

Multiplication and Division: Calculations with Zero and One

Aim: To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. I can multiply by 0 and 1 and divide by 1.	Success Criteria: I know different words for the number 0 and understand what it represents. I can use drawings and objects to show why multiplying by 0 or 1 is different from adding and subtracting 0 or 1. I can write rules for multiplying by 0 or 1 and dividing by 1. I can use what I have learnt to solve word problems.	Resources: Lesson Pack Small manipulatives
	Key/New Words: Multiply, divide, product, times, groups of, shared by, zero, naught, nothing, nil.	Preparation: Differentiated Calculations with 0 and 1 Activity Sheets - 1 per child

Prior Learning: It will be helpful if the children have had experience of adding and subtracting one and zero.

Learning Sequence

	Corners: Children play Corners as a whole class. Label the four corners (or four areas) of the classroom as 'multiplication', 'division', 'addition' and 'subtraction'. Show the word problems on the Lesson Presentation . The children read the word or problem and then go and stand in the corner which matches it. Children could be 'out' if they go to the wrong corner or everyone could stay in and earn points for correct choices.				
	Zero: As a whole class, discuss the number zero. How many different names for zero can they think of? Naught, nil, nothing, etc. Encourage the children to name zero in any other known languages too.				
	Adding and Subtracting Zero: Use small manipulatives to model practically what happens when we add and subtract zero. Encourage the children to say the number sentence out loud using mathematical vocabulary and suggest simple word problems to go with the number sentences. Formulate a rule for adding and subtracting zero.				
	Make a Rule: Write a rule for adding and subtracting zero.				
	Multiplying and Dividing by Zero: How is multiplying by zero different? Model this with small manipulatives. When you multiply by zero you have nothing to multiply. Use repeated addition to reinforce the concept.				
	Make a Rule: Write a rule for multiplying by zero.				
	Calculations with Zero and One: Children complete differentiated Calculations with 0 and 1 Activity Sheets , multiplying and dividing by one and multiplying by zero. <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;"> Children use small manipulatives to model multiplying and dividing by one, before writing rules for multiplying and dividing by one, like they did earlier for zero. The final section asks them to apply the rules to solve problems. </td> <td style="width: 33%; border: none;"> Children investigate then write rules for multiplying and dividing by one. They then apply the rules to solve problems requiring them to multiply by zero and one and divide by one. </td> <td style="width: 33%; border: none;"> Children investigate then write rules for multiplying and dividing by one. They then apply the rules to solve problems requiring them to add, subtract and multiply by zero and one and divide by one. </td> </tr> </table>	Children use small manipulatives to model multiplying and dividing by one, before writing rules for multiplying and dividing by one, like they did earlier for zero. The final section asks them to apply the rules to solve problems.	Children investigate then write rules for multiplying and dividing by one. They then apply the rules to solve problems requiring them to multiply by zero and one and divide by one.	Children investigate then write rules for multiplying and dividing by one. They then apply the rules to solve problems requiring them to add, subtract and multiply by zero and one and divide by one.	
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	True or False: Children put their thumbs up for statements they think are true and down for statements they think are false, identifying the correct rules for multiplying by zero and one and dividing by one.				

Masterit

Displayit: Children write their rules for multiplying by zero and one and dividing by one up onto a poster for displaying in the classroom. They could give examples to illustrate the rule.

Quizit: Children make their own PowerPoint quiz to test their classmates on multiplying by zero and one and dividing by one. They must provide answers to the quiz in the notes page.

Playit: Children use their mathematical vocabulary to write some new problems of their own for **Corners** and lead the game.