

SUBJECT: Maths – Y9 Foundation

UNIT: Algebra

SANDHILL VIEW

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Key Concepts

A **formula** involves two or more letters, where one letter equals an **expression** of other letters.

An **expression** is a sentence in algebra that does NOT have an equals sign.

An **identity** is where one side is the equivalent to the other side.

When **substituting** a number into an expression, replace the letter with the given value.

Examples

- $5(y + 6) \equiv 6y + 30$ is an **identity** as when the brackets are expanded we get the answer on the right hand side
- $5m - 7$ is an **expression** since there is no equals sign
- $3x - 6 = 12$ is an **equation** as it can be solved to give a solution
- $C = \frac{5(F - 32)}{9}$ is a **formula** (involves more than one letter and includes an equal sign)
- Find the value of $3x + 2$ when $x = 5$
 $(3 \times 5) + 2 = 17$
- Where $A = b^2 + c$, find A when $b = 2$ and $c = 3$
 $A = 2^2 + 3$
 $A = 4 + 3$
 $A = 7$

Key Words

Substitute
Equation
Formula
Identity
Expression

Questions

- Identify the equation, expression, identity, formula from the list
 (a) $v = u + at$ (b) $u^2 - 2as$
 (c) $4x(x - 2) = x^2 - 8x$ (d) $5b - 2 = 13$
- Find the value of $5x - 7$ when $x = 3$
- Where $A = d^2 + e$, find A when $d = 5$ and $e = 2$

SUBJECT: Maths

UNIT: Sequence

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Key Concepts

Arithmetic or linear sequences

increase or decrease by a common amount each time.

Geometric series has a common multiple between each term.

Quadratic sequences include an n^2 . It has a common second difference.

Fibonacci sequences are where you add the two previous terms to find the next term.

Linear/arithmetic sequence:

-3 $+3$ $+3$ $+3$ $+3$
 $+1$ 4 7 10 13 16....

a) State the nth term

$$3n + 1$$

Difference

The 0th term

b) What is the 100th term in the sequence?

$$3n + 1$$

$$3 \times 100 + 1 = 301$$

c) Is 100 in this sequence?

$$3n + 1 = 100$$

$$3n = 99$$

$$n = 33$$

Yes as 33 is an integer.

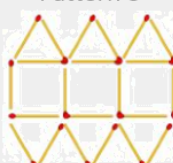
Pattern 1



Pattern 2



Pattern 3



Hint: Firstly write down the number of matchsticks in each image:

$$7n + 1$$

Pattern 1	Pattern 2	Pattern 3
8	15	22

State the nth term.

Geometric sequence e.g.

$\times 3$ $\times 3$ $\times 3$
 4 12 36 108...

Quadratic sequence e.g.

$n^2 + 4$ Find the first 3 numbers in the sequence

First term: $1^2 + 4 = 5$

Third term: $3^2 + 4 = 13$

Second term: $2^2 + 4 = 8$

Examples

Linear sequences with a picture:

State the nth term.

Key Words

Linear
Arithmetic
Geometric
Sequence
Nth term

1) 1, 8, 15, 22,

a) Find the nth term b) Calculate the 50th term c) Is 120 in the sequence?

2) $n^2 - 5$ Find the first 4 terms in this sequence