Question 1: Find the next two terms for each quadratic sequence

(a) 4, 6, 10, 16, 24 ... ... (b) 1, 2, 4, 7, 11 ... ... (c) 2, 5, 10, 17, 26 ... ...
(d) 3, 9, 19, 33, 51 ... ... (e) 50, 48, 44, 38, 30 ... ...
(f) 3, 14, 29, 48, 71 ... ... (g) 2, 5, 10, 17, 26 ... ...

Question 2: List the first 5 terms of the sequences with n<sup>th</sup> term:

(a) n<sup>2</sup> 
(b) n<sup>2</sup> + 1 
(c) n<sup>2</sup> + 4 
(d) n<sup>2</sup> - 2 
(e) 2n<sup>2</sup>

(f) 5n<sup>2</sup> 
(g) \(\frac{1}{2}n^2\) 
(h) \(\frac{1}{4}n^2\) 
(i) 3n<sup>2</sup> + 10 
(j) \(\frac{3}{5}n^2\)

Question 3: The quadratic n<sup>th</sup> term of the sequence below is n<sup>2</sup>
1, 4, 9, 16, 25, 36, 49 ...

Find the n<sup>th</sup> term of each of these sequences

(a) 4, 7, 12, 19, 28, 39, 52 ... ... (b) 51, 54, 59, 66, 75, 86, 99 ... ... (c) -5, -2, 3, 10, 19, 30...
(d) 3, 12, 27, 48, 75, 108 ... ... (e) 20, 80, 180, 320, 500, 720 ... ... (f) 0.2, 0.8, 1.8, 3.2, 5 ...
(g) 3, 9, 19, 33, 51, 73, 99 ... ... (h) 2.5, 4, 6.5, 10, 14.5, 20 ...

Question 4: For each n<sup>th</sup> term, work out the first five terms of the sequence.

(a) n<sup>2</sup> + n 
(b) n<sup>2</sup> + 2n 
(c) n<sup>2</sup> - n 
(d) n<sup>2</sup> - 3n

(e) n<sup>2</sup> + n + 2 
(f) n<sup>2</sup> - 2n + 5 
(g) n<sup>2</sup> + 4n - 10 
(h) 2n<sup>2</sup> + n

(i) 3n<sup>2</sup> - n + 6 
(j) 10n<sup>2</sup> + 5n - 7

Question 5: For each n<sup>th</sup> term, work out the first five terms of the sequence.

(a) -n<sup>2</sup> 
(b) -2n<sup>2</sup> 
(c) -4n<sup>2</sup> + 2 
(d) -n<sup>2</sup> + 3n

(e) 50 - n<sup>2</sup> 
(f) 6n - n<sup>2</sup> 
(g) -n<sup>2</sup> - 7n - 2

© CORBETTMATHS 2016
Question 6: For each \(n\text{th}\) term, work out the first five terms of the sequence.

(a) \(n(n + 1)\)  
(b) \(n(n + 3)\)  
(c) \((n + 1)(n + 5)\)  
(d) \(n(n - 2)\)  
(e) \((n - 3)(n + 1)\)  
(f) \((n - 8)(n - 3)\)

Question 7: Work out the \(n\text{th}\) term for each quadratic sequence

(a) \(7, 12, 19, 28, 39 \ldots\)  
(b) \(7, 16, 31, 52, 79 \ldots\)  
(c) \(6, 13, 24, 39, 58 \ldots\)  
(d) \(3, 13, 27, 45, 67 \ldots\)  
(e) \(9, 20, 35, 54, 77 \ldots\)  
(f) \(9, 24, 45, 72, 105 \ldots\)  
(g) \(−6, −1, 6, 15, 26 \ldots\)  
(h) \(−5, −4, −1, 4, 11 \ldots\)  
(i) \(7, 10, 17, 28, 43 \ldots\)  
(j) \(2.5, 5, 8.5, 13, 18.5 \ldots\)  
(k) \(−0.5, 1, 4.5, 10, 17.5 \ldots\)

Question 8: Calculate the 10\(th\) term of each sequence in question 7

Question 9: Work out the \(n\text{th}\) term for each quadratic sequence

(a) \(3, 1, −3, −9, −17 \ldots\)  
(b) \(−4, −12, −24, −40, −60 \ldots\)  
(c) \(6, 5, 2, −3, −10 \ldots\)  
(d) \(100, 96, 90, 82, 72 \ldots\)  
(e) \(−17, −30, −49, −74, −105 \ldots\)  
(f) \(6, 5.5, 4.5, 3, 1 \ldots\)

Question 10: Calculate the 10\(th\) term of each sequence in question 9

Question 11: A sequence has an \(n\text{th}\) term of \(n^2 + n - 20\)
Work out which term in the sequence has a value of 52.

Question 12: A sequence has an \(n\text{th}\) term of \(n^2 + 2n - 5\)
Work out which term in the sequence has a value of 58.

Question 13: A sequence has an \(n\text{th}\) term of \(n^2 - 6n + 7\)
Work out which term in the sequence has a value of 23.

Question 1: The first 5 terms of a quadratic sequence are: 4, 10, 18, 28, 40
Work out the difference between the 10\(th\) and 20\(th\) terms.

© CORBETTMATHS 2016
Question 2: Below are patterns of tiles. The number of tiles in each form quadratic sequences. Find the number of tiles in pattern \( n \) for each.

(a) 
(b) 
(c) 
(d) 

Question 3: Here is a pattern made from tiles. How many tiles are needed to make Pattern 20?

Question 4: The first 4 terms of a sequence are: 400, 390, 375, 355 ... Which term is the first to be negative?

Question 5: The \( n \)th term of a quadratic sequence is \( n^2 + 4n \) Two consecutive terms have a difference of 25. Work out the two terms.

Question 6: Prove every term in the sequence \( n^2 - 8n + 21 \) is positive