



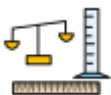

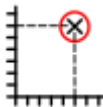
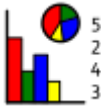
Donnington Wood CE Junior School 	Our School Vision Our school is a community where each person is valued as a child of God. We are a Church of England school, inspired and guided by the life and teaching of Jesus. We work together to create a caring, friendly and safe school family, to enable the whole school community to flourish and each person reach their full God-given potential.	Our core values friendship hope perseverance
Our Motto <i>"The ones who plant and the ones who water work together as a team with the same purpose."</i> 1 Corinthians 3:8 We believe that with God's help when we all work as a TEAM - Together Everyone Achieves More.		

Progression of knowledge in Maths

Adapted from the NCETM

Key Concepts/Golden threads

Subject concepts act as coat-hangers to hook information onto and **'Golden threads'** that run throughout the curriculum. This allows the pupils to store this knowledge into the long term memory and to remember for longer. Developed on research by Jan Meyer and Ray Land (2003), the use of concepts in our curriculum are used to capture the most important essence (knowledge) of the subject. The same concepts are explored in every year group and students will gradually increase their understanding of them.

Number and place value	Four operations	Fractions, decimals and percentages	Measurement	Properties of shape	Position and direction	Statistics	Algebra	Ratio and proportion
H T U 3 5 4	$+$ \div \times $-$	$\frac{1}{2}$ 					$a^2+b^2=c^2$	4:3

KEY CONCEPT: FOUR OPERATIONS – MULTIPLICATION AND DIVISION						
Strands	Y1	Y2	Y3	Y4	Y5	Y6
Multiplication and division facts	I can count in multiples of twos, fives and tens.	<p>I can count in steps of 2, 3, and 5 from 0.</p> <p>I can count in tens from any number, forward or backward.</p>	I can count from 0 in multiples of 4, 8, 50 and 100.	I can count in multiples of 6, 7, 9, 25 and 1 000.	I can count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.	
		I can recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables.	I can recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	I can recall multiplication and division facts for multiplication tables up to 12×12 .		
Mental calculations			I can mentally calculate mathematical statements for multiplication and division using known multiplication tables, including for two-digit numbers times one-digit numbers.	<p>I can use place value, known and derived facts to multiply and divide mentally, including:</p> <ul style="list-style-type: none"> ❖ multiplying by 0 ❖ multiplying by 1 ❖ dividing by 1 ❖ multiplying together three numbers 	I can multiply and divide numbers mentally drawing upon known facts.	I can perform mental calculations, including with mixed operations and large numbers.
Mental calculations		I can show that multiplication of two numbers can be done in any order (commutative) but that division is not.		I can recognise and use factor pairs and commutativity in mental calculations.	I can multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.	

Written calculations		I can write calculations using the multiplication (\times), division (\div) and equals (=) signs and understand their meanings.	I can use a formal written method to multiply two-digit numbers by a one-digit number, using known multiplication tables.	I can use a formal written method to multiply two-digit and three-digit numbers by a one-digit number.	I can use a formal written method to multiply 4-digit numbers by one-or two-digit numbers.	I can use a formal written method to multiply multi-digit numbers up to 4-digits by a two-digit whole number.
		I can calculate mathematical statements for multiplication and division within the multiplication tables.	I can use a formal written method to divide two-digit numbers by a one-digit number, using known multiplication tables.	I can use a formal written method to divide two-digit and three-digit numbers by a one-digit number.	I can use a formal written method to divide numbers up to 4 digits by a one-digit number.	I can use both the formal written methods of short division, where appropriate, and long division to divide numbers up to 4 digits by a two-digit number.
					I can interpret remainders appropriately for the context.	I can interpret remainders appropriately for the context, including: <ul style="list-style-type: none"> ❖ whole number remainders ❖ fractions ❖ rounding
Properties of numbers				I can recognise and use factor pairs and commutativity in mental calculations (<i>repeated from mental methods</i>).	I can identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	I can identify common factors, common multiples and prime numbers.
					I know and can use the vocabulary of prime numbers, prime factors and composite numbers.	

					I can establish whether a number up to 100 is prime and recall prime numbers up to 19.	
					I can recognise, use the notation for and apply my understanding of square numbers and cube numbers.	
Order of operations						I can use my knowledge of the order of operations to carry out calculations involving the four operations.
Inverse operations, estimating and checking answers		I understand the inverse relationship between multiplication and division.	I can estimate the answer to a calculation.	I can estimate the answer to check the accuracy of my calculation.		I can use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
			I can use inverse operations to check answers.	I can use inverse operations to check the answers to a calculation.		

Problem Solving	I can solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays (with support).	I can solve problems involving multiplication and division, using the following resources: <ul style="list-style-type: none"> ❖ materials ❖ arrays ❖ repeated addition ❖ mental methods ❖ multiplication and division facts 	I can solve problems involving multiplication and division: <ul style="list-style-type: none"> ❖ missing number problems ❖ positive integer scaling problems ❖ correspondence problems 	I can solve problems involving multiplying (including using the distributive law to multiply two digit numbers by one digit): <ul style="list-style-type: none"> ❖ integer scaling problems ❖ harder correspondence problems 	I can solve problems involving that include a combination of the four operations, including understanding the meaning of the equals sign.	I can solve problems involving all four operations.
					I can solve problems involving multiplication and division: <ul style="list-style-type: none"> ❖ knowledge of factors and multiples, squares and cubes ❖ scaling by simple fractions ❖ problems involving simple rates 	