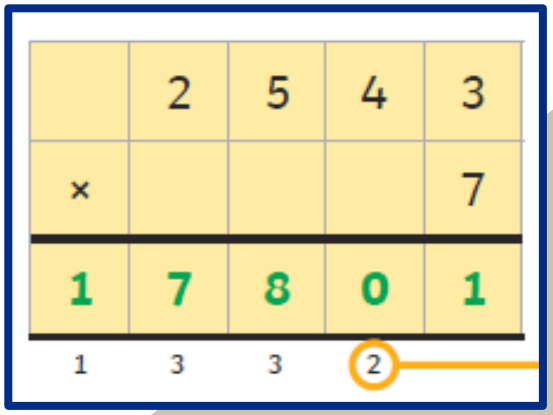
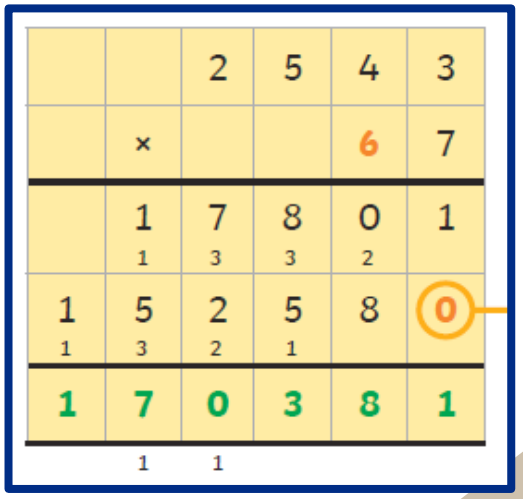
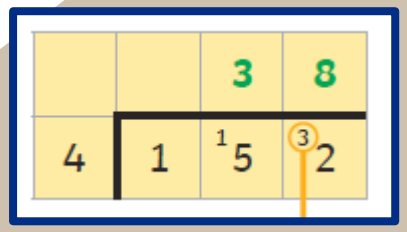
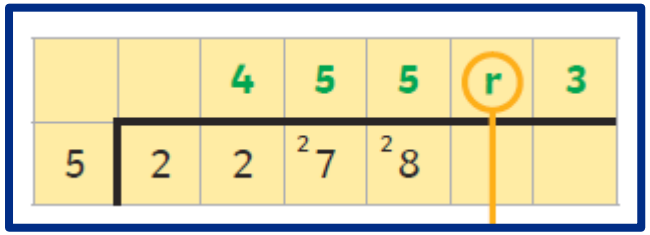
Spring Term 1 Overview YEAR 5 – Maths

Spring Term Book(s)– Goodnight Mr Tom		
Block number 1: Multiplication and division		**Guide Time = 3 Weeks**
Assessment:	WRMH End of block / term assessments Weekly Arithmetic Tests Termly Year 5 tests	**Very Important Points (VIPs):** **Short division**  **When completing your calculation using the column method, you must move the regrouped digit into the next column and add it onto your answer after the next multiplication is complete.**
Links to prior learning (sequencing) and canon book	Canon Book-Goodnight Mr Tom Children will be able to recall and use multiplication and division facts for multiplication tables up to 12 × 12. Children will have prior knowledge in the 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. Children will be able to recognise and use factor pairs and commutativity in mental calculations. Children will have the ability to multiply two-digit and three-digit numbers by a one-digit number using formal written layout. Children will be able to solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one-digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.	
Links to other learning (cross fertilisation)	History – timelines and the understanding of the progression of events and dates of WWII; comparing the events of WWII and prior events, which contributed to the beginning of the war. The geograph of Europe as well as the rest of the world will be linked through the comparison of distance, size and population. Active Maths - provide additional maths questions / problems based around times tables and multiplication and division VIPs, which allows children to apply their knowledge and understanding mentally at another time / lesson e.g. in PE.	

