simple reasoning to support the process and show consistency with the evidence presented. The context of individual problems Level 1 will require some comprehension in order for the learner to be able to identify and carry out an appropriate mathematical approach independently