



Timester Challenge

Quadratic Sequences



<p>Here are the first four terms of a quadratic sequence</p> <p style="text-align: center;">2, 5, 11, 20</p> <p>Work out the next term of the sequence.</p> <p style="text-align: right;">Bronze ★</p>	<p>The nth term of a quadratic sequence is</p> $n^2 + 2n - 4$ <p>Work out the first three terms of this sequence.</p> <p style="text-align: right;">Silver ★</p>	<p>Here are the first 4 terms of a quadratic sequence.</p> <p style="text-align: center;">3, 13, 27, 45</p> <p>Find an expression, in terms of n, for the nth term of this quadratic sequence.</p> <p style="text-align: right;">Gold ★</p>
<p>Complete the quadratic sequence by calculating the missing terms.</p> <p style="text-align: center;">3, 8, —, 33, 53, —</p> <p style="text-align: right;">Bronze ★</p>	<p>A quadratic sequence has an nth term of</p> $2n^2 - 3n + 5$ <p>Calculate the 7th Term of the sequence.</p> <p style="text-align: right;">Silver ★</p>	<p>Here is a pattern made up of tiles.</p> <div style="text-align: center;"> </div> <p>a) How many tiles will be needed in the 4th Pattern?</p> <p>b) Find in terms of n, an expression for the nth term of this pattern.</p> <p style="text-align: right;">Gold ★</p>



Timester Challenge

Quadratic Sequences

Answers



Here are the first four terms of a quadratic sequence

2, 5, 11, 20
 +4 +6 +9 +12

Work out the next term of the sequence.

5th Term: $20 + 12 = 32$

Bronze ★

Complete the quadratic sequence by calculating the missing terms.

3, 8, 18, 33, 53, 78,
 +5 +10 +15 +20 +25

Bronze ★

The n th term of a quadratic sequence is

$$n^2 + 2n - 4$$

Work out the first three terms of this sequence.

1st Term: -1

2nd Term: 4

3rd Term: 11

Silver ★

A quadratic sequence has an n th term of

$$2n^2 - 3n + 5$$

Calculate the 7th Term of the sequence.

$$\begin{aligned} 7^{\text{th}} \text{ Term: } & 2(7)^2 - 3(7) + 5 \\ & = 2(49) - 21 + 5 \\ & = 98 - 16 \\ & = 82 \end{aligned}$$

Silver ★

A sequence has an n th term of

$$n^2 - 5n + 4.$$

Work out with term in the sequence has a value of 54. $n^2 - 5n + 4 = 54$ Therefore 54 is the 10th term of the sequence.

$$n^2 - 5n - 50 = 0$$

$$(n - 10)(n + 5) = 0$$

Solutions when $n = 10$ and $n = -5$

Silver ★

Here are the first 4 terms of a quadratic sequence.

3, 13, 27, 45
 +10 +14 +18
 +4 +4 $4 \div 2 = 2n^2$

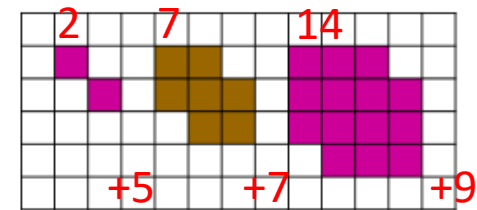
3, 13, 27, 35
 $2n^2$ 2, 8, 18, 32 — Therefore the n th term rule is

1, 5, 9, 13 $2n^2 + 4n - 3$

So $4n - 3$

Gold ★

Here is a pattern made up of tiles.



a) How many tiles will be needed in the 4th Pattern? Pattern 4: $14 + 9 = 23$ tiles

b) Find in terms of n , an expression for the n th term of this pattern.

$$n^2 - 2$$

Gold ★