Edexcel Award in Number and Measure Level 2

This Scheme of work should be read alongside the Edexcel Specification here.

Maths Scheme of Work – Edexcel Award Number and Measure Level 2

Module	Prior Knowledge from Level 1	Learning Opportunities	Colour band	Edexcel Award	Functional skills	GCSE
1 Number size and rounding	Read, write, order and compare positive integers up to 1000 Know multiplication and division facts up to 10 × 10 Check solutions to questions and problems by considering whether the answer is sensible Read, write, order and compare money	1. Use and order positive and negative numbers 2. Write numbers in words and write numbers from words 3. Multiply or divide any number by powers of 10 4. Round whole numbers to the nearest 10, 100 and 1000 5. Check calculations by rounding, eg 29 × 31 ≈ 30 × 30 Teaching ideas and resources here				
Extension Opportunities		Estimate answers to calculations involving the four rules of operation Try investigations with digits 3, 7, 5 and 2 and challenge students to find the biggest number, smallest odd number, the largest sum or product etc Round answers to appropriate degrees of accuracy to suit the context of the question Work with larger denominations of bills (£5, £10, £20, £50 etc) Estimates linked to shopping and bill calculations			**Level 2**	**Foundation Unit 1a Grade 4-5**
Additional Teacher Notes		Present all working clearly Unit assessments here				

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2 Integers and the four rules	Add and subtract positive integers Multiply and divide by positive integers (single digit multiplier and divisor for non-calculator section)	1. Add and subtract integers, including negative numbers 2. Multiply or divide any number by powers of 10 3. Multiply and divide positive and negative numbers 4. Add, subtract, multiply and divide negative numbers Teaching ideas and resources here				
Extension Opportunities		Read, write, order and compare positive and negative integers of any size Add, subtract, multiply and divide integers of any size Multiply and divide using negative integers Check solutions to questions and problems by using suitable approximations			**Level 2**	**Foundation Unit 1a Grade 4-5**
Additional Teacher Notes		Present all working clearly For non-calculator methods, ensure that remainders are shown as evidence of working Show what is entered into your calculator, not just the answer Try different methods from traditional ones, eg Russian or Chinese methods for multiplication Incorporate Functional Elements whenever and wherever possible and always round measures to an appropriate degree of accuracy Calculations related to shopping and bills, and practical applications such as darts and other games involving mathematical calculations Unit assessments here				

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3 Decimals	Read, write, order and compare decimals up to two decimal places, and understand place value Add and subtract decimals up to two decimal places Multiply decimals with up to two decimal places (single digit whole number multiplier for non-calculator section)	1. Understand place value, identifying the values of the digits 2. Write decimals in order of size 3. Round decimals to the nearest integer or up to two decimal places 4. Add and subtract decimals 5. Multiply and divide decimal numbers by integers and decimal numbers 6. Check their answers by rounding, eg $9.8 \times 17.2 \approx 10 \times 17$ Teaching ideas and resources here				
Extension Opportunities		Practice long multiplication and division without using a calculator Use decimals in real-life problems as much as possible, eg money problems Use functional examples such as entry into theme parks, cost of holidays, sharing the cost of a meal Money calculations that require rounding answers to the nearest penny Multiply and divide decimals by decimals with more than two decimal places			**Level 2**	**Foundation Unit 1b Grade 4-5**
Additional Teacher Notes		Practice long multiplication and division without using a calculator Use decimals in real-life problems as much as possible, eg money problems Use functional examples such as entry into theme parks, cost of holidays, sharing the cost of a meal Money calculations that require rounding answers to the nearest penny Multiply and divide decimals by decimals with more than two decimal places Unit assessments here				

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4 Reading scales	Read, measure and record time using digital and analogue clocks in 12-hour and 24-hour format Know and use units of measure for length, weight, angles, capacity, temperature, including metric and imperial units Read integer scales	1. Interpret scales on a range of measuring instruments including: mm, cm, m, km, m*l*, c*l*, *l*,mg, g, kg, tonnes, °C, time 2. Indicate given values on a scale Teaching ideas and resources here				
Extension Opportunities		This could be made a practical activity by collecting assorted everyday items and then weighing and measuring them to check the estimates of their lengths, weights and volumes Use the internet to find the weights, volumes and heights of large structures such as buildings, aeroplanes and ships Take the opportunity to do some real measuring/estimating around school			**Level 2**	**Foundation Unit 6a, 8 Grade 4-5**
Additional Teacher Notes		**Note: Imperial Units do not appear in FS or GCSE** Measurement is essentially a practical activity Use a range of everyday objects to bring reality to lessons Use Functional Elements as a source of practical activities Provide opportunities for students to select the unit of measure to use, particularly where they have a choice of imperial or metric measure, eg height and weight of a person Unit assessments here				

