

Year 6 objective matching grid

Introduction

This grid is designed to help you with your planning by showing how the *Mult-e-Maths* lessons and starters match the renewed *Primary Framework for mathematics* learning objectives for Year 6. It lists all the Year 6 learning objectives, arranged in the seven Framework strands. Matching *Mult-e-Maths* lessons and starters are shown beside each objective using their activity references:

UA refers to the **Using and applying mathematics** strand

CN refers to the **Counting and understanding number** strand

NF refers to the **Knowing and using number facts** strand

CA refers to the **Calculating** strand

SH refers to the **Understanding shape** strand

ME refers to the **Measuring** strand

HD refers to the **Handling data** strand

UA6S1 refers to **Using and applying Year 6 Starter 1**

UA6L1 refers to **Using and applying Year 6 Lesson 1**

For ease of reference, all lessons are highlighted are in grey.

Using and applying	
Learning objectives (with end-of-year expectations in bold)	Mult-e-Maths Starters and Lessons
Solve multi-step problems, and problems involving fractions, decimals and percentages; choose and use appropriate calculation strategies at each stage, including calculator use	UA6L1 Fraction and decimal problems Investigating equivalent fractions and decimals
	UA6L2 Adding decimals Solving problems involving adding and ordering decimals
	UA6L3 Perimeter and area investigations Investigating the perimeter and area of compound shapes made up of rectangles
	UA6L4 Using a calculator Using a calculator to solve problems
	UA6L5 Division problems involving decimals Using a calculator to solve division problems that involve numbers with up to two decimal places
	UA6L6 Problems involving decimals Using understanding of place value and calculating with decimals to solve problems
	UA6L7 Percentages Solving problems involving percentages
	UA6L8 Solving real life problems Solving problems that each involve some multiplication or division

<p>Tabulate systematically the information in a problem or puzzle; identify and record the steps or calculations needed to solve it, using symbols where appropriate; interpret solutions in the original context and check their accuracy</p>	<p>UA6L9 Dartboard problems Investigating ways of adding multiples of numbers to make a given total</p>
	<p>UA6L10 Scales and graphs Reading scales and interpreting graphs and bar charts to solve measurement problems</p>
	<p>UA6L11 Applying concepts of time Creating a timeline and timetable for preparing and cooking a meal</p>
<p>Suggest, plan and develop lines of enquiry; collect, organise and represent information, interpret results and review methods; identify and answer related questions</p>	<p>UA6S1 Making multiplications Deducing how to create five multiplications using a given set of numbers</p>
	<p>UA6L12 Multiplication problems Solving problems involving multiplication</p>
	<p>UA6L13 Magic shapes Arranging numbers along the lines forming a shape so that the three numbers along each line have the same total</p>
	<p>UA6L14 Using tables and bar charts Extracting data from tables and bar charts to solve problems</p>
<p>Represent and interpret sequences, patterns and relationships involving numbers and shapes; suggest and test hypotheses; construct and use simple expressions and formulae in words then symbols</p>	<p>UA6S2 Investigating doubles Investigating properties of doubles and which numbers have doubles that are multiples of 4</p>
	<p>UA6S3 Using square numbers Exploring patterns between square numbers and multiplication facts</p>
	<p>UA6S4 Investigating the sum of products Investigating how to arrange given numbers in a sum of two products to produce the largest and smallest answers</p>
	<p>UA6S5 What's my number? Asking questions to identify a number</p>
	<p>UA6S6 Properties of numbers Identifying numbers that have one, two or three given properties</p>
	<p>UA6L15 Triangular numbers Investigating the sequence of triangular numbers</p>
	<p>UA6L16 Odd or even? Using visual representations to illustrate general statements about calculating with odd and even numbers</p>
	<p>UA6L17 Finding a rule or formula Describing, extending and explaining number sequences, based on patterns, in words and using a formula</p>
<p>Explain reasoning and conclusions, using words, symbols or diagrams as appropriate</p>	<p>All of the 'Using and applying mathematics' lessons link to this objective</p>

