

# Quadratic Sequence Formula Guide

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Input the first three terms															
2																
3	The given sequence		4			1		9								....
4					∪			∪								
5	First row of differences				-3			8								
6																
7	Second row							11								
8																
9	Quadratic term															
10	$5.5r^2$		5.5			22		49.5								
11																
12	Linear sequence		-1.5			-21		-40.5								
13																
14	Constant gap					-19.5		-19.5								
15																
16																
17	Linear formula		-19.5	r		+		18								
18																
19																
20	General term		$5.5r^2$			-		$19.5r$		+						
21	$T_r$															
22																
23	Formula check		$5.5r^2$			-		$19.5r$		+						
24	$T_r$															
25																

Only three terms are required to determine the general term of a quadratic sequence.

This is the general term calculated using the formula which uses the first three terms of the sequence.

Open the MS Excel file "Quadratic Sequence Formula". Input the first three terms of the quadratic sequence. The spreadsheet automatically shows the two rows of differences. The sequence relating to the quadratic term is produced along with the required linear sequence. The spreadsheet gives the generating formula of the linear sequence. The general term is calculated and checked using the formula derived in Tutorial 2.

# Quadratic Sequence Formula Guide

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Input the first three terms															
2																
3	The given sequence		4			6		14		28		48		74	....	
4				∪			∪		∪		∪		∪			
5	First row of differences			2			8		14		20		26			
6						∪		∪		∪		∪				
7	Second row					6		6		6		6				
8																
9	Quadratic term															
10	$3r^2$		3			12		27		48		75		108		
11																
12	Linear sequence		1			-6		-13		-20		-27		-34		
13				∪			∪		∪		∪		∪			
14	Constant gap			-7			-7		-7		-7		-7			
15																
16																
17	Linear formula		-7	r	+		8									
18																
19																
20	General term		$3r^2$		-		$7r$		+		8					
21	$T_r$															
22																
23	Formula check		$3r^2$		-		$7r$		+		8		This is the general term calculated using the formula which uses the first three terms of the sequence.			
24	$T_r$															
25																

The Quadratic Sequence Composer can be used to help produce questions involving quadratic sequences.

Input the first three terms **only**. The spreadsheet calculates the next three terms of the sequence.

As in the previous case the general term is calculated and checked using the formula derived in Tutorial 2.

Terms can be omitted from the sequence to construct questions which require the application of the method of differences and algebra to solve.