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5 Converting units	Use units of time including seconds, minutes, hours, days, weeks, months and years Work out intervals of time and convert between units of time Read, measure and record events on calendars Add and subtract units of measure	1. Know that measurements using real numbers depend upon the choice of unit 2. Convert units within one system 3. Convert metric units to metric units (metric equivalents should be known) 4. Convert imperial units to imperial units (NB: Conversion between imperial units will be given) 5. Convert between metric and imperial measures 6. Convert using metric equivalents of pounds, feet, miles, pints and gallons: • **Metric Imperial** • 1 kg 2.2 pounds • 1 / 1.75 pints 4.5 / 1 gallon • 8 km 5 miles • 30 cm 1 foot Teaching ideas and resources here				
Extension Opportunities		Convert and compare actual measurements taken in both metric and imperial measure Use conversions for height and weight of students, cars, bridges etc Combine with simple scales such as 1 cm to 1 m for classrooms, playing fields, bedrooms Ask them to draw a plan of their ideal design for their bedrooms, including the furniture			**Level 2**	**Foundation Unit 8 Grade 4-5**
Additional Teacher Notes						

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6 Tables and charts	Read, write and use everyday tables and charts, eg mileage charts, bar charts, line graphs, currency conversion tables and timetables (bus, train and airlines)	1. Draw: Bar charts, mileage charts, line graphs, pie charts. 2. Interpret: Bar charts, mileage charts, line graphs, conversion graphs, pie charts. Teaching ideas and resources here				
Extension Opportunities		Carry out a statistical investigation of their own and use an appropriate means of displaying the results Use a spreadsheet to draw different types of graphs Collect examples of charts and graphs in the media which have been misused and discuss the implications Dividing objects up into fraction parts, eg circles, pizza, cakes Use of calendars for planning exercises, eg holiday planning, scheduling			**Level 2**	**Foundation Unit 3a and 3b Grade 4-5**
Additional Teacher Notes		Reiterate that clear presentation with axes correctly labeled is important, and to use a ruler to draw straight lines Make comparisons between previously collected data Encourage group work and presenting their charts (useful display material for classrooms or corridors) Use Excel Graph wizard Consider Functional Elements by comparing rainfall charts, distribution of ages in cinemas etc Unit assessments here				

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7 Types of number	Know multiplication and division facts up to 10 × 10	1. Recognise even and odd numbers 2. Identify factors, multiples and prime numbers 3. Find the common factors and common multiples of two numbers 4. Find the Highest Common Factor (HCF) and Lowest Common Multiple (LCM) of two positive integers 5. Recall integer squares up to 15 × 15 and the corresponding square roots 6. Recall the cubes of 2, 3, 4, 5 and 10 7. Find squares and cubes 8. Find square roots and cube roots 9. Use index notation for squares and cubes 10. Use index notation for powers of 10 11. Find the value of calculations using indices Teaching ideas and resources here				
Extension Opportunities		Calculator exercise to check factors of larger numbers Use prime factors to find LCM Use a number square to find primes (sieve of Eratosthenes) Calculator exercise to find squares, cubes and square roots of larger numbers (using trial and improvement)			**Level 2**	**Foundation Unit 1a, 1c and 1d Grade 4-5**
Additional Teacher Notes		All of the work in this module can be easily reinforced by using it as 'starters' or 'plenaries' Calculators should be used only when appropriate There is plenty of investigative work using squares like 'half-time' scores Unit assessments here				

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8 Fractions	Read, write, order and compare fractions and mixed numbers Write fractions in their simplest form	1. Visualise a fraction diagrammatically 2. Understand a fraction as part of a whole 3. Recognise and write fractions in everyday situations 4. Find fractions of amounts 5. Write a fraction in its simplest form and find equivalent fractions 6. Compare the sizes of fractions using a common denominator 7. Add and subtract fractions by using a common denominator 8. Write an improper fraction as a mixed number 9. Multiply and divide fractions 10. Write one number as a fraction of another Teaching ideas and resources here				
Extension Opportunities		Careful differentiation is essential as this topic is dependent on the student's ability Relate simple fractions to percentages and vice versa Work with improper fractions and mixed numbers, eg divide 5 pizzas between 3 people Solve real-life problems and word problems involving fractions, eg finding a perimeter from a shape with fractional side lengths Link fractions with probability questions			**Level 2**	**Foundation Unit 4a Grade 4-5**
Additional Teacher Notes		Regular revision of fractions is essential Demonstrate how to use the fraction button on a calculator in order be able to check solutions Use real-life examples whenever possible solutions Unit assessments here				

