

Multiplicative Reasoning 5.13	Length of unit: 3 weeks	Week beg:	Year:5	Teacher:	
<p>Success criteria</p> <p>Pupils can solve problems involving multiplication and division in different contexts, appropriately choosing and using number facts, understanding of place value and mental and written methods. They can explain their decision making and justify their solutions. They can explain and represent the connection between fractions and division.</p>	<p>Prior Learning:</p> <p>Check that children can already</p> <ul style="list-style-type: none"> • count in multiples of 6, 7, 9, 25 and 1000 • recall multiplication and division facts for multiplication tables up to 12×12 • use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers • recognise and use factor pairs and commutativity in mental calculations • multiply two-digit and three-digit numbers by a one-digit number using formal written layout • solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling and harder correspondence problems such as n objects are connected to m objects • solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number • solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days 		<p>Resources</p> <p>Maths vocabulary book</p> <p>Using and Applying in every maths lesson</p> <p>Assessment through guided maths</p> <p>Think Maths!</p> <p>Pitch and Expectations Y5 and Y6</p> <p>Mind the Gap (L3 to L4)</p> <p>Overcoming Barriers to Learning – L3 to 4 and L4 to 5 (available on M drive)</p> <p>Securing Level 4 and Securing Level 5 documents (available on M drive))</p> <p>Errors and Misconceptions in Maths at KS2</p>		
<p>Guidance</p> <p>Pupils practise and extend their use of the formal written methods of short multiplication and short division. They apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations.</p> <p>Distributivity can be expressed as $a(b+c) = ab + ac$.</p> <p>See also sequences 5.3 and 5.8 for further guidance.</p>					

Learning objectives

Pupils should be taught to:

Multiplication and division

- identify multiples and factors, including finding all factor pairs, and common factors of two numbers
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method including long multiplication for two-digit numbers
- multiply and divide numbers mentally drawing upon known facts
- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
- recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
- solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Fractions (including decimals and percentages)

- identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
- solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those with a denominator of a multiple of 10 or 25

Measurement

- use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling
- understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
- solve problems involving converting between units of time.

Pupil outcomes:

I can explain and represent different ways of solving “A school trip to Wimbledon costs £175 per pupil. 19 children are booked on the trip; how much money will be collected?” and “280 children are going to the county show and need to travel in mini buses which each hold nine children. How many mini buses need to be booked?”

I can represent and explain that $\frac{4}{5}$ is both four lots of $\frac{1}{5}$ and $4 \div 5$ and represent and explain why $\frac{8}{10}$ and $\frac{80}{100}$ are equivalent fractions.