



FluidMaths

GCSE Mathematics (Grade 9-1)

Problem Solving
Non-Linear Sequences
Questions

The marks shown are for guidance purposes only

When not specified, round all non-terminating decimals during your calculations to 3 significant figures

Some useful strategies in problem-solving

- Read the question carefully
- Sketch a diagram where applicable
- Take note of key information
- Write down any formulae you may need
- Tackle the problem in bite-size rather than as a whole
- Concentrate on the part of the problem you understand and start from there
- Collaborate with a partner and share ideas
- Use a dictionary to find the meaning of any confusing words
- Check that your answers make sense in the context of the question

1	<p>The Nth term of a sequence is given as $\left(\frac{5n}{6}\right)^2$ The 4th term of the sequence is $7x$ Find the value of x Give your answer as a mixed number. [3marks]</p>
2	<p>The Nth term of a sequence is given as $5n + 3^n$ Find the sum of the first 3 terms. [4marks]</p>
3	<p>The first 4 terms of a Fibonacci sequence are given below $3p, 2q, 3p + 2q, 3p + 4q, \dots$ Given that the 3rd and 4th terms are 15 and 31 respectively, find the values of p and q [4marks]</p>
4	<p>The Nth term of a sequence is given as $5n + 3^{n-p}$ The 7th term of the sequence is 62. Find the value of p. [4marks]</p>
5	<p>Here are the first three terms of a certain sequence. $\frac{1}{5a}, \frac{2}{3a+b}, \frac{3}{a+2b}, \dots$ The 2nd and 4th terms of the sequence are $\frac{1}{3}$ and 1 respectively. Calculate the values of a and b. [5marks]</p>
6	<p>The first 4 terms of a Fibonacci sequence are given below $3x, 4y, 3x + 4y, 3x + 8y \dots$ The 1st and 5th terms of the sequence are 5 and 20 respectively. Find the ratio of $x:y$ in its simplest form. [5marks]</p>
7	<p>The first 3 terms of a Fibonacci sequence are given below $\frac{1}{2}x, \frac{1}{2}y, \frac{x+y}{2}, \dots$ The 4th term in the sequence is 3 Given that $y = 3x$, find the values of x and y. [5marks]</p>