

MATHEMATICS

Core Curriculum Programme

National Qualifications Framework

Year 10

Level 1

Expectations

In order to achieve **Level 1** the learner is expected to demonstrate basic competency in applying mathematics in simple everyday situations. The student's competency is demonstrated by an ability to (a) carry out straightforward numerical calculations encountered in shopping, home, workshop or office environments (b) read basic measurement scales (c) extract and interpret straightforward information from tables and charts (d) solve problems that require a combination of basic mathematical knowledge and skills.

Assessment

A learner working at **Level 1** will be required to demonstrate the ability to understand the nature of numbers and make use of them. Assessment tasks will therefore involve simple mathematical reasoning and straightforward calculations encountered in practical real-life situations presented **in aural, oral and visual** forms to reduce demands on reading and writing which may hinder the demonstration of these competencies. Pencil and paper jottings are accepted as a means of supporting the mental processes involved when solving simple mathematical problems or tasks.

KNOWLEDGE (theoretical and and or factual)

At Level 1: **Basic General Knowledge.**

SKILLS (cognitive-logical, intuitive and creative thinking, practical-manual dexterity, use of methods, materials, tools and instruments)

At Level 1: **Basic skills required to carry out simple tasks.**

COMPETENCES (responsibility and autonomy)

At Level 1: **Work or study under direct supervision in a structured context.**

STRANDS		KNOWLEDGE	SKILLS	COMPETENCES	Learning Outcomes		
Number and Applications	Number	Knows how to count, read, write and order positive whole numbers.			i	Read and write numbers in figures and words. (Up to 1,000,000)	
					ii	Understand place value through partitioning of a six-digit number into thousands, hundreds, tens and ones.	
					iii	Arrange a set of numbers in ascending and descending order.	
					iv	Recognise and generate the next odd or even number.	
	Number Operations	Understands the concepts associated with the four number operations (e.g. that multiplication is repeated addition).				i	Use mental addition and subtraction of numbers up to 100.
						ii	Use pencil-and-paper addition and subtraction of numbers up to four digits.
						iii	Learn multiplication facts up to 10 x 10.
						iv	Multiply whole numbers by any one-digit number.
						v	Divide whole numbers by a one-digit number.
						vi	Multiply and divide whole numbers by 10, 100 and 1000.
	Fractions, Decimals and Percentages	Understands the language and notation of simple fractions, decimals and percentages as applied in real life situations.	Uses simple fractions to find parts of a quantity in real life contexts (e.g. $\frac{1}{2}$ cm, $\frac{1}{100}$ m, $\frac{1}{4}$ h, €1/10).			i	Write a fraction that is equivalent to another fraction.
						ii	Add and subtract two proper fractions where one of the denominators is a multiple of the other.
						iii	Find a fraction of a quantity.
iv						Arrange a set of decimal numbers up to 3 d.p. in ascending and descending order.	
v						Add and subtract decimal numbers up to 3 d.p.	
vi						Multiply and divide decimal numbers by 10,100, 1000.	
vii						Multiply decimal numbers by a one-digit number.	
viii						Find a percentage of a quantity (50%, 25%, 10%, 20%,75%).	

STRANDS		KNOWLEDGE	SKILLS	COMPETENCES	Learning Outcomes		
Number and Applications	Coordinates	Understands why coordinates are required to locate a point (in the first quadrant).	Describes the location of a point in the first quadrant using coordinates.		i	Read, write and plot coordinates using ordered pairs in the first quadrant.	
	Time	Understands time on a 12 hour and 24 hour clock.	Calculates time intervals; Reads analogue and digital clocks.		i	Convert 12-hour to 24-hour clock and vice versa (on the hour, half hour, quarter past, quarter to).	
					ii	Read, interpret and use a calendar and a timetable (on the hour, half hour, quarter past, quarter to).	
					iii	Convert between different units of time, limited to one conversion.	
					iv	Work out simple problems involving time and time intervals (Restrict to hour, half hour and quarter hour).	
	Rounding		Rounds a figure to the nearest unit, ten, hundred or thousand.			i	Estimate and round numbers to the nearest whole number.
						ii	Estimate and round numbers to the nearest ten, hundred, and thousand.
	Calculator		Uses the calculator to work out calculations involving any of the four operations.			i	The use of the calculator is to be restricted to calculations involving the four rules. In order to use the calculator efficiently, students need to learn how to apply checks on the reasonableness of the answer through rough estimates.
	Problem Solving		Sorts out which operations can be used to work out simple problems situated in familiar everyday contexts (to include problems involving money, length, weight, temperature, etc.); Carries out calculations and solves simple problems involving the use of the four operations.	Displays confidence in using mathematics in simple everyday applications of the subject ; Attempts to understand a problem before trying to solve it ; Uses simple mathematical language to talk about the method and solution of a simple problem ; Checks the reasonableness of the solution in a supportive environment.		i	Apply the four rules in simple problems involving length, weight and capacity.
						ii	Apply the four rules in simple problems related to money.
iii						Emphasise the importance of carrying out rough estimates to check the accuracy of calculations especially when using a calculator.	
Directed Numbers	Recognises negative numbers occurring in real life situations.				i	Understand and use the numberline for positive and negative whole numbers: identifying missing positive and negative numbers on a number line.	

