

Success Criteria for Quadratic Sequences	Completed																																								
I have found the difference between each pair of terms. -7 27 79 149 237 343 467 +34 +52 +70 +88 +106 +124 eg																																									
I have worked out the difference between these differences giving me a constant term each time. eg -7 27 79 149 237 343 467 +34 +52 +70 +88 +106 +124 +18 +18 +18 +18 +18																																									
I have divided the constant difference by 2 to find “a” in the an^2 term eq $18 \div 2 = 9$ so $9n^2$ is the first term																																									
For each term in the sequence, I have subtracted the corresponding an^2 term where n starts as 1 and increments (+1) each time. eg. <table><tr><td>t_n</td><td>-7</td><td>27</td><td>79</td><td>149</td><td>237</td><td>343</td><td>467</td></tr><tr><td>n</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>n^2</td><td>1</td><td>4</td><td>9</td><td>16</td><td>25</td><td>36</td><td>49</td></tr><tr><td>$9n^2$</td><td>9</td><td>36</td><td>81</td><td>144</td><td>225</td><td>324</td><td>441</td></tr><tr><td>$t_n - 9n^2$</td><td>-16</td><td>-9</td><td>-2</td><td>5</td><td>12</td><td>19</td><td>26</td></tr></table> $t_n - 9n^2$ is a linear sequence which we shall call sequence B.	t_n	-7	27	79	149	237	343	467	n	1	2	3	4	5	6	7	n^2	1	4	9	16	25	36	49	$9n^2$	9	36	81	144	225	324	441	$t_n - 9n^2$	-16	-9	-2	5	12	19	26	
t_n	-7	27	79	149	237	343	467																																		
n	1	2	3	4	5	6	7																																		
n^2	1	4	9	16	25	36	49																																		
$9n^2$	9	36	81	144	225	324	441																																		
$t_n - 9n^2$	-16	-9	-2	5	12	19	26																																		
I have found the difference between each pair of terms in sequence B. eg -16 -9 -2 5 12 19 26 +7 +7 +7 +7 +7 +7																																									
I have made the common difference the n co-efficient for Sequence B. eg $7n$																																									
I have calculated the difference between the value of the found term and the value of $t_n - 7n$. <table><tr><td>t_n</td><td>-16</td><td>-9</td><td>-2</td><td>5</td><td>12</td><td>19</td><td>26</td></tr><tr><td>n</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>$7n$</td><td>7</td><td>14</td><td>21</td><td>28</td><td>35</td><td>42</td><td>49</td></tr><tr><td>$t_n - 7n$</td><td>-23</td><td>-23</td><td>-23</td><td>-23</td><td>-23</td><td>-23</td><td>-23</td></tr></table>	t_n	-16	-9	-2	5	12	19	26	n	1	2	3	4	5	6	7	$7n$	7	14	21	28	35	42	49	$t_n - 7n$	-23	-23	-23	-23	-23	-23	-23									
t_n	-16	-9	-2	5	12	19	26																																		
n	1	2	3	4	5	6	7																																		
$7n$	7	14	21	28	35	42	49																																		
$t_n - 7n$	-23	-23	-23	-23	-23	-23	-23																																		
I have put these terms together to find the quadratic sequence eg $9n^2 + 7n - 23$																																									