	Science / Geography – exploring the voltage and ampage of electrical currents through the use of mathematical reasoning. Exploring the planets and comparing/ measuring temperatures /distances through investigations and from analysing data in tables / on graphs from countries / cities around the world, in which they can interpret the data and draw conclusions from during investigations. Conpare contemporary scientific knowlegde to that of the 1930s and 1940s. Children will be taught to use their decimal knowlegde to interpret and compare voltages and Ohm's Law in order to Thematic Questions: The World Beyond Us: How did mathematics contribute the space race between the East and West after the end of WWII? Why were former Nazi scientists brought to the United States after the war to help in the creation of Nasa? Why were their skills so sought after? The World Around Us: How does our number system in Britain compare to that of Japan? How did Japanese Emperor Hirohito encourage mathematical thinking and scientific reasoning through his reign? Modern Britain: Explore where you would use your knowledge of ratio and proportion in modern day Britain. How will this knowledge help in your chosen career in the future? Which recreational activities and careers rely on ratio as a concept to function? How has our understanding of maths developed since the 1930s and 1940s? What scientific and technological advancements can be attributed to our better understanding of mathematics? Healthy Bodies & Healthy Minds: Do you think the resting heart rate of the average British citizen has improved or deteriorated since the end of WW2? How could we use mathematics to record and convey this data? Culture: Explore the causes of WWII. What cultural differences and ideologies contributed to the conflict? Is the prominence of mathematics in education the same for every culture? Why do you think this is?	**Long multiplication**  **Before multiplying by the digit in the tens column, you must place a zero as a place holder as the zero represent a full ones column and allows you to successfully multiply by ten.** **Short division**  **You must regroup any remainder and move them in the next column.**

	How are numbers written in other religions and cultures? Why is this? Technology in Action: How was mathematics used throughout WWII to gain the upper hand in battle, espionage and logistical management? How is mathematics used in the design and mass manufacture of weapons, vehicles and supplies?	 **If your calculation has a remainder, place a lower case r after your final use of the divisor followed by the remaining digit.** **Fat Questions:** What makes a place holder such an important part of our mathematical reasoning? When dividing using the bus stop method, why do we begin our working out on the left hand side of the question?
Links to future learning	The skills and knowledge taught in this block will be built upon and deepened throughout the year and will begin to provide a platform for long division in year 6. Children will have a secure understanding of the formal methods of multiplying and dividing such as the bus stop method and column method as well as prime numbers and squared numbers to apply to their learning on calculations and Year 6 mathematical learning (Long division, long multiplication and volume).	
Character/Wider Development ('50 things', cultural capital, skills)	Relate and use this knowledge and understanding in real-life contexts and make these relevant and purposeful links: when visiting a restaurant or cinema; exploring the population of a range of countries and how these have increased overtime; In what careers and industries is multiplication and division utilised? Communicate in a different language – Spanish: children will relate their mathematical understanding of place value to the Spanish number system in their language. Taking part in time travel – The above can also be applied to curriculum learning on rationing, battle participation numbers and planning logistics in wartime.	

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OVERVIEW OF TEACHING SEQUENCE

Key Facts / Learning	Learning Focus or Key Question	Learning Outcomes (NC)	Key Words/ Vocabulary	Greater Depth/SEND	Misconceptions	Activities and Resources
(8-10 lessons) Multiplication and division	To multiply 4-digits by 1-digit To multiply by 2-digits (Area model) To multiply 2-digits by 2-digits To multiply 3-digits by 2-digits To multiply 4-digits by 2-digits	To multiply and divide numbers mentally drawing upon known facts. To multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2-digit numbers. To divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and	multiplication multiply multiplied by multiple, factor groups of times product once, twice, three times … ten times repeated addition division dividing, divide, divided by, divided into left, left over, remainder grouping sharing, share, share equally one each, two each, three each … ten each group in pairs, threes … tens equal	GD: Children are introduced to more complex and wider reasoning and problem-solving questions / concepts. Children will have multi-step reasoning problems to solve, applying prior learning as well as current. Children will need to use depth of mathematical knowledge to provide clear mathematical explanation and reasoning to problems.	Children use the wrong operation for the question. defective procedure or method The correct operation is chosen and number facts are recalled correctly but there are errors in the use of the procedure Children have learned a pattern, 'rule', or method and then has applied it to situations where it is not appropriate (hence the importance of real understanding and not just mechanical learning of a procedure.	Pre-teaching of key concepts to allow students to commence tasks immediately within lessons. DTMs to be created using the following resources and based on CTs AFL of their class/cohort. Further cross-curricular links can be made to the 6 these during these also, for a wider context. WRMH: https://wrm-13b48.kxcdn.com/wp-content/uploads/2019/01/Year-5-2018-19-Spring-Term-Block-1-FINAL.pdf Third Space Learning: https://thirdspacelearning.com/ Classroom Secrets: https://classroomsecrets.co.uk/category/maths/year-5/spring-block-1-multiplication-and-division-year-5/ NCETM – resources / activities for DTMs Mastery_Assessment_Y5_High_Res.pdf

