



Air maths tuition

Interact, engage and perform

Arithmetic Progressions - What are they?

Arithmetic Progressions	first term a	common difference d
$6, 8, 10, 12, \dots$ $\xrightarrow{+2} \xrightarrow{+2} \xrightarrow{+2}$	6	2
$11, 8, 5, 2, \dots$ $\xrightarrow{-3} \xrightarrow{-3} \xrightarrow{-3}$	11	-3

In general the terms: $u_1, u_2, u_3, u_4, \dots, u_n$
 $a, a+d, a+2d, a+3d, \dots, a+(n-1)d$

n^{th} term $u_n = a + (n-1)d$ $S_n = \frac{n}{2} [2a + (n-1)d]$ or $S_n = \frac{n}{2} (a+l)$

for the sequence: $5, 9, 13, 17, \dots$ $a=5, d=4$

21^{st} term $= u_{21} = 5 + 20(4)$ $= 85$	$S_{21} = \frac{21}{2} [2(5) + 20(4)]$ $= 945$	or $S_{21} = \frac{21}{2} (5 + 85)$ $= 945$
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