Counting and understanding number	
Learning objectives	Mult-e-Maths Starters and Lessons
Find the difference between a positive and a negative integer, or two negative integers, in context	CN6S1 Positive and negative numbers Identifying positive and negative numbers with the greatest difference
	CN6S2 Temperature differences Finding temperature differences using a thermometer scale
	CN6S3 Changing temperatures Calculating rises and falls between pairs of temperatures that include at least one negative temperature
	CN6L1 Positive and negative integer differences Progressing from finding differences between positive and negative temperatures to finding similar differences out of context
	CN6L2 Temperature differences Finding differences between positive and negative temperatures
Use decimal notation for tenths, hundredths and thousandths; partition, round and order decimals with up to three places, and position them on the number line	CN6S4 Decimal counting Counting on and back in decimal steps
	CN6S5 Rounding decimals Rounding decimals with 1 or 2 places
	CN6S6 Estimating and rounding Estimating positions of decimals on a number line and rounding them to the nearest integer and tenth
	CN6S7 Comparing distances Comparing two distances with up to two decimal places
	CN6S8 Zap the digits Using a calculator to change a decimal with up to three decimal places to zero, digit by digit
	CN6S9 Place value bingo A bingo game involving recognition of the values of digits in decimal fractions with three decimal places
	CN6S10 Decimal positions Ordering decimals with either 1 or 2 decimal places or a mixture of both
	CN6L3 Tenths, hundredths, thousandths Identifying numbers with up to three decimal places on a number line
	CN6L4 Rounding decimals Rounding decimals to the nearest tenth
	CN6L5 Ordering decimals Ordering measurements and numbers with up to three decimal places
Express a larger whole number as a fraction of a smaller one (e.g. recognise that 8 slices of a 5-slice pizza represents $\frac{8}{5}$ or $1\frac{3}{5}$ pizzas); simplify fractions by cancelling common factors; order a set of fractions by converting them to fractions with a common denominator	CN6S11 Ordering using equivalent fractions Investigating the relative positions on a number line of fractions that can be expressed as twentieths
	CN6S12 Fraction positions on a number line Creating fractions less than 1 from given numbers and positioning them on a marked number line
	CN6L6 Simplest form Reducing fractions to their simplest form by cancelling common factors
	CN6L7 Ordering fractions Ordering fractions by converting them to fractions with a common denominator
	CN6L8 Mixed numbers Converting improper fractions to mixed numbers and vice versa

<p>Express one quantity as a percentage of another (e.g. express £400 as a percentage of £1000); find equivalent percentages, decimals and fractions</p>	<p>CN6S13 Equivalent fractions and decimals Playing a game involving finding pairs of equivalent fractions and decimals</p>
	<p>CN6S14 Fraction and percentage bingo Matching equivalent fractions and percentages in a game of bingo</p>
	<p>CN6S15 Ways of expressing a fractional part Identifying which fraction, decimal or percentage in a set of three is not equivalent to the other two</p>
	<p>CN6S16 Missing number percentage sentences Identifying the missing numbers in percentage sentences</p>
	<p>CN6L9 Fraction and decimal equivalences Converting decimals to fractions and mixed numbers and vice versa</p>
	<p>CN6L10 Calculator conversions Using a calculator to convert fractions to their decimal equivalents</p>
	<p>CN6L11 Fractions and percentages Converting fractions to percentages</p>
	<p>CN6L12 Fractions, decimals and percentages Identifying and using fraction, decimal and percentage equivalents</p>
<p>Solve simple problems involving direct proportion by scaling quantities up or down</p>	<p>CN6S17 Proportions of a grid Identifying what proportion of a grid of squares is coloured</p>
	<p>CN6L13 Problems involving ratio and proportion Using and applying concepts of ratio and proportion</p>
<p>Knowing and using number facts</p>	
<p>Learning objectives</p>	<p>Multi-e-Maths Starters and Lessons</p>
<p>Use knowledge of place value and multiplication facts to 10×10 to derive related multiplication and division facts involving decimals (e.g. 0.8×7, $4.8 \div 6$)</p>	<p>NF6S1 Making products Using single-digit integers and decimals to make a target product</p>
	<p>NF6S2 Decimal division facts Finding missing numbers in decimal divisions based on multiplication facts</p>
	<p>NF6S3 Multiplying by tenths Using times-table facts to multiply single-digit integers by decimals with one decimal place</p>
	<p>NF6S4 Times-tables facts and place value Identifying multiplications and divisions of integers and decimals with a given answer</p>
<p>Use knowledge of multiplication facts to derive quickly squares of numbers to 12×12 and the corresponding squares of multiples of 10</p>	<p>NF6S5 Squares of multiples of 10 Using and applying understanding of square numbers, including finding squares of multiples of 10</p>
	<p>NF6L1 Square numbers Investigating square numbers</p>
<p>Recognise that prime numbers have only two factors and identify prime numbers less than 100; find the prime factors of two-digit numbers</p>	<p>NF6S6 Prime factors Identifying prime factors of numbers to 100</p>
	<p>NF6L2 Spot the prime Identifying numbers with exactly 2 factors as prime numbers</p>
	<p>NF6L3 Factor trees Using factor trees to find prime factors of numbers to 100</p>

