



Topic: Understand and Use Notation

Year: 7

NC Strand: Algebra

What should I already know?

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| <ul style="list-style-type: none"> • How to express missing number problems algebraically • Use simple formula • How to describe and continue a sequence given diagrammatically • How to predict and check the next term(s) of a sequence | <ul style="list-style-type: none"> • How to represent sequences in tables and graphs • How to recognise the difference between a linear and non-linear sequence • How to continue numerical sequences • How to continue non-numerical sequences • How to explain the term to term rule of numerical sequences in words • How to find missing numbers within sequences |
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What will I know by the end of the unit?

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| <ul style="list-style-type: none"> • How to use a single function machine • How to use inverse operations to find the input given the output • How to use diagrams and letters to generalise number operations • How to use diagrams and letters with single function machines | <ul style="list-style-type: none"> • How to find the function machine given a simple expression • How to substitute values into single operation expressions • How to find numerical inputs and outputs for a series of two function machines • How to find the function machine given a two-step expression • How to substitute values into two-step expressions • How to generate sequences given an algebraic rule • How to represent one and two step functions graphically |
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Vocabulary

Function	a mathematical relationship from a set of inputs to a set of outputs.	Order	arrangement according to size, amount or value.
Input	what is put in, taken in, or operated on by any process or system.	Constant difference	the difference between two numbers does not change after adding or subtracting the same quantity to both numbers.
Output	the result of a process or system	Sequence	ordered sets of numbers, shapes or other mathematical objects, arranged according to a rule.
Operation	mathematical procedures or processes used to work something out.	Rule	The pattern that a sequence follows
		Axis	real or imaginary reference line. (plural – axes)
Square	a number that results from multiplying an integer by itself	Linear	number pattern is a sequence of numbers whose difference between all the terms is the same
Inverse	opposite, reverse operations.	Non-Linear	do not increase from term to term by a constant amount
Commutative	numbers may be added or multiplied together in any order.	Term to Term	a rule that defines the value of each term in a sequence if the previous terms are known.
Expression	an expression is one or a group of terms and may include variables, constants, operators and grouping symbols.	Position to Term	a rule that defines the value of each term in a sequence with regard to its position
Variable	a letter or symbol representing a varying quantity,	Graph	a visual diagram used to represent statistical information



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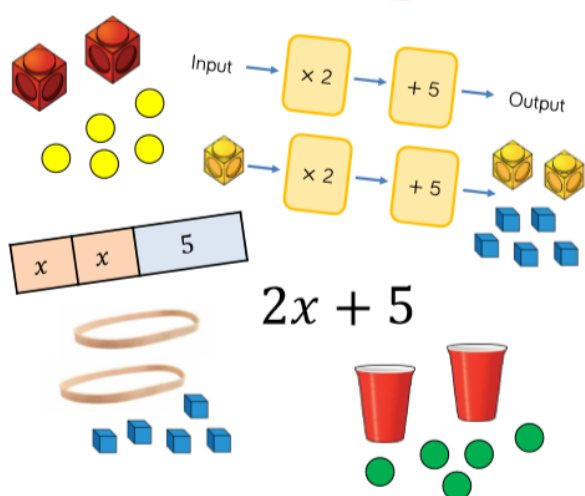
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	for example, n in $10 + n$.		or functions and equations.
Coefficient	a number which multiplies a variable.	Curve	a curve is not straight
Equation	a mathematical statement containing an equals sign	Interval	the space between each value on the scale of a graph.

Diagram/Key Information

Key Representations



Key Information

We will develop a deep understanding of the basic algebra forms. Function machines will be used alongside bar models and letter notation. We will use inverse operations to find the input when given the output of a function machine.

Students need to know the following algebraic notations

- ab in place of $a \times b$
- $3y$ in place of $y + y + y$ and $3 \times y$
- a^2 in place of $a \times a$
- ab in place of $a \times b$
- $\frac{a}{b}$ in place of $a \div b$



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- Homework will be set from the booklet issued by your teacher
- You should complete at least 30 minutes of maths tasks on Maths Whizz (not games). Please attend help sessions if you do not have access to the internet at home
- Additional work you could complete:
 - Find out more about the meaning of the vocabulary list using <http://www.amathsdictionaryforkids.com/>
- To challenge yourself:
 - Investigate the key questions typed in blue text
 - Explain the key questions typed in purple text

Key skills/Timeline/Topic Questions

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| <ul style="list-style-type: none"> ● How can we check if the answer on our calculator is reasonable? ● What happens to the size of the outputs if we change the size of the inputs? ● How can we check that we have worked out our answer for the input correctly? ● Will outputs like $a + 3$ and $3a$ always, sometimes or never be the same? ● What does the expression $6a$ mean? ● Why are the expressions $\frac{a}{2}$ and $\frac{2}{a}$ different? ● Are $t + 5$ and $5 + t$ always, sometimes or never equal? ● Are $2p$ and p^2 always, sometimes or never equal? | <ul style="list-style-type: none"> ● Does it always, sometimes or never make a difference if you change the order of a pair of function machines? ● What is the difference between $\frac{a+4}{2}$ and $-\frac{a}{2} + 4$ ● How would you use your calculator to find out the square of a number? ● What feature of the difference between the terms tells us if a sequence is linear? ● Which type of rule is better for finding the 100th term of a sequence? ● How can you tell from an equation if the graph is going to be linear? |
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