



Big Question - Place Value

AoLE: Mathematics and Numeracy	Subject: Maths	Year: 7
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Big Question / Aim / Objective / Concept	Vision (Proposed outcome) / Purpose of curriculum	Prior knowledge / Learners previous knowledge
How big can numbers get?	Pupils will gain an appreciation for the impact that changes in place value can have. Pupils will realise how the value of a number can change depending on its place and order these appropriately. Pupils will gain an understanding of how rounding can impact the value of a number and also apply different notations to compare numbers.	Four arithmetic operations. Ordering numbers. Integers. Decimals. Powers of 10.

What does progression look like in this 'Big Question'?

Progression Indicator	Description of learning (What matters statements)	Student evidence of progression (Blooms) / Knowledge
Excelling	<p>I can use standard index form to represent large and small numbers, performing calculations in context.</p> <p>I can use appropriate rounding methods, including significant figures, to estimate values.</p>	<p>Calculate rounding to a significant figure.</p> <p>Apply rounding to a significant figure to calculate approximations.</p> <p>Describe large or small quantities using standard form.</p> <p>Compare large or small quantities using standard form.</p> <p>Apply the four arithmetic operations to large or small quantities using standard form.</p> <p>Explore the use of standard form (e.g. the use in physics for distances or Biology for the size of microbes).</p> <p>Explore non-standard numbers (e.g. infinity).</p> <p>Construct a question using standard form and rounding.</p>
Advancing	<p>I can use a range of representations to develop and secure my understanding that the value of a digit is related to its position.</p> <p>I can read, record and interpret numbers, using figures and words up to at least one million.</p> <p>I can use a range of representations to extend my understanding of the number system to include negative values, decimals and fractions.</p> <p>I can accurately place integers, decimals and fractional quantities on a number line. I can apply my understanding of number value to round and approximate appropriately.</p> <p>I can verify calculations and statements about number by inverse reasoning and approximation methods.</p> <p>I can fluently recall multiplication facts up to at least 10 x 10 and use these to derive</p>	<p>Describe integer numbers written in figures in words.</p> <p>Describe integer numbers written in words as figures.</p> <p>List integers in either an ascending or descending order.</p> <p>List positive decimals in either ascending or descending order.</p> <p>Calculate the intervals on a number line.</p> <p>Calculate the position of a decimal on a number line.</p> <p>Calculate rounding integers to the nearest power of 10 (10, 100, 1000, etc).</p> <p>Calculate rounding decimals to the nearest whole number.</p>



	related facts.	<p>Apply multiplication facts to determine an estimation.</p> <p>Compare two integer quantities up to 1 billion using the equality and inequality symbols.</p> <p>Construct a question using rounding to a whole number.</p>
Securing	<p>I can read, write and interpret larger numbers, up to at least 1000, using digits and words.</p> <p>I can understand that the value of a number can be determined by the position of the digits.</p> <p>I have engaged in practical tasks to estimate and round numbers to the nearest 10 and 100.</p> <p>I am beginning to estimate and check the accuracy of my answers, using inverse operations when appropriate.</p> <p>I can order and sequence numbers, including odd and even numbers, and I can count on and back in step sizes of any whole number and simple unit fractions.</p>	<p>Describe positive integer numbers up to 1000 written in figures in words.</p> <p>Describe positive integer numbers up to 1000 written in words as figures.</p> <p>Calculate the value of a positive integer depending on the position of its digits.</p> <p>Calculate rounding positive integers to the nearest power of 10 (10, 100, 1000, etc).</p> <p>Calculate estimates using rounding to check answers.</p> <p>Construct a question using rounding to a power of 10.</p>
Beginning	<p>I can notice, recognise and write numbers in a range of media, through a multisensory approach, from 0 to 10 and beyond.</p> <p>I can use mathematical language to describe quantities, and to make estimates and comparisons such as 'more than', 'less than' and 'equal to'.</p> <p>I have experienced the counting sequence of numbers in different ways, reciting forwards and backwards, and starting at different points.</p> <p>I can use my experience of the counting sequence of numbers and of one-to-one correspondence to count sets reliably. I can count objects that I can touch, and ones that I cannot.</p> <p>I am beginning to demonstrate, using objects, an understanding of the concepts of 'equal' and 'not equal'.</p>	<p>Describe integer numbers up to 100 written in figures in words.</p> <p>Describe integer numbers up to 100 written in words as figures.</p> <p>List positive integers in either an ascending or descending order.</p> <p>Compare two integer quantities above zero and up to 10 using the equality and inequality symbols.</p> <p>Demonstrate how a positive integer number is equal to and not equal to another.</p> <p>Construct a question to describe integer numbers in words and figures.</p>

Authentic learning experiences (Local / National / International)	Skills (Literacy / Numeracy / DCF) / Cross Curricular links
<p>Local links: Rounding the local population to an appropriate level to compare with other areas.</p> <p>National links: Compare rounded local population to other areas of Wales and order based on population size.</p> <p>International links: Access the NASA website to explore how large numbers are used in space travel.</p>	<p>Cross-curricular Links: Geography uses rounding in a population task, also uses large numbers in comparing house types. History uses rounding in a task related to Roman armies. Product Design uses rounding in practical work when measuring materials. Science uses standard form in both physics which uses standard form to measure distance between planets or the size of molecules and biology to measure the size of cells.</p> <p>DCF: Use of spreadsheets throughout the term to explore how ICT systems represent large and small numbers.</p>



	Literacy: Frayer models and key word spelling tests will assist learners with tier 3 vocabulary. Reasoning and logic will be tested using additional constraints and higher order questioning.
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Assessment (How will we know that students have learnt what we taught them?)	
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Formative assessment: Teacher circulating. Cold calling. Mini whiteboards. Peer/self assessment tasks. Pickers. Desmos.	Summative assessment: Open book assessment covering all topics.
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Evaluation (To be completed July 2024)		
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Strengths	Areas for Development	Pupil Voice