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9 Fractions, decimals and percentages	Read, write, order and compare simple percentages	1. Understand that a percentage is a fraction in hundredths 2. Convert between fractions, decimals and percentages Teaching ideas and resources here				
Extension Opportunities		Consider fractions and percentages of amounts, eg 12.5% = 0.125 =1/8 Consider percentages which convert to recurring decimals, eg $33\frac{1}{3}$ %, and situations which lead to percentages of more than 100% Use fraction, decimal and percentage dominos or follow me cards Investigate the many uses of percentages, particularly in the media Practice the ability to convert between different forms Use of a fraction board to compare fractions and decimals			**Level 2**	**Foundation Unit 4a Grade 4-5**
Additional Teacher Notes		Use Functional Elements questions using fractions, eg 1/4 off the list price when comparing different sale prices Keep using non-calculator methods, eg start with 10%, then 1% in order to reach the required percentages Unit assessments here				

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10 Percentages and applications	Work out simple percentages of quantities, including VAT.	1. Use percentages to solve problems 2. Convert between fractions, decimals and percentages 3. Find a percentage of a quantity 4. Find percentage increase or decrease 5. Use percentages in real-life situations, eg simple interest 6. Write one number as a percentage of another Teaching ideas and resources here				
Extension Opportunities		Find percentages of quantities of any value Calculate percentage increase and decrease Calculate simple interest Calculate wages and salaries, including national insurance and tax deductions			**Level 2**	**Foundation Unit 4b Grade 4-5**
Additional Teacher Notes		Use a mixture of calculator and non-calculator methods Use ideas for wall display, students make up their own poster to explain say a holiday reduction Use Functional Elements questions to look at questions in context Problems which lead to the necessity of rounding to the nearest penny, eg real-life contexts Unit assessments here				

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11 Ratio and proportion	Multiply and divide by positive integers (single digit multiplier and divisor for non-calculator section) Use equivalencies between decimals, fractions and percentages, eg 25% = $\frac{1}{4}$ = 0.25	1. Understand what is meant by ratio and use ratios 2. Write a ratio in its simplest form and find an equivalent ratio 3. Solve a ratio problem in context, eg recipes 4. Share a quantity in a given ratio 5. Solve problems involving money conversions, eg £'s to Euro Teaching ideas and resources here				
Extension Opportunities		Plan a housing estate with a variety of different sized houses Currency calculations using foreign exchange rates Link ratios and proportion to Functional Elements, eg investigate the proportion of different metals in alloys, the ingredients needed for recipes for fewer or more people, mixing cement, planting forests, comparing prices of goods here and abroad, medicines			**Level 2**	**Foundation Unit 11a and 11b Grade 4-5**
Additional Teacher Notes		Students often find ratios with 3 parts difficult Ratios can also be dealt with by considering multiples Can be linked to work on metric and imperial units Unit assessments here				

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12 Perimeter and area	Work out the perimeter of rectangles and shapes made from rectangles Work out the area of rectangles and shapes made from rectangles	1. Find the perimeter of shapes 2. Find the perimeter of compound shapes 3. Find the area by counting squares 4. Recall and use the formulae for the area of a triangle and a rectangle 5. Calculate areas of compound shapes made from triangles and rectangles 6. Solve a range of problems involving areas including cost of carpet type questions 7. Recall the definition of a circle and identify parts of a circle 8. Find circumferences of circles and areas enclosed by circles 9. Use π ≈3.142 or use the π button on a calculator 10. Find the perimeters and areas of semicircles and quarter circles Teaching ideas and resources here				
Extension Opportunities		Further problems involving combinations of shapes Use combinations of shapes where not all the lengths needed are given (but can be deduced) Use practical examples from functional papers on topics such as returfing a garden, carpeting a room, laying carpet tiles on a floor Perimeter questions could use skirting board, wallpaper, planting a border of a garden			**Level 2**	**Foundation Unit 8 and 17 Grade 4-5**
Additional Teacher Notes		Discuss the correct use of language and units, particularly when method marks are for the correct unit of measure Ensure that students can distinguish between perimeter and area Practical examples help to clarify the concepts, eg floor tiles Unit assessments here				

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13 Volume	Work out the volume of a cuboid	1. Recall and use formulae for the volume of cubes and cuboids 2. Calculate the volumes of right prisms and shapes made from cubes and cuboids 3. Calculate the volume of a cylinder Teaching ideas and resources here				
Extension Opportunities		Look at practical examples such as fish tanks, filling containers, finding the number of small boxes that fit into a large box Further problems involving a combination of shapes			**Level 2**	**Foundation Unit 8 and 17 Grade 4-5**
Additional Teacher Notes		Discuss the correct use of language and units Remind students that there is often a mark attached to writing down the correct unit Use practical problems to enable the students to understand the difference between perimeter, area and volume Use Functional Elements problems, e.g. filling a water tank, optimisation type questions volume Unit assessments here				