Use approximations, inverse operations and tests of divisibility to estimate and check results	NF6S7 Estimating totals Approximating answers to additions of 4-digit numbers
	NF6S8 Approximating answers to divisions Using knowledge of multiplication facts and/or rounding to approximate answers to divisions
	NF6S9 Estimation in the context of money Estimating totals of money amounts and amounts of change
	NF6S10 Checking statements Identifying whether number statements are true or false and justifying choices
	NF6L4 Divisibility tests for 2, 4, 5, 10 and 100 Investigating tests of divisibility
	NF6L5 Divisibility tests for 3, 6 and 9 Finding and applying tests of divisibility for 3, 6 and 9
	NF6L6 Rounding to estimate Exploring the effect of rounding integers to the nearest 10, 100 or 1000 on estimated answers for calculations
	NF6L7 Estimating answers Using estimation to spot incorrect answers to calculations
Year 6 progression to Year 7 Consolidate rapid recall of number facts, including multiplication facts to 10×10 and the associated division facts	* NF6S11 Multiplication facts Recalling multiplication facts
	* NF6S12 Applying multiplication facts Using knowledge of multiplication facts to find missing numbers in division sentences
	* NF6S13 Division facts Recalling and deriving division facts
	* NF6S14 What's the remainder Identifying divisions with a given remainder, and expressing answers to divisions in different ways
Year 6 progression to Year 7 Recognise and use multiples, factors, divisors, common factors, highest common factors and lowest common multiples in simple cases	* NF6S15 Common multiples Identifying common multiples and lowest common multiples
	* NF6S16 Finding factors Identifying factors, common factors and highest common factors of numbers to 50
	* NF6S17 Patterns in common multiples Identifying and using patterns in common multiples
Calculating	
Learning objectives	Multi-e-Maths Starters and Lessons
Calculate mentally with integers and decimals: $U.t \pm U.t$, $TU \times U$, $TU \div U$, $U.t \times U$, $U.t \div U$	CA6S1 Decimal number sequences Calculating with decimals to identify missing entries in number sequences with two non-consecutive entries visible
	CA6S2 Doubling and halving decimals Solving problems involving doubling and halving decimals
	CA6S3 Differences between decimal lengths Using knowledge of units of length to find differences between lengths expressed as decimals to two places
	CA6S4 Decimal additions and subtractions Finding missing numbers in additions and subtractions involving one place decimals
	CA6S5 Calculating mentally Using a range of mental calculation strategies

