Multiplication and Division: Key Skill 11



Use the formal algorithm to multiply a 2-digit or 3-digit number by a 1-digit number



The **formal algorithm** is a step-by-step process to solving multiplication and division problems. Formal algorithm and vertical algorithm mean the same thing.

A **digit** is a symbol used to write a numeral. The digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 are used to write all the numbers in our number system. A 3-digit number can be made from any 3 digits, e.g. 584 or 109.



The formal algorithm uses the same steps in the same order every time to find the answer. The formal algorithm is essential for more complex questions. Start with questions that don't need trading first because they are easier.



Practice this skill over and over with lots of different questions to build confidence. Mulitply with smaller numbers first, and then work up to larger numbers. Here are some examples.

45	124	134
x 3	<u>x 5</u>	x 7
135	620	938



WEB LINKS go to:

Video: Mulitplying with the formal algorithm Games: Multiplication and division games

Multiplication and Division: Key Skill 12



Use mental and written strategies to divide numbers with 3 or more digits by a 1-digit operator, including remainders



A **remainder** is the number left over when the problem cannot be divided equally.

Children use **mental strategies** to figure out the maths in their head, without writing anything down.

Using a **written strategy** means to show your way of working something out using known relationships, patterns and operations.

A **fact family** is a group of related facts in addition and subtraction, and multiplication and division. It helps children understand the relationship between operations.

 $4 \times 5 = 20$ $5 \times 4 = 20$ $20 \div 4 = 5$ $20 \div 5 = 4$



For division, it is important to remember the fact family. Strong multiplication skills and strategies help with division. There are divisibility tests that children can learn as a quick way to see if a large number can be divided by a 1 digit number without a remainder.

There are lots of different methods to solve division and all are acceptable. Children can choose which one they like best to use.



Let's solve $248 \div 4 = ?$ and try the divisibility test for 4.

The Rule for **4**: If the last 2 digits of a whole number are **divisible** by **4**, then the entire number is **divisible** by **4**. So in 248, 48 is divisible by 4 without any left over.

To divide 248 by 4, children might use the split strategy $(200 + 40 + 8) \div 4 =$

 $200 \div 4 = 50$ $40 \div 4 = 10$ $8 \div 4 = 2$ 50 + 10 + 2 = 62

Using a fact family, let's split 248 and work with 240 and 8.

- A With 240, $4 \times 6 = 24$, so $4 \times 60 = 240$ and therefore: $240 \div 4 = 60$
- B With 8, 4 x 2 therefore: $8 \div 4 = 2$
- C Add A and B together so 60 + 2 = 62248 ÷ 4 = 62

WEB LINKS go to:

<u>Notes: Division strategies</u> <u>Video: Written methods for division</u> <u>Video: Long division method explained</u> <u>Video: Long division rap</u> Game: Multiplication and division games

<u>Video: Big 7 long division</u> <u>Video: Divisibility rap – class</u> <u>Video: Area division</u> <u>Video: Divisibility tests</u> <u>Game: Bamzooki – mental multiplication</u>