








Number and Place Value: Calculating Intervals Across Zero

Aim: To calculate intervals across zero. To calculate intervals across zero.	Success Criteria: I can use a number line to calculate with negative numbers. I can solve additions and subtractions above, below and across zero.	Resources: Lesson Pack Dice - per child
	Key/New Words: Negative, minus, below, zero, interval.	Preparation: Differentiated Find a Path Activity Sheet - per child -20 to 20 Number Line - cut out, as required Extra Challenge Activity Sheet - as required Diving into Mastery Activity Sheets - as required

Prior Learning: It will be helpful if children have covered negative numbers, including counting forwards and backwards through zero.

Learning Sequence

	Remember It: Children round the given numbers on the Lesson Presentation to the required degree of accuracy.	
	Negative Numbers: Introduce negative numbers and their uses, referring to the Lesson Presentation . Explain how we can calculate intervals across zero using a number line. Click to show the steps on the number line counting back from 7 through zero to -12. Can children use the number line on the Lesson Presentation, or their own -20 to 20 Number Line, to solve the calculations shown on the Lesson Presentation? Share the answers and review any misconceptions.	
	Calculating Intervals Across Zero: Children calculate intervals across zero, answering the problems shown on the Lesson Presentation . They justify their responses with reasoning where appropriate.	
	Find a Path: Children follow the calculations shown on the Lesson Presentation to find a path through the maze. Can children calculate intervals across zero with negative numbers? Share the answers with children to see if they found the correct path through the maze.	
	Find a Path Activity: Children complete the differentiated Find a Path Activity Sheet . Can they calculate intervals across zero with negative numbers? <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Calculate with numbers between -20 and 20. Use the -20 to 20 Number Line if required.</p> </div> <div style="text-align: center;"> <p>Calculate with numbers between -35 and 30.</p> </div> <div style="text-align: center;"> <p>Calculate with numbers between -40 and 50, including decimal numbers. An Extra Challenge Activity Sheet is provided as an extension activity if required.</p> </div> </div>	

	<p>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.</p> <p> Children complete fluency problems using negative numbers in context and calculating intervals across zero.</p> <p> Children explore answering reasoning problems which use negative numbers in context. They calculate intervals across zero and discuss their reasoning.</p> <p> Children use problem-solving skills in order to answer an open-ended task that involves a greater depth of thinking when using negative numbers in context and calculating intervals across zero.</p>	
	<p>Crossing Zero: Children try to solve the problem shown on the Lesson Presentation. Can children use the given interval across zero to find the missing values? Show the answers and explain how to find the values.</p>	

Exploreit

Calculateit: Challenge children to explore adding and subtracting negative numbers. Children could look at the idea that we move down the number line when adding a negative number and up the number line when subtracting a negative number. They could explore this by discussing the answers to negative number addition and subtractions and formulate their own rule, before solving some of their own.

Investigateit: Allow children to find the average day and night-time temperatures for a range of cities around the world. Challenge them to investigate the temperature difference between the hottest cities and the coldest cities.

Learnit: Children will find this visually exciting [Knowledge Organiser](#) a useful tool for enhancing their knowledge of number and place value.