

Place Value: Powers of 10 up to 10 Million

<p>Aim: Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.</p> <p>DFE Ready -to-Progress Criteria: Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000). (6NPV-1)</p> <p>To understand the relationship between powers of 10 from 1 hundredth to 10 million.</p>	<p>Success Criteria:</p> <p>I know that each power of 10 is equal to 1 group of 10 of the next smallest power of 10.</p> <p>I can identify the number that is 10, 100 and 1000 times the size of a given number and associate this with multiplying or dividing by 10, 100 and 1000.</p> <p>I can multiply and divide numbers up to 10 million by 10, 100 and 1000, including calculations that involve numbers with more than one significant digit.</p> <p>I can use my understanding of powers of 10 scaling in the context of measures.</p>	<p>Resources:</p> <p>Lesson Pack</p> <p>Whiteboards and pens – class set</p> <p>Dice – one per pair of children</p>
	<p>Key/New Words:</p> <p>Power of 10, equivalence, scaling by 10, scaling by 100, scaling by 1000, multiplying, dividing.</p> <p>Language Focus:</p> <p>10 hundred thousands is equal to 1 million. 1 000 000 is 10 times the size of 100 000. 100 000 is one-tenth times the size of 1 000 000.</p>	<p>Preparation:</p> <p>Differentiated Rolling Powers of Ten Activity Sheet – one set child/pair</p> <p>Diving into Mastery Activity Sheets – as required</p>

Year 5 Conceptual Prerequisite: Understand the relationship between powers of 10 from 1 hundredth to 1000 in terms of **Prior Learning:** grouping and exchange (for example, 1 is equal to 10 tenths) and in terms of scaling (for example, 1 is ten times the size of 1 tenth).

Learning Sequence

	Remember It: Use the corresponding slides on the Lesson Presentation to rehearse identifying the relationships between powers of 10 from 1 hundredth to 1000 in terms of grouping and exchange and scaling. Use the maths sentence stems to consolidate using the correct language.	
	Beyond 1000: Use the corresponding slides on the Lesson Presentation to introduce identifying the relationships between powers of 10 from 1 thousand to 1 million in terms of grouping and exchange and scaling. Use the maths sentence stems to consolidate using the correct language. Do the children know that each power of 10 is equal to 1 group of 10 of the next smallest power of 10?	
	Scaling by 10, 100 and 1000: Introduce the Gattegno chart displayed on the Lesson Presentation . Explain that we can use the chart to help identify the number that is 10, 100 and 1000 times the size of a given number and associate this with multiplying or dividing by 10, 100 and 1000. You may find it helpful for the children to have a copy of the Gattegno Chart to support during this whole class activity.	
	Scaling by 10, 100 and 1000 Roll and Read: Children work with partners to complete the Scaling by 10, 100 and 1000 Roll and Read Game to demonstrate they can multiply and divide numbers up to 10 million by 10, 100 and 1000 including calculations that involve numbers with more than one significant digit. Use the Gattegno Chart to support children as required. Can children multiply and divide numbers up to 10 million by 10, 100 and 1000, including calculations that involve numbers with more than one significant digit?	
	Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative activity. These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.	
	Children complete fluency word problems involving the relationship between powers of 10 from 1 hundredth to 10 million.	
	Children answer reasoning questions involving the relationship between powers of 10 from 1 hundredth to 10 million, explaining their reasoning.	
	Children work individually or collaboratively on problem-solving questions involving the relationship between powers of 10 from 1 hundredth to 10 million.	



Word Problems: Refer to the corresponding slides of the [Lesson Presentation](#) which introduce solving word problems using understanding of the relationship between powers of 10 from 1 hundredth to 10 million in the context of measures. **Can the children use their understanding of powers of 10 scaling in the context of measures?**



ExploreIt

LearnIt: Children will find this visually exciting [Place Value Chart](#) a useful tool for understanding the place value of numbers up to 10 million.

CreateIt: Encourage the children to make their own matching game using multiples of 1000s and the equivalent number of hundreds.