Multiplication and Division

Introduction

In Y4 Multiplication and Division, lessons build upon learning previous learning by developing fluency in all multiplication tables up to 12 × 12. The children use these known facts and their understanding of place value to multiply and divide mentally, including multiplying by zero and one, dividing by one, and multiplying together three numbers. They use formal written methods to multiply and divide two and three-digit numbers by one-digit numbers. They solve problems and puzzles including word problems, integer scaling problems, and harder correspondence problems.
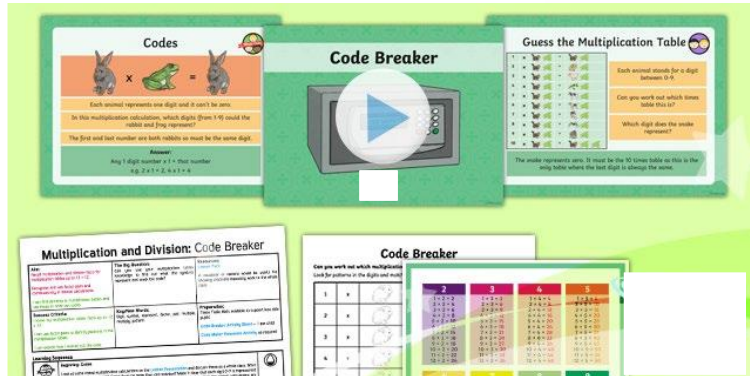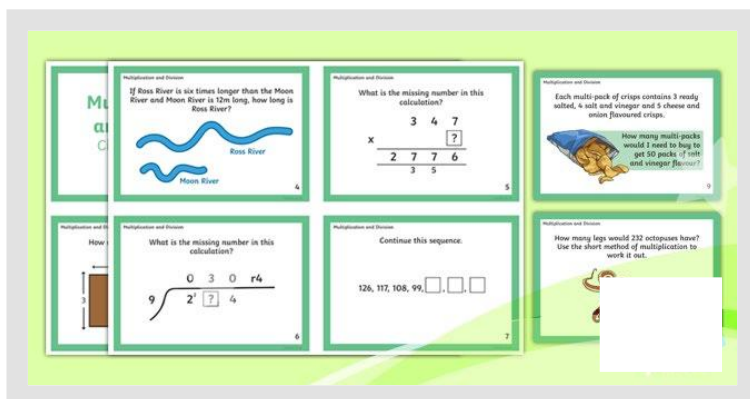

SolveIt Lesson Pack: Code Breakers

Can you use your multiplication tables knowledge to find out what the symbols represent and crack the code? In this problem solving lesson, the children are encouraged to use their knowledge of patterns in the digits in the multiplication tables to work out codes.

Starter Ideas

### Challenge Cards

Assessment Statements

By the end of this unit…

…all children should be able to:

- recall multiplication and division facts for multiplication tables up to 12 × 12;
- use place value and multiplication tables facts when multiplying and dividing mentally, including multiplying by 0 and 1, dividing by 1, and multiplying together three numbers;
- identify factor pairs and use inverses when solving problems;
- use the expanded written method to multiply two and three-digit by one digit numbers;
- calculate using the short method for division where there are no remainders;
- use partitioning and rounding and adjusting to solve two-digit by one-digit multiplication problems;
- use known multiplication and division facts to scale up and down;
- begin to use branching diagrams to solve correspondence problems;
- begin to solve division problems involving fractions.

…most children will be able to:

- Recall multiplication and division facts for multiplication tables up to 12 × 12 with increasing speed and accuracy;
- begin to calculate multiples of numbers beyond 12 × 12;
- use a range of mental calculation strategies for multiplication and division with increasing accuracy including multiplying by 0 and 1, dividing by 1, and multiplying together three numbers;
- use factor pairs and inverses when solving multiplication and division problems;
- use the expanded method and short method to multiply two-digit and three-digit by one digit numbers;
- calculate using the short written method for division for two-digit and three-digit by one-digit numbers, including those with remainders;
- use partitioning and rounding and adjusting to solve two-digit by one-digit number problems with increasing confidence;
- use multiplication and division facts to scale up and down;
- use branching diagrams to solve correspondence problems;
- solve division problems involving fractions.

