

Examples



Workout

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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, 34, 54 (e) 50, 48, 44, 38, 30 (f) 3, 14, 29, 48, 71

Question 2: List the first 5 terms of the sequences with n^{th} term:

- (a) n^2 (b) $n^2 + 1$ (c) $n^2 + 4$ (d) $n^2 - 2$ (e) $2n^2$
(f) $5n^2$ (g) $\frac{1}{2}n^2$ (h) $\frac{1}{4}n^2$ (i) $3n^2 + 10$ (j) $\frac{3}{5}n^2$

Question 3: The quadratic n^{th} term of the sequence below is n^2
1, 4, 9, 16, 25, 36, 49 ...

Find the n^{th} 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^{th} term, work out the first five terms of the sequence.

- (a) $n^2 + n$ (b) $n^2 + 2n$ (c) $n^2 - n$ (d) $n^2 - 3n$
(e) $n^2 + n + 2$ (f) $n^2 - 2n + 5$ (g) $n^2 + 4n - 10$ (h) $2n^2 + n$
(i) $3n^2 - n + 6$ (j) $10n^2 + 5n - 7$

Question 5: For each n^{th} term, work out the first five terms of the sequence.

- (a) $-n^2$ (b) $-2n^2$ (c) $-4n^2 + 2$ (d) $-n^2 + 3n$
(e) $50 - n^2$ (f) $6n - n^2$ (g) $-n^2 - 7n - 2$

Question 6: For each n^{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^{th} term for each quadratic sequence

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

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

Question 9: Work out the n^{th} term for each quadratic sequence

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

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

Question 11: A sequence has an n^{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^{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^{th} term of $n^2 - 6n + 7$
Work out which term in the sequence has a value of 23.

Apply

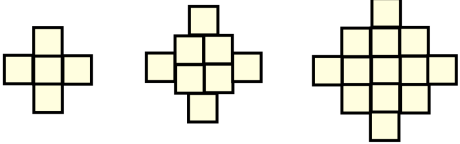
Question 1: The first 5 terms of a quadratic sequence are: 4, 10, 18, 28, 40
Work out the difference between the 10th and 20th terms.

Quadratic nth Term


Video 388 on www.corbettmaths.com

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.

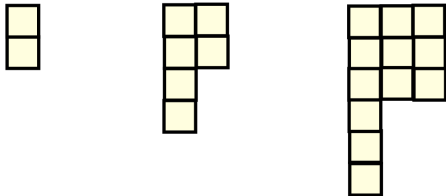
(a) Pattern 1 Pattern 2 Pattern 3



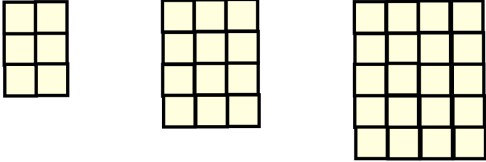
(b) Pattern 1 Pattern 2 Pattern 3



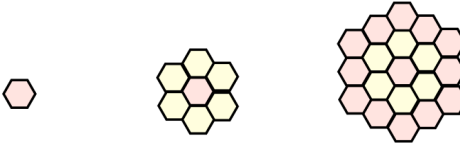
(c) Pattern 1 Pattern 2 Pattern 3



(d) Pattern 1 Pattern 2 Pattern 3



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



Pattern 1 Pattern 2 Pattern 3

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 nth 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

Answers



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