	To divide 4-digits by 1-digit To divide with a remainder (Two lessons if needed)	interpret remainders appropriately for the context. To solve problems involving addition and subtraction, multiplication, division, and a combination of these, including understanding the use of the equals sign.	groups of doubling halving array row, column number patterns multiplication table multiplication fact, division fact	SEND: Assessment and analysis of prior knowledge is needed. Teacher to assess and base planning and resources in a bespoke manner. Children will focus and use pictorial and practical resources to support and develop their understanding, using smaller digit numbers to begin with – are they secure in the place value of 2 and 3 digit numbers? Children will focus on recognising and understanding the value of negative numbers, through use of number lines and context to support their understanding.	Children have encountered insufficient examples or examples, which have insufficient variation. A sufficiency of both examples and of variation in examples is required in order for the child to be able to abstract the conceptual or procedural understanding required and so, without this sufficiency, the child may generalise on the basis of inadequate knowledge or experience.	Maths Frame: https://mathsframe.co.uk/en/resources/category/403/y5-Multiplication-and-Division Slides / resources saved on trust shared.

Context (big picture learning):
Mathematics is an important, creative discipline that helps us to understand and change the world. We want all of our children within the Pontefract Academies Trust to experience all that mathematics has to offer and to develop a sense of curiosity about the subject with a clear understanding. When they leave us we want them to continue their love of maths and use it continuously and positively in their future lives.
We foster a positive 'growth mind-set' attitude and we promote the fact that we believe that all children can achieve in mathematics. We teach for secure and deep understanding of mathematical concepts through manageable, bespoke steps and cross fertilize at every opportunity. VIPs (Very Important Points) are implemented in every lesson to ensure knowledge and skills are revisited and retained over time.
We use mistakes and misconceptions as an essential part of learning and provide challenge through rich and sophisticated reasoning and problem solving activities. At our school, the majority of children will be taught the content from their year group only. They will spend time becoming true masters of content, applying and being creative with new knowledge in multiple ways.

Folder name and link to resources: Trust shared > Primaries > Departments > KS2 > Planning Cycle B > Autumn 1 > Maths > Year 5 > Block 3

Week 1 L1-4

Week 2 L5-8

Year 5 Knowledge Organiser: Multiplication and division

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Fat Questions:

In what ways would the British government have used multiplication and division during WWII?

How can the concept of rationing be linked to the concept of division?

What makes a place holder such an important part of our mathematical calculations?

When dividing using the bus stop method, why do we begin our working out on the left hand side of the question?

What mental methods can be used to multiply and divide larger numbers?

Key vocabulary

Multiply

Divide

Place value

Place holder

Remainder

Carry

Product

Dividend

Divisor

Column

To see the full list of vocabulary, please refer to our resource walls.

Intent

We aim to develop and progress our skills in multiplication and division in order to equip us with the ability to solve real world problems that require a mathematical solution. With these skills, we can help to improve the world in which we live.

VIPs (very important points)

Multiplication- to add equal groups. When we **multiply**, the number of things in the group increases. The two factors and the product are parts of a **multiplication** problem.

Division- The division is a method of distributing a group of things into equal parts. It is one of the four basic operations of arithmetic, which gives a fair result of sharing.

Short multiplication

	2	5	4	3
×				7
1	7	8	0	1
1	3	3	2	

When completing your calculation using the column method, you must move the regrouped digit into the next column and add it onto your answer after the next multiplication is complete.

Long Multiplication

		2	5	4	3
	×			6	7
	1 1	7 3	8 3	0 2	1
1 1	5 3	2 2	5 1	8	0
1	7	0	3	8	1
	1	1			

Before multiplying by the digit in the tens column, you must place a zero as a place holder as the zero represent a full ones column and allows you to successfully multiply by ten.

Short division

		3	8
4	1	1 5	3 2

You must regroup any remainder and move them in the next column.

		4	5	5	r	3
5	2	2	2 7	2 8		

If your calculation has a remainder, place a lower case r after your final use of the divisor followed by the remaining digit.