

Subject: MATHS	White Rose Maths Year3/4 7/8	OUR TOPIC: Properties of number
Class: V3 JS	Teacher: Jacqui Shepherd	Term: 1 Autumn block 4 – place value and ordering Multiplicative Reasoning
Key Vocabulary: Place value Digit Billion Placeholder Integer Equal division Interval Scale Gap Spaces Round Approximate Nearest Convention Halfway Range Greatest Least Difference Equal division Interval Scale Gap Spaces Approximate Compare Digit Equal Not equal Greater than Less than Order Ascending Descending Place Value Leading digit Median Middle Order Average Tenth Hundredth Decimal Decimal point Interval	Alternative Learning Environments	Resources: Pencils, Rulers, Rubbers, White Rose scheme resources, white board, base 10 cheese, cubes Pupil specific activities at the beginning of each lesson on board including lesson descriptor rules and/or formula

Learning Intentions.

Current Unit –	Prior Learning –	Future Learning –
<p>Recognise the place value of any number in an integer up to one billion</p> <p>Understand and write integers up to one billion in words and figures</p> <p>Work out intervals on a number line</p> <p>Position integers on a number line</p> <p>Round integers to the nearest power of ten</p> <p>Compare two numbers using =, \neq, $<$, $>$, \leq, \geq</p> <p>Order a list of integers</p> <p>Find the range of a set of numbers</p> <p>Find the median of a set of numbers</p> <p>Understand place value for decimals</p> <p>Position decimals on a number line</p> <p>Compare and order any number up to one billion</p> <p>Round a number to 1 significant figure</p> <p>Write 10, 100, 1000 etc. as powers of 10 (H)</p>	<p>Percentages</p> <p>Fractions</p> <p>Decimals</p> <p>Addition</p> <p>subtraction</p>	

<p>Write positive integers in the form $A \times 10^n$ (H)</p> <p>Investigate negative powers of ten (H)</p> <p>Write decimals in the form $A \times 10^n$ (H)</p>		
<p>Properties of multiplication & division</p> <p>Understand and use factors</p> <p>Understand and use multiples</p> <p>Convert metric units</p> <p>Use formal methods to multiply integers</p> <p>Use formal methods to multiply decimals</p> <p>Use formal methods to divide integers</p> <p>Use formal methods to divide decimals</p> <p>Understand and use order of operations</p>		<p>Multiply and divide integers and decimals by powers of 10</p> <p>Multiply by 0.1 and 0.01 (H)</p> <p>Solve problems using the area of rectangles and parallelograms</p> <p>Solve problems using the area of triangles</p> <p>Solve problems using the area of trapezia (H)</p> <p>Solve problems using the mean</p> <p>Explore multiplication and division in algebraic expressions (H)</p>
<p>Recap –</p>		

<p>Pupil Asset Milestones to be achieved: use formal written methods, applied to positive integers and decimals</p> <p>select and use appropriate calculation strategies to solve increasingly complex problems recognise and use relationships between operations including inverse operations</p> <p>use the concepts and vocabulary factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple</p> <p>change freely between related standard units [time, length, area, volume/capacity, mass] derive and apply formulae to calculate and solve problems involving:</p> <p>perimeter and area of triangles, parallelograms, and trapezia (H) substitute numerical values into formulae and expressions, including scientific formulae</p> <p>use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)</p> <p>describe, interpret and compare observed distributions of a single variable through: the mean</p>
<p>Stage: 3 –</p>
<p>Stage 4 –</p>
<p>Stage 6 –</p>
<p>YR10 functional skills maths: main objectives: consolidating learning, understanding and learning how to answer exam style questions; lateral thinking, demonstrating working</p>
<p>Completion of Entry Level Maths Papers</p>