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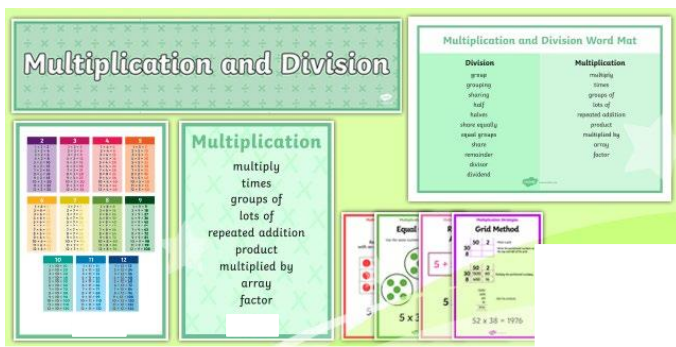
Display Pack

...some children will be able to:

- quickly recall multiplication and division facts for multiplication tables up to 12 × 12;
- calculate multiples of numbers beyond 12 × 12;
- perform multiplication and division calculations mentally including multiplying by 0 and 1, dividing by 1, and multiplying together three numbers;
- use factor pairs and inverses accurately when solving multiplication and division problems;
- use the expanded method and the short method, to multiply two-digit and three-digit by one-digit numbers, with increasing accuracy;
- calculate accurately using the short written method for division for two-digit and three-digit by one-digit numbers, including those with remainders;
- use the distributive law, partitioning and re-combining, or rounding and adjusting confidently to solve two-digit by one-digit multiplication problems;
- use multiplication and division facts within and beyond multiplication tables knowledge to scale up and down;
- use and devise their own branching diagrams and begin to use multiplication to calculate the number of options when solving correspondence problems;
- solve division problems involving fractions with confidence.

Lesson Breakdown

Recall multiplication and division facts for multiplication tables up to 12 × 12.

Multiplication and Division Facts (1): The Sixes
I can multiply and divide by 6.

Multiplication and Division Facts (2): The Sevens
I can multiply and divide by 7.

Multiplication and Division Facts (3): The Nines
I can multiply and divide by 9.

Multiplication and Division Facts (4): The Elevens
I can multiply and divide by 11.

Multiplication and Division Facts (5): The Twelves
I can multiply and divide by 12.

Multiplication and Division Facts (6): Beyond the 12 Times Table
I can calculate the multiplication and division facts for numbers beyond the 12 times table.

Home Learning: Multiplication Tables Challenge
Differentiated multiplication grids to enable the children to practise and consolidate their multiplication tables up to 12 x 12.

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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.

Mental Multiplication and Division (1): Calculations with 0 and 1
I can multiply by 0 and 1 and divide by 1.

Mental Multiplication and Division (2): Multiplication Machines
I can multiply together three numbers.

Mental Multiplication and Division (3): Doubling and Halving
I can use halving and doubling as a strategy for mental multiplication and division.

Mental Multiplication and Division (4): Division by Grouping
I can divide larger numbers mentally by subtracting easy multiples.

Home Learning: Calculating Volume
Differentiated activities where children multiply three numbers to calculate the volume of cubes and cuboids.

Recognise and use factor pairs and commutativity in mental calculations.

Factors and Commutativity (1): Factors
I can identify and use factor pairs when calculating mentally.

Factors and Commutativity (2): Inverse Operations
I can use multiplication facts to help me to solve division problems.

Home Learning: Finding Factors
Differentiated activities where children find the factors of numbers and begin to identify prime numbers.

Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.

Expanded Multiplication (1): Expanded Multiplication with Two-Digit Numbers
I can multiply two-digit by one-digit numbers using expanded multiplication.

Expanded Multiplication (2): Expanded Multiplication with Three-Digit Numbers
I can multiply larger numbers using expanded multiplication.

Short Multiplication (1): Short Multiplication with Two-Digit Numbers
I can use the short method of multiplication to multiply two-digit numbers by one-digit numbers.

Short Multiplication (2): Short Multiplication with Three-Digit Numbers
I can use the short method of multiplication to multiply three-digit numbers by one-digit numbers.

Home Learning: Be the Teacher
Differentiated activities that encourage children to identify errors in written multiplication calculations and correct them.

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Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by a one-digit number, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

The Distributive Law (1): Chocolate Champion
I can use partitioning to multiply two-digit numbers by one-digit numbers.

The Distributive Law (2): Rounding and Adjusting
I can multiply two-digit numbers by one-digit number using rounding and adjusting.

Scaling Problems (1): Potions
I can use multiplication and division to scale up or down.

Scaling Problems (2): Tall Towers
I can solve scaling problems using times table facts.

Correspondence Problems: Olympic Snacks
I can use branching diagrams to solve correspondence problems.

Fractions and Division Problems: Pizza Party
I can solve division problems involving fractions.

Home Learning: Party Time
Differentiated party themed problems which require children to apply their multiplication and division knowledge to complete a range of problem solving tasks.

Practise to become fluent in the formal written method of short division with exact answers (non-statutory).

Written Methods for Division (1): The Short Method
I can use the short written method for division.

Written Methods for Division (2): Remainders
I can use the short written method for division where there are remainders.

Written Methods for Division (3): Teamwork
I can use short division to solve problems.

Home Learning: Donkey Division
Differentiated activities to practise the short written method for division with and without remainders.