

CALCULATIONS

Pupils should be taught to:

Consolidate understanding of the operations of multiplication and division, their relationship to each other and to addition and subtraction; know how to use the laws of arithmetic (continued)

As outcomes, Year 7 pupils should, for example:

When dividing using a **calculator**, interpret the quotient in the context of a problem involving money, metric measures or time.



For example, depending on the context:

- A display of '3.05' could mean £3.05, 3 kilograms and 50 grams, or 3 hours and 3 minutes.
- A display of '5.2' could mean £5.20, 5 metres and 20 centimetres, or 5 hours and 12 minutes.

Relate division to fractions. Understand that:

- $\frac{1}{4}$ of 3.6 is equivalent to $3.6 \div 4$.
- $7 \div 8$ is equivalent to $\frac{7}{8}$.
- $\frac{50}{3}$ is equivalent to $50 \div 3$.

See Y456 examples (pages 54–7).

[Link to finding fractions of numbers \(pages 66–7\).](#)

Know how to use the **laws of arithmetic** to support efficient and accurate mental and written calculations, and calculations with a **calculator**.

Examples of commutative law

$$4 \times 7 \times 5 = 4 \times 5 \times 7 = 20 \times 7 = 140$$

or $7 \times 5 \times 4 = 35 \times 4 = 140$

To find the area of a triangle, base 5 cm and height 6cm:
area = $\frac{1}{2} \times 5 \times 6 = \frac{1}{2} \times 6 \times 5 = 3 \times 5 = 15\text{cm}^2$

Example of associative law

$$15 \times 33 = (5 \times 3) \times 33 \text{ or } 5 \times (3 \times 33) = 5 \times 99 = 495$$

Example of distributive law

$$\begin{aligned} 3.7 \times 99 &= 3.7 \times (100 - 1) \\ &= (3.7 \times 100) - (3.7 \times 1) \\ &= 370 - 3.7 \\ &= 366.3 \end{aligned}$$

[Link to algebraic operations \(pages 114–17\), and mental calculations \(pages 92–7\).](#)

Inverses

Understand that addition is the inverse of subtraction, and multiplication is the inverse of division. For example:

- Put a number in a **calculator**. Add 472 (or multiply by 26). What single operation will get you back to your starting number?
- Fill in the missing number: $(\square \times 4) \div 8 = 5$.

Use inverses to check results. For example:

- $703 \div 19 = 37$ appears to be about right, because $36 \times 20 = 720$.

[Link to inverse operations in algebra \(pages 114–15\), and checking results \(pages 110–11\).](#)