STRANDS		KNOWLEDGE	SKILLS	COMPETENCES	Learning Outcomes	
Shape Space and Measurement	Shape	Recognises simple flat and solid shapes.	Identifies, sorts and classifies flat and solid shapes.		i	Recognise and know properties of special triangles: scalene, isosceles, equilateral and right-angled.
					ii	Recognise and know properties of the square and the rectangle. Recognise rhombus and parallelogram.
					iii	Draw squares, rectangles and triangles.
					iv	Identify the number of faces, edges and vertices of the following solid shapes: cube, cuboid, cylinder, cone and sphere.
					v	Understand that the length of the diameter is twice that of the radius.
					vi	Using compasses to draw circles and circle patterns given the radius or diameter.
					vii	Recognise and draw simple tessellations.
					viii	Identify and draw lines of symmetry.
					ix	Complete a figure to make it symmetrical about either a horizontal or a vertical line.

STRANDS		KNOWLEDGE	SKILLS	COMPETENCES	Learning Outcomes		
Shape Space and Measurement	Measurement	Knows the units of measurement for length, area, weight and capacity.	Displays a feel for the units of measurement as applied in real life contexts ; Measures length, weight and capacity using appropriate metric units.		i	Use appropriate instruments to measure length, weight (mass) and time intervals and capacity.	
					ii	Convert km to m; m to cm; cm to mm and vice versa.	
					iii	Convert kg to g and vice versa.	
					iv	Convert litres to millilitres and vice versa.	
					v	Estimate and measure the perimeter of regular and irregular shapes and objects.	
					vi	Find the perimeter of squares and rectangles by calculation (given the length and breadth).	
					vii	Find the perimeter of compound shapes.	
					viii	Find the area of squares and rectangles using formula	
					ix	Find the area of right-angled triangles (as half the area of a rectangle).	
					x	Find the area of compound shapes made up of squares, rectangles and right-angled triangles only.	
					xi	Find the volume of cubes and cuboids using formula.	
	Angles	Understand the concept of an angle				i	Understand the concept of an angle as the turn of a line around a point measured in degrees.
						ii	Know that a whole turn is 360° , the angle on a straight line is 180° and a right angle is 90° .
						iii	Be able to recognise angles which are acute, obtuse and reflex.
						iv	Identify the angle between the main four compass directions

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Algebra	Number Machines and Sequences	Understands the purpose and meaning of a formula in words.	Uses a simple formula in words.		i	Describe verbally and construct a number machine involving up to two operations.	
					ii	Work out the output of a number machine up to two operations.	
					iii	Describe the rule for a given sequence involving one operation.	
					iv	Extend and complete simple number sequences. E.g. 2, 4, 6, __, __. and 2, __, 6, __, 10.	
					v	Generate a sequence from a rule given in words.	
Data Handling	Data	Knows that data can be represented in pictorial forms by means of tables, diagrams and charts with simple scales.	Organises and presents data in simple tabular forms; Constructs, reads and interprets simple diagrams and charts (including frequency tables bar charts and pictograms).		i	Collect data using surveys and experiments.	
					ii	Compile and interpret frequency tables for grouped and ungrouped data (Do not include inequality signs).	
					iii	Draw and interpret bar charts.	
					iv	Interpret simple pie charts. E.g. Which is the most or least favourite.	
	Probability	Differentiates between the likelihood of different events				i	Describe the occurrence of an event as impossible, unlikely, even chance, likely and certain.
						ii	Find the probability by experiment.
						iii	Understand and work out the probability of an event as a fraction