Week	Session 1	Session 2	Session 3	Session 4
1				Lesson Objective Introduction to expectations and terms work. Vocabulary for maths – including spelling of numbers in words Activities: 20 questions on board relating to topic differentiated for all students Students completing activities with a range of concrete materials as required Peer support – working in set groups with staff support.
2	Lesson Objective: Recognise the place value of any number in an integer up to one billion Understand and write integers up to one billion in words and figures White Rose Maths Stage 7 Autumn 2 Place value and ordering Students should write and represent the numbers in several ways and need to see a mixture of smaller and larger integers. Activities: Teaching Slides as resource Introduce topic Worksheets	Lesson Objective Work out intervals on a number line Position integers on a number line White Rose Maths Stage 7 Autumn 2 Place value and ordering Students should be taught to work out the intervals given the number of spaces on a line and to fill in missing values. Although the focus should be on the most common values such as 5 and 10, it is worth exploring other values. Using other scales that use number lines.	Lesson Objective Round integers to the nearest power of ten White Rose Maths Stage 7 Autumn 2 Place value and ordering Emphasis placed on “nearest” meaning proximity, encouraging students to think about the size of the number rather than rote-learned rules. “Rounding up” for halfway should be explained as a convention. Activities Teaching Slides as resource Worksheets	Lesson Objective 20 questions review of topics. Review of mathematical language and relationship with inverse operations. Complete questions with substitutions. Ensure understanding of inverse operations relationships. Board work. Group work

	<p>For all students : Write in figures. Thirty-five thousand million One and a half billion Two hundred and three thousand, five hundred and twelve Eighty-eight million, eighty-eight thousand Half a million One billion, ten thousand and one</p> <p>Some: Write down the numbers that are: Three million more than 917 000 000 The sum of three hundred million and 700 000 000 30 000 000 more than nine hundred and sixty million The difference between one billion and seventy-five million</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support. SE, RW, LS, CR – round to nearest million – focus on reading figures and words</p>	<p>Activities</p> <p>Teaching Slides as resource Worksheets Work out the value of each of the intervals in number lines. Fully label number lines. Repeat for lines where 10 is replaced by 20, 100 and 1000 start to use these to place integers and to read values. Making links to reading from common scales such as weighing scales, measuring jugs and thermometers.</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support. SE, RW, LS, CR – round to nearest million – focus on reading figures and words</p>	<p>Use calculator to find the answers to calculations. Rounding answers to the nearest hundred.</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p> <p>SE, RW, LS, CR – round to nearest million – focus on reading figures and words</p>	
3	<p>Compare two numbers using $=, \neq, <, >, \leq, \geq$ Encourage the use of “greater than” and “less than” rather than “bigger than”/“smaller than” etc. and pay attention to reading statements like “829 < 850” both from left to right and from right to left.</p> <p>Activities Teaching Slides as resource Worksheets</p>	<p>Lesson Objective Find the range of a set of numbers Find the median of a set of numbers</p> <p>White Rose Maths Stage 7 Autumn 2 Place value and ordering</p> <p>RECAP: remind students of meaning of terms median and range Care needs to be taken so that students remember to find the difference between the greatest and least values rather than state “they range from ___ to ___”. It is worth revisiting the concept</p>	<p>Lesson Objective Understand place value for decimals Position decimals on a number line White Rose Maths Stage 7 Autumn 2 Place value and ordering</p> <p>Students following the Foundation strand should focus on proper understanding of tenths and hundredths during this step, and throughout this unit. Only move on to thousandths and beyond if appropriate for the students in your class. Conversion between fractional and decimal forms of tenths and hundredths are covered in depth in the next block. Students should now be able to compare decimal</p>	<p>Lesson Objective Compare and order any number up to one billion</p> <p>White Rose Maths Stage 7 Autumn 2 Place value and ordering</p> <p>It is important that students read numbers correctly e.g. “nought point three five” as opposed to “nought point thirty-five” as this leads to misconceptions such as $0.35 > 0.4$. Students following the Foundation strand should focus on numbers with up to two decimal places at this stage,</p> <p>Activities</p>

