

## ALGEBRA

### Pupils should be taught to:

Use letter symbols and distinguish their different roles in algebra

### As outcomes, Year 7 pupils should, for example:

Use, read and write, spelling correctly:  
algebra, unknown, symbol, variable... equals... brackets...  
evaluate, simplify, substitute, solve...  
term, expression, equation... squared... commutative...

Reinforce the idea of an **unknown**. Answer questions such as:

- $5 + \square = 17$
- $3 \times \square - 5 = 7$
- $\blacktriangledown + \blacklozenge = 4$ . What numbers could  $\blacktriangledown$  and  $\blacklozenge$  be?
- The product of two numbers is 24. What could they be?

**Know that letters are used to stand for numbers** in algebra. Begin to distinguish between different uses of letters.

For example:

- In the equation  $3n + 2 = 11$ ,  $n$  is a particular unknown number, but in the equation  $a + b = 12$ ,  $a$  and  $b$  can take many different values.

**Recognise algebraic conventions**, such as:

- $3 \times n$  or  $n \times 3$  can be thought of as '3 lots of  $n$ ', or  $n + n + n$ , and can be shortened to  $3n$ .
- In the expression  $3n$ ,  $n$  can take any value, but when the value of an expression is known, an equation is formed, i.e. if  $3n$  is 18, the equation is written as  $3n = 18$ .

Understand the meaning of and begin to **use simple expressions with brackets**, e.g.  $3(n + 2)$  meaning  $3 \times (n + 2)$ , where the addition operation is to be performed first and the result of this is then multiplied by 3.

**Use the equals sign** appropriately and correctly.

- Recognise that if  $a = b$  then  $b = a$ , and that  $a + b = c$  can also be written as  $c = a + b$ .
- Avoid errors arising from misuse of the sign when setting out the steps in a calculation, e.g. incorrectly writing  
 $38 + 29 = 38 + 30 = 68 - 1 = 67$

**Use letter symbols** to write expressions in meaningful contexts.

For example:

add 7 to a number	$n + 7$
subtract 4 from a number	$n - 4$
4 minus a number	$4 - n$
a number multiplied by 2 and then 5 added	$(n \times 2) + 5$ or $2n + 5$
a number divided by 2	$n \div 2$ or $n/2$
a number plus 7 and then multiplied by 10	$(n + 7) \times 10$ or $10(n + 7)$
a number multiplied by itself	$n \times n$ or $n^2$

Understand the difference between expressions such as:

$2n$ and $n + 2$	$3(c + 5)$ and $3c + 5$
$n^2$ and $2n$	$2n^2$ and $(2n)^2$

**Link to formulating expressions and formulae (pages 122–5).**