

HIAS MOODLE+ RESOURCE

Year 6 Unit Plan: 6.2

Autumn Term

HIAS Maths Team
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Final Version

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Overview

In this document

Year 6 Unit Plans linked to Medium Term Overview

Points to consider when using this resource

These unit plans provide an example of how medium term planning could be developed into units of work. These unit plans will need to be adapted to meet the needs of students. The unit plan provides an outline of a possible learning journey with suggestions of types of tasks that could be used. They also identify key prior learning; some common misconceptions and an indication of key skills students need to develop towards competency. It is assumed that teachers will make use of appropriate mathematical representations (manipulatives, visuals and symbolic) to support conceptual understanding for students alongside procedural fluency.

Year 6 Unit 6.2 Plan – Multiplication and Division including missing number equations

This unit is about multiplication and division. Pupils will understand vocabulary such as factors, multiples, common factors and prime numbers and investigate patterns and relationships between numbers in the context of multiplication and division. Pupils will use formal and informal strategies to solve problems including long multiplication and division.

Session	Unit Objectives	Types of task
1-15	- Represent multiplication and division facts as grid arrays, link to rectangular areas, identifying factors as whole number side lengths of rectangles. - Calculate and compare the area of rectangles, including squares, and including using standard units (cm^2 and m^2) and estimate the area of irregular shapes. - Identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers. Know and use the vocabulary of prime numbers. - Use place value knowledge to multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. Multiply multi-digit numbers up to 4-digits by a 2-digit whole number using a formal written method of long multiplication (see NC appendix for methods). Divide numbers up to 4-digits by a 2-digit whole number using a formal written method of long division (see NC appendix for methods) , and interpret remainders as a whole number, fraction or by rounding as appropriate for the context. - Understand division as grouping, moving on from sharing, to make efficient use of multiplication facts when dividing. - Represent division calculations (not the solution) as number-lines and bar-models to support conceptual understanding before solving.	Ensure pupils gain a conceptual understanding of multiplication and division by demonstrating an array within a rectangular shape making the link with the formula of area. Apply this understanding to a range of regular and irregular shapes. How can the area be found now? Include examples with and without squares. Factors and multiples: Remind pupils of factors and multiples. What can you tell me about all multiples of 8? They are also multiples of 2 and 4. Understand that meaning of prime numbers. Pupils to use concrete resources to find prime numbers up to 20 including the use of arrays. Understand the terminology of common factors and give examples – Find numbers that have common factors of 5 and 13. Explore multiplying and dividing by 10, 100 and 1000. Why shouldn't we say 'just add a zero?' Investigate how this does not work for decimals and that when multiplying and dividing by 10, 100 and 1000 it is about moving to a new place holder. Formal written method: Teach the formal written method of long multiplication and division. When practising, include examples when a mental strategy would perhaps be more efficient and encourage pupils to select the most efficient strategy each time. Problem solving: When dividing, include examples where there is a remainder and pupils need to round according to context – <i>'A farmer sold boxes of eggs to the local supermarket. A box of eggs holds 12 eggs. A farmer collected 93 eggs. How many boxes was he able to sell to the supermarket?'</i>

	• Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy	<i>A coach holds 45 people. 387 children and 35 adults were going on a school trip. How many coaches did the school need for the school trip?</i> What would this look like as a bar model? Can we make an estimation as to the answer? How can we make a sensible estimation? Remind pupils that when estimating the process should be quick so we need to make the numbers easier to calculate with. Explore the difference between grouping and sharing to support the concept of division. Support this understanding through arrays and establish why this difference is important to understand. Use bar models to represent more complex problems including multi-step problems. Can pupils multi-represent a problem using a numberline and part/whole models also? Share similar style questions and simply represent the problem; encouraging pupils to identify the number sentence/s within a problem.
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		Key facts focus: Include examples of multiplying and dividing by 10, 100 and 1000 including missing box examples. $52 \times 1000 =$ $5.2 \div 100 =$ $3.4 \times \underline{\hspace{2cm}} = 340$ $\underline{\hspace{2cm}} \div 10 = 0.66$ Pupils are to apply times tables to number sentences that include larger numbers, such as $5400 \div 90 =$ $30 \times 0.3 =$ $1440 \div \underline{\hspace{2cm}} = 120$ Pupils can apply rules of divisibility to problems such as $455 \div 6 =$ the answer will include a remainder as all multiples of 6 are even.
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Check and refresh	Watch out for...	Building fluency
Times table facts Multiplication formal written method Short division Place value and multiplying and dividing by 10, 100 and 1000.	Pupils making place value errors when calculating. Pupils depth of understanding linked to times tables Pupils knowing when to use a formal written method and when to use a mental strategy.	By knowing one multiplication fact, I can derive so many more facts. Include facts and related facts and include possible link to fractions. Find common denominators by finding common multiples/factors of numbers

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