	<p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p> <p>Additional plenary questions on board regarding rounding and place value</p>	<p>regularly in lesson starters or within other topics 20 questions on board relating to topic differentiated for all students</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p> <p>SE, RW, LS, CR– focus on reading figures and words, numbers Students need to be taught how to find the median from a list with both an even amount of numbers and an odd amount of numbers.</p> <p>Activities Teaching Slides as resource Worksheets</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p>	<p>numbers as well as integers. Students may need help with finding the intervals in decimal number lines, and this key skill will be revisited in the upcoming FDP work. The focus in this step is appreciating the place value of decimal numbers and how this affects their relative positioning. Challenge can be added if appropriate by looking at intervals of 0.2, 0.05 etc,</p> <p>Activities Teaching Slides as resource Worksheets</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p> <p>SE, RW, LS, CR– focus on working with decimals in the form of pounds and pence. More concrete applications of decimals.</p>	<p>Teaching Slides as resource Worksheets</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support. 20 questions on board relating to topic differentiated for all students</p> <p>Physical engagement – board work. Quiz in teams. How do we work out the size of an interval on a number line? What is different when thinking about the position of 0.3 and 0.03?</p>
4	<p>Lesson Objective: Round a number to 1 significant figure</p> <p>White Rose Maths Stage 7 Autumn 2 Place value and ordering</p> <p>Activities: Recap confirm understanding of previous weeks</p>	<p>Lesson Objective Write 10, 100, 1000 etc. as powers of 10 (H) BS, KT, OV, JW White Rose Maths Stage 7 Autumn 2 Place value and ordering</p> <p>Activities</p>	<p>Lesson Objective Write positive integers in the form $A \times 10^n$ (H)</p> <p>BS, KT, OV, JW White Rose Maths Stage 7 Autumn 2 Place value and ordering</p>	<p>Lesson Objective White Rose Maths Stage 7 Autumn 2 Place value and ordering</p> <p>Activities Weekly plenary questions on board from all levels to give</p>

	<p>topics, develop independent working skills.</p> <p>20 questions on board relating to topic differentiated for all students</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p>	<p>Teaching Slides as resource Introduce topic With additional resources for as required.</p> <p>TA TO FOCUS ON SE, RW, LS, CR Consolidate understanding of decimal place value and Compare two numbers using =, ≠, <, >, ≤, ≥ Encourage the use of “greater than” and “less than” rather than “bigger than”/“smaller than” etc. and pay attention to reading statements like “829 < 850” both from left to right and from right to left.</p>	<p>Activities</p> <p>Teaching Slides as resource Introduce topic With additional resources for as required.</p> <p>White Rose worksheets as above</p> <p>TA TO FOCUS ON SE, RW, LS, CR Consolidate understanding of decimal place value and Compare two numbers using =, ≠, <, >, ≤, ≥ Encourage the use of “greater than” and “less than” rather than “bigger than”/“smaller than” etc. and pay attention to reading statements like “829 < 850” both from left to right and from right to left.</p>	<p>opportunity to improve and develop knowledge and understanding; incorporating extension activities and further real-world applications and examples for all students combining themes</p>
5	<p>Lesson Objective:</p> <p>Recap confirm understanding of previous weeks topics, develop independent working skills, thought, problem solving. Alongside developing mental maths skills and rehearsing number bonds</p> <p>Activities:</p> <p>20 questions on board relating to topic differentiated for all students</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p>	<p>Lesson Objective</p> <p>Write decimals in the form Ax10n (H) BS, KT, OV, JW White Rose Maths Stage 7 Autumn 2 Place value and ordering</p> <p>Activities</p> <p>Teaching Slides as resource Introduce topic With additional resources for as required.</p> <p>White Rose worksheets as above</p> <p>Students completing activities with a range of concrete materials as required</p>	<p>Lesson Objective</p> <p>Investigate negative powers of ten (H) BS, KT, OV, JW White Rose Maths Stage 7 Autumn 2 Place value and ordering</p> <p>Activities</p> <p>Teaching Slides as resource Introduce topic With additional resources for as required.</p> <p>White Rose worksheets as above</p> <p>Students completing activities with a range of concrete materials as required</p>	<p>TOPIC PLENARY</p> <p>Questions on board from all levels to give opportunity to improve and develop knowledge and understanding; incorporating extension activities and further real-world applications and examples for all students combining themes</p>