<p>Calculate mentally with integers and decimals: $U.t \pm U.t$, $TU \times U$, $TU \div U$, $U.t \times U$, $U.t \div U$ (continued)</p>	<p>CA6S6 Multiplying by teens Using known multiplication facts to multiply by 'teens' numbers</p>
	<p>CA6S7 Missing number multiplication grids Identifying missing numbers in multiplication grids involving products of 1- and 2-digit integers</p>
	<p>CA6S8 Consolidating mental calculation Practising mental calculation methods with integers and decimals</p>
	<p>CA6S9 Multiplying by partitioning Using partitioning to multiply 2-digit numbers by 1-digit numbers</p>
	<p>CA6S10 Missing number multiplications Calculating mentally with decimals to identify missing numbers in diagrams involving multiplication</p>
	<p>CA6S11 Multiplying decimals Applying mental methods for multiplying integers by 5 and 8 to multiplying decimals</p>
	<p>CA6S12 Egyptian multiplication Discussing the Ancient Egyptian method for multiplying larger integers</p>
	<p>CA6S13 Relating integer and decimal divisions Finding answers to integer divisions and using a capacity context to deduce related decimal divisions</p>
	<p>CA6L1 Adding several numbers Applying strategies for adding several integers to decimals</p>
	<p>CA6L2 Approximating then adjusting Applying the method of adding and subtracting integers by approximating and adjusting to decimals</p>
	<p>CA6L3 Multiplying integers mentally Using multiplication facts to 10×10 to find multiplication facts for larger numbers</p>
	<p>CA6L4 Extending mental multiplication Using doubling and halving to multiply pairs of 2-digit numbers</p>
	<p>CA6L5 Egyptian and Russian multiplication Using methods involving doubling and halving to multiply larger numbers</p>
	<p>CA6L6 Mental multiplication Using partitioning to multiply mentally 2-digit integers then 2-digit decimals by single digits, and extending this to 3-digit integers</p>
	<p>Use efficient written methods to add and subtract integers and decimals, to multiply and divide integers and decimals by a one-digit integer, and to multiply two-digit and three-digit integers by a two-digit integer</p>
<p>CA6L8 Decimal multiplications and divisions Using the relationship between multiplication and division with decimal numbers</p>	
<p>CA6L9 Using factors to multiply Investigating using factors to help to multiply pairs of 2-digit integers</p>	
<p>CA6L10 Written integer addition Deciding when mental methods are efficient for addition and using a standard written method of addition</p>	
<p>CA6L11 Written integer subtraction Deciding when mental methods are efficient for subtraction and using a standard written method of subtraction</p>	
<p>CA6L12 Written decimal additions and subtractions Using the standard written method for adding and subtracting numbers with up to three decimal places</p>	

<p>Use efficient written methods to add and subtract integers and decimals, to multiply and divide integers and decimals by a one-digit integer, and to multiply two-digit and three-digit integers by a two-digit integer (continued)</p>	<p>CA6L13 The grid method of multiplication Using the grid method to multiply ThHTU by U and HTU by TU</p>
	<p>CA6L14 Developing multiplication with decimals Using an informal written method to multiply two place decimals by single digits</p>
	<p>CA6L15 Written division Extending informal written methods for dividing integers by single digits to dividing decimals</p>
<p>Relate fractions to multiplication and division (e.g. $6 \div 2 = \frac{1}{2}$ of $6 = 6 \times \frac{1}{2}$); express a quotient as a fraction or decimal (e.g. $67 \div 5 = 13.4$ or $13\frac{2}{5}$); find fractions and percentages of whole-number quantities (e.g. $\frac{5}{8}$ of 96, 65% of £260)</p>	<p>CA6S14 Finding fractions Completing fraction sentences involving unit fractions and with a given answer</p>
	<p>CA6S15 Which is bigger? Comparing pairs of percentages of quantities</p>
	<p>CA6S16 Percentages and fractions of quantities Identifying whether statements about fractions and percentages of money and measures are true or false</p>
	<p>CA6L16 Non-unit fractions of numbers Calculating non-unit fractions of numbers and quantities</p>
	<p>CA6L17 Percentages of money Finding percentage reductions and sale prices</p>
	<p>CA6L18 Remainders as fractions Expressing remainders as fractions</p>
<p>Use a calculator to solve problems involving multi-step calculations</p>	<p>CA6L19 Using the calculator's memory Using the memory function of a calculator to solve multi-step problems that involve some multiplication or division</p>
<p>Year 6 progression to Year 7 Consolidate and extend mental methods of calculation to include decimals, fractions and percentages</p>	<p>* CA6S17 Two place decimal additions Playing a game of bingo based on missing number addition sentences involving two place decimal fractions</p>
	<p>* CA6S18 Counting on from decimals to integers Finding the difference between a two place decimal and the next higher integer</p>
	<p>* CA6L20 Mental strategies with two place decimals Finding the difference between a two place decimal and the next higher integer, and adding two place decimals</p>
<p>Year 6 progression to Year 7 Use standard column procedures to add and subtract integers and decimals, and to multiply two-digit and three-digit integers by a one-digit or two-digit integer; extend division to dividing three-digit integers by a two-digit integer</p>	<p>* CA6L21 Extending written division Developing a written method for division of HTU by TU that uses multiples of the divisor</p>
<p>Understanding shape</p>	
<p>Learning objectives</p>	<p>Multi-e-Maths Starters and Lessons</p>
<p>Describe, identify and visualise parallel and perpendicular edges or faces; use these properties to classify 2-D shapes and 3-D solids</p>	<p>SH6S1 Comparing quadrilaterals Describing and comparing the properties of quadrilaterals</p>
	<p>SH6S2 Sorting 3-D shapes Sorting 3-D shapes into a Venn diagram according to three criteria</p>
	<p>SH6L1 Quadrilaterals Identifying the properties of quadrilaterals in order to name and classify them</p>
	<p>SH6L2 3-D shapes Visualising 3-D shapes from 2-D drawings</p>

