

Multiplication and division as 'arrays' and inverses lesson plan

DAY	We Are Learning To (WALT):	MODEL / INTRODUCTION	INDEPENDENT WORK	PLENARY
	<p>Mental:</p> <p>Main: Understand multiplication as arrays and inverses</p>	<p>Mental:</p> <p>Main: More able children to attempt to use a given multiplication or division sentence to derive 3 related sentences without listening to teacher. TA to monitor their progress. If confident, allow to finish; if insecure send back to carpet to listen to teacher e.g. given $4 \times 0.3 = 1.2$, derive $0.3 \times 4 = 1.2$, $1.2 \div 4 = 0.3$ and $1.2 \div 0.3 = 4$ Teacher (with remainder of class): Explain that we will be looking at multiplication and division as 'arrays' and using each array to write 4 related number sentences, all using the same numbers Revise how an array is a grid – it has columns and rows A column is vertical and a row is horizontal Use children to make an array e.g. 4 rows of 2 What 2 multiplication and 2 division sentences can we make from this array? ($4 \times 2 = 8$, $2 \times 4 = 8$, $8 \div 4 = 2$ and $8 \div 2 = 4$) Repeat this model for several arrays, including squares e.g. $2 \times 2 = 4$ / $4 \div 2 = 2$, $3 \times 3 = 9$, $9 \div 3 = 3$ etc and how these can only be written one way Model how to complete independent work Emphasise the need to have the numbers in the correct order in each number sentence (can give children clue that divisions always start with greatest number and multiplications always end with the greatest number, although this is not true when working with decimals) With more able children who were secure on higher ability work explain area and perimeter Go through PowerPoint covering the following:</p> <ul style="list-style-type: none"> • Multiplication as arrays and how this is the same as calculating area • Explain perimeter as the length of the fence around a field and area as the space inside the field and how to calculate perimeter by totalling the length of all of the sides and calculate area by multiplying a long side by a short side, and write as cm^2 • Model how to find perimeter and area of two rectangles • Model how to find perimeter and area of two irregular shapes by counting squares <p>Remind children to write perimeter as cm and area as cm^2</p>	<p>Lower ability – derive 2 multiplication and 2 division sentences from arrays (multiplying and dividing by 2, 3, 4 and 5) (slow workers to work on worksheet)</p> <p>Middle ability – derive 2 multiplication and 2 division sentences from arrays (multiplying and dividing by 6, 7, 8 and 9)</p> <p>Higher ability – use known facts to calculate with decimals e.g. $4 \times 0.3 = 1.2$, $0.3 \times 4 = 1.2$, $1.2 \div 4 = 0.3$ and $1.2 \div 0.3 = 4$</p> <p>G+T – calculate area and perimeter</p> <p>Extension – make up own arrays and related multiplication and division sentences on pupil whiteboards or draw own shapes to calculate area and perimeter of</p>	<p>Ask the class to split themselves in to groups, with each group being an array Tell class that all children in the class need to be in a group; no one can be left out Ask children to give a multiplication sentence or division sentence that could come from their array G+T – draw a shape of their own for a partner to calculate the area and perimeter of</p>