		<p>Peer support – working in set groups with staff support.</p> <p>TA TO FOCUS ON SE, RW, LS, CR RECAP LEARNING AND CHECK UNDERSTANDING OF DECIMAL PLACE VALUE AND ORDERING OF NUMBER</p>	<p>Peer support – working in set groups with staff support.</p> <p>TA TO FOCUS ON SE, RW, LS, CR RECAP LEARNING AND CHECK UNDERSTANDING OF DECIMAL PLACE VALUE AND ORDERING OF NUMBER</p>	
6	<p>Lesson Objective: Properties of multiplication and division</p> <p>Starter: on board</p> <p>Activities: Remind students of various forms of representing x. Discuss scale models and repeated addition. Inverse nature of x and division to be emphasised, as should commutativity and associativity of multiplication.</p> <p>20 questions on board relating to topic differentiated for all students</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p> <p>SE, RW, LS, CR– focus on concrete multiplication. Use of base ten.</p>	<p>Lesson Objective Understand and use factors White Rose Maths</p> <p>Starter review terminology</p> <p>Activities Teaching Slides as resource Worksheets</p> <p>Focus on FACTORS of a number Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p>	<p>Lesson Objective Understand and use multiples White Rose Maths</p> <p>How do multiples relate to time table facts? Is 0 a multiple of every number? Can neg no be multiplied? Do multiples have to be a whole number? Explain how 18 can both be a factor and multiple of a number.</p> <p>Activities Teaching Slides as resource Worksheets</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p> <p>SE, RW, LS, CR– focus on working with. More concrete applications of multiplication.</p>	<p>Lesson Objective Entry Level maths Papers to be completed White Rose Maths</p> <p>Activities Students completing activities with a range of concrete materials as required</p> <p>Exam conditions</p>
7	<p>Lesson Objective: Convert metric units Recap confirm understanding of previous weeks topics multiplication of decimals</p>	<p>Lesson Objective Formal methods: multiply integers Starter times table machines. Bingo</p>	<p>Lesson Objective Formal methods : x decimals</p> <p>Students may need help with finding the intervals in decimal number lines, and this</p>	<p>Lesson Objective Entry Level maths Papers to be completed White Rose Maths</p>

	<p>develop independent working skills.</p> <p>Activities:</p> <p>20 questions on board relating to topic differentiated for all students</p> <p>concrete images of legths to enable students to see link between whether they should multiply or divide to convert. Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p> <p>SE, RW, LS, CR– Work with Amy</p>	<p>Activities</p> <p>Teaching Slides as resource</p> <p>Worksheets</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Revisit using rounding to one sig fig. and estimating</p> <p>Stress place value and importance of clearly laying out number/ digits.</p> <p>Peer support – working in set groups with staff support.</p>	<p>key skill will be revisited in the upcoming FDP work. The focus in this step is appreciating the place value of decimal numbers and how this affects their relative positioning.</p> <p>Remind students of x and dividing through powers of 10.</p> <p>Give students time to use calculators to come up with their own rules to share a check with group.</p> <p>Activities</p> <p>Teaching Slides as resource</p> <p>Worksheets</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p> <p>SE, RW, LS, CR– work with Amy to complete task set.</p>	<p>Activities</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Exam conditions</p>
8	<p>Lesson Objective:</p> <p>Formal methods: divide decimals develop independent working skills.</p> <p>Activities: Development to dividing decimals by integers</p> <p>Key questions:</p> <p>How do you know 325 divided by 2 will not have an integer answer?</p> <p>ID types of equation solved by using division?</p> <p>20 questions on board relating to topic differentiated for all students</p> <p>concrete images of legths to enable students to see link</p>	<p>Lesson Objective</p> <p>Order of operations</p> <p>Starter times table machines.</p> <p>Bingo</p> <p>Activities</p> <p>Teaching Slides as resource</p> <p>Worksheets</p> <p>Students completing activities with a range of concrete materials as required</p> <p>BIDMAS : go through with students to check understanding.</p> <p>Peer support – working in set groups with staff support.</p>	<p>Lesson Objective</p> <p>Order of operations</p> <p>Starter times table machines.</p> <p>Bingo</p> <p>Activities</p> <p>Teaching Slides as resource</p> <p>Worksheets</p> <p>Students completing activities with a range of concrete materials as required</p> <p>BIDMAS : go through with students to check understanding.</p> <p>Peer support – working in set groups with staff support.</p>	<p>Lesson Objective</p> <p>Entry Level maths Papers to be completed</p> <p>White Rose Maths</p> <p>Activities</p> <p>Students completing activities with a range of concrete materials as required</p> <p>Exam conditions</p> <p>Exam level questions for students GCSE/ Functional skills that have completed ELC</p>

	<p>between whether they should multiply or divide to convert. Students completing activities with a range of concrete materials as required</p> <p>Peer support – working in set groups with staff support.</p> <p>SE, RW, LS, CR– Work with Amy – basic division with busstop method</p>			
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