Make and draw shapes with increasing accuracy and apply knowledge of their properties	SH6L3 Tangrams Investigating how shapes fit together to make other shapes
	SH6L4 Measuring angles and drawing polygons Estimating and drawing angles, investigating angles in a triangle and giving instructions for drawing polygons
Visualise and draw on grids of different types where a shape will be after reflection, after translations, or after rotation through 90° or 180° about its centre or one of its vertices	SH6S3 Translating shapes Giving the coordinates of a shape after translations and identifying translations from given coordinates
	SH6S4 Rotating shapes Giving the coordinates of a shape after a rotation about a vertex
	SH6S5 Reflecting shapes Giving the coordinates of a shape after a reflection in a mirror line not parallel to one side
	SH6L5 Rotation Exploring rotations of shapes about one vertex and calculating angles around a point
Use coordinates in the first quadrant to draw, locate and complete shapes that meet given properties	SH6S6 Identifying missing vertices Giving the coordinates of points to complete polygons
Estimate angles, and use a protractor to measure and draw them, on their own and in shapes; calculate angles in a triangle or around a point	SH6S7 Angles Estimating acute and obtuse angles, and investigating the effect of changing one angle in a right-angled triangle
	SH6S8 Calculating angles Calculating missing angles in triangles
Year 6 progression to Year 7 Use all four quadrants to find coordinates of points determined by geometric information	* SH6L6 Coordinates in all four quadrants Using coordinates in all four quadrants to identify the positions of shapes after various transformations
Measuring	
Learning objectives	Multi-e-Maths Starters and Lessons
Select and use standard metric units of measure and convert between units using decimals to two places (e.g. change 2.75 litres to 2750 ml, or vice versa)	ME6S1 Which units? Suggesting suitable units to measure everyday lengths, masses and capacities
	ME6L1 Comparing capacities Exploring the relationships between different standard measures for capacity
Read and interpret scales on a range of measuring instruments, recognising that the measurement made is approximate and recording results to a required degree of accuracy; compare readings on different scales, for example when using different instruments	ME6S2 Measuring cylinder scales Identifying the scale on a measuring cylinder and solving problems based on it
	ME6L2 Recording mass Solving problems involving mass and recording masses in different ways
Calculate the perimeter and area of rectilinear shapes; estimate the area of an irregular shape by counting squares	ME6S3 Perimeters and areas of compound shapes Calculating the perimeter and area of simple compound shapes with missing side lengths
	ME6L3 Perimeters and areas of compound shapes Calculating and comparing the areas and perimeters of compound shapes

<p><i>Year 6 progression to Year 7</i> Solve problems by measuring, estimating and calculating; measure and calculate using imperial units still in everyday use; know their approximate metric values</p>	<p>* ME6S4 Imperial and metric masses Finding objects with approximately equal masses, using imperial and metric units</p>
	<p>* ME6S5 Time zones Using a time zone map to identify the time in different parts of the world</p>
	<p>* ME6L4 Time and time zones Introducing times around the world</p>
<p>Handling data</p>	
<p>Learning objectives</p>	<p>Mult-e-Maths Starters and Lessons</p>
<p>Describe and predict outcomes from data using the language of chance or likelihood</p>	<p>HD6S1 Investigating chance Investigating whether you are more likely to throw an odd or an even total score using 2 dice</p>
	<p>HD6L1 Probability Exploring probability</p>
<p>Solve problems by collecting, selecting, processing, presenting and interpreting data, using ICT where appropriate; draw conclusions and identify further questions to ask</p>	<p>HD6L2 Interpreting data Solving a problem by organising and interpreting data</p>
<p>Construct and interpret frequency tables, bar charts with grouped discrete data, and line graphs; interpret pie charts</p>	<p>HD6S2 Pounds and euros line graph Using a conversion graph to convert pounds to euros</p>
<p>Describe and interpret results and solutions to problems using the mode, range, median and mean</p>	<p>HD6S3 Averages Finding the mode, range, median and mean values of sets of data</p>