Multiplication and Division: Multiply 3-Digits and 4-Digits by 2-Digits

Aim: Multiply numbers up to 4 digits by a one or two-digit number using a formal written method, including long multiplication for two-digit numbers. **DfE Ready-to-Progress Criteria:** Multiply any whole number with up to 4-digits by any one-digit number using a formal written method (5MD-3). To multiply 3- and 4-digit numbers by 2-digit numbers using long multiplication.	**Success Criteria:** I can set out the written method of long multiplication correctly. I begin by multiplying in the place value column with the smallest value. I can use zero as a placeholder correctly in long multiplication.	**Resources:** Lesson Pack
	Key/New Words: Multiply, 2-digits, long multiplication, formal method, zero, placeholder, regroup, inverse, 3-digits, 4-digits.	**Preparation:** Differentiated Multiply 3-Digits and 4-Digits by 2-Digits Activity Sheets – one per child Diving into Mastery Activity Sheets – as required

Prior Learning: It will be helpful if children are familiar with multiplying 2-digits by 2-digits using the long multiplication method.

Learning Sequence

	**Remember It:** Using the corresponding slide on the Lesson Presentation, the children will revise the important skill of multiplying by multiples of 10. This activity will support children when they carry out the long multiplication method within this lesson. Children will solve the calculations and can be further challenged by creating inverse division expressions for multiplication calculations.	
	**Multiplying 3-Digits by 2-Digits:** Using the corresponding slide of the Lesson Presentation, the children will be introduced to the formal method for multiplying 3-digit numbers by 2-digit numbers. The individual steps of this method will be demonstrated through animation and will break each stage down into single calculations. There are two instances of regrouping which the children's attention should be drawn to. It is imperative that the children understand the place value of each digit in the calculation to help them calculate correctly. Can the children begin by multiplying in the place value column with the smallest value? Can the children use zero as a placeholder correctly in long multiplication?	
	**Multiplying 4-Digits by 2-Digits:** Using the corresponding slide of the Lesson Presentation, the children will be guided through an example where a 4-digit number is multiplied by a 2-digit number. For this example, the children will be actively involved with discussions and calculations. There are four instances of regrouping within this example to support children develop this important skill. Can the children begin by multiplying in the place value column with the smallest value? Can the children use zero as a placeholder correctly in long multiplication?	
	**Practice Time!** Using the corresponding slide of the Lesson Presentation, the children will solve four multiplications using the formal method for long multiplication. It could be beneficial for them to complete this task in pairs so that they can discuss their ideas with a partner. This time will provide a valuable opportunity for assessment and misconceptions can also be addressed. Once the children have completed the partner task, the answers can be revealed on the slide so that the children can self-assess. Can the children set out the written method of long multiplication correctly? Can the children begin by multiplying in the place value column with the smallest value? Can the children use zero as a placeholder correctly in long multiplication?	
	**Spot the Error!** Using the corresponding slide of the Lesson Presentation, the children will engage in discussion which focuses on finding errors within two different methods. This activity is intended to address the common misconception of making errors with place value. The child on the slide has multiplied by 2 rather than 20. Can the children use zero as a placeholder correctly in long multiplication?	

Multiply 3- and 4-Digits by 2-Digits: Using the differentiated Multiply 3- and 4-Digits by 2-Digits activity sheets, the children complete tasks that provide them with opportunities to practise using the formal method for long multiplication.

To support children working towards expected level, they will work through an activity where they need to finish partially-completed calculations. They will then progress to carrying out two formal calculations, before applying their new learning as they work through a word problem.

Children working at expected level will carry out four long multiplication calculations using the formal method. They will then apply their new learning by completing a reasoning question, before solving a word problem.

To challenge children working at greater depth, there is an activity provided which allows them to set out the formal method independently. The calculations provided include many instances of regrouping to fully cement children's understanding of this method. Children will then complete problem-solving activities to deepen their understanding.

Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative. These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and 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 questions related to multiplying 3- and 4-digit numbers by 2-digit numbers, using the formal method for long multiplication.

Children answer reasoning questions related to multiplying 3- and 4-digit numbers by 2-digit numbers, explaining their reasoning.

Children work individually or collaboratively on problem-solving questions related to multiplying 3-and 4-digit numbers by 2-digit numbers.

Exploreit

Playit: Children can play a dice game to further practise this method. Children can roll a dice 5 times to create a 3-digit number and a 2-digit number. They can then carry out the calculation. You could play against a partner and extend learning by seeing who can make the greatest or smallest product. You can also adapt this game by rolling the dice 6 times to cover 4-digit numbers multiplied by 2-digit numbers.

Makeit: Children can mark out the formal method using masking tape and can represent the numbers using their bodies or using PE equipment to bring the method to life!

Learnit: Children will find this superb Knowledge Organiser useful to support their understanding of multiplication.