

# Knowledge Organiser Focus:

Sequences and equations.

## I should already know:

How to apply the 4 operations to integers

How to recognize a number sequence

## I will learn:

How to continue a sequence.

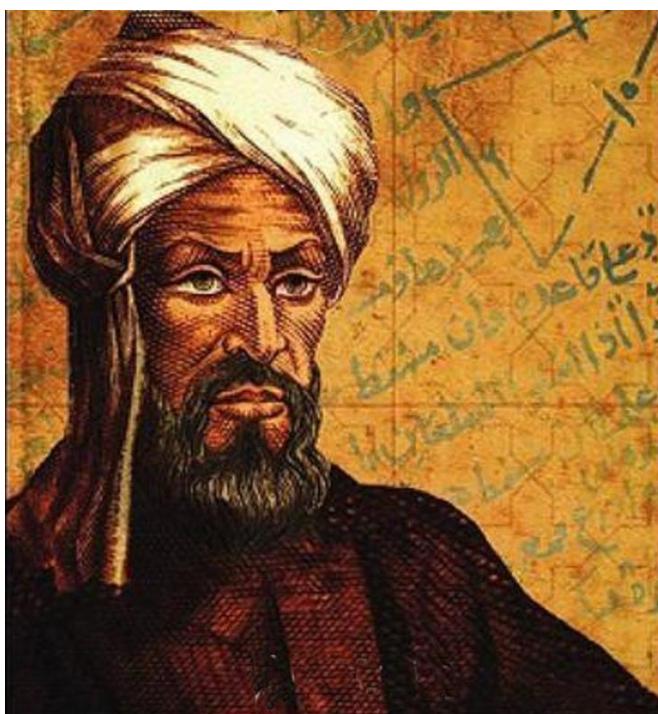
How to find the nth term rule for any linear sequence.

How to substitute into an expression.

How to solve an equation.

## Key Words

Linear Sequence	a sequence where the difference between terms is constant.
Equation	a mathematical statement containing an equals sign, to show that two expressions are equal.
Solve	Find the value of the variable
Term	Each part of an expression e.g. $2x$ ; $4$ ; $x^2$
Expression	A mixture of numbers and letters e.g. $2x + 5$



*Muhammad ibn Mūsā al-Khwārizm, whose book al-Kitāb al-mukhtaṣar fi ḥisāb al-jabr wal-muqābala is the origin of the word algebra*

## Greater Depth Challenge

Can you write a non-linear sequence?

Can you describe the term-to-term rule in words?

Using algebra?

## This will help in the future:

Developing a sense of algebra allows the true power of maths to be uncovered. Algebra allows calculations to be generalized so that maths can solve problems

## Further Reading

Hegarty Maths

### Finish the Sentences

**An equation is different from an expression because ....**

... an equation has an equality symbol and shows that two or more expressions are equal. An expression is a single statement that does not have an equality symbol.

**1 , 2 , 4 , 7 , 11 , 16**

**This sequence is a non-linear sequence as...**

... there is not a constant term-to-term difference. This difference between terms in this sequence increase by 1 each time.

1. Sequences	
Question	Answer
What is the definition of a sequence?	A sets of numbers, shapes, or other mathematical objects, that follow a particular rule.
What does consecutive mean?	One after the other.
What is a linear sequence?	A sequence that increases by the same amount each time.
What is the definition of a non-linear sequence?	A sequence that does not increase by the same amount each time.
What is a Fibonacci sequence?	In a Fibonacci sequence each number is the sum of the two numbers before it
What does the "n" represent in an nth term rule?	"n" is the term number in a sequence.

3. Operations
Fill in the gaps
The inverse of addition is <u>subtraction</u> .
The inverse of subtraction is <u>addition</u> .
The inverse of multiplication is <u>division</u> .
The inverse of division is <u>multiplication</u> .
The inverse of squaring is <u>square-rooting</u> .
The inverse of square-rooting is <u>squaring</u> .

2. Equations	
Question	Answer
What is an equation?	An equation shows that two or more mathematical expressions are equal. It will contain at least one equality sign.
What is an expression?	An expression is one or more terms that represent the value of something.
What is the definition of "solving"?	To work out the solution or value to a problem.
What is the definition of "substituting"?	Substitution is the replacement of letters with numbers into an equation or expression, and vice versa.
What is an inequality?	An inequality shows two or more terms that are not equal. This can be shown using the inequality symbols.
What are the 4 inequalities symbols?	< , ≤ , > , ≥
What is an inverse operation?	All operations have an inverse, which reverses its affects.
What is an unknown variable?	An unknown represents a number we do not know. It is normally represented by a letter.

### Finish the Sentences

An equation is different from an expression because ....

... \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

1 , 2 , 4 , 7 , 11 , 16

This sequence is a non-linear sequence as...

... \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

1. Sequences	
Question	Answer
What is the definition of a sequence?	
What does consecutive mean?	
What is a linear sequence?	
What is the definition of a non-linear sequence?	
What is a Fibonacci sequence?	
What does the "n" represent in an nth term rule?	

3. Operations
Fill in the gaps
The inverse of addition is _____
The inverse of subtraction is _____
The inverse of multiplication is _____
The inverse of division is _____
The inverse of squaring is _____
The inverse of square-rooting is _____

2. Equations	
Question	Answer
What is an equation?	
What is an expression?	
What is the definition of "solving"?	
What is the definition of "substituting"?	
What is an inequality?	
What is an inverse operation?	
What is an unknown variable?	