

1 Algebraic notation: multiplying

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- a) Simplify $4p \times 3pq \times 2q$
b) Find the missing term. $6n^2 \times \square = 18n^5$

a) $24p^2q^2$
b) $3n^3$

2 Term to term rules

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- a) The first term is 4. The rule is multiply by 3, then subtract 5. Write the next three terms.
b) Another rule is multiply by 2, then add 3. The 4th term is 85. Find the 1st term.

a) 7, 16, 43
b) 85, 41, 19, 8: 1st term 8

3 Square and triangular numbers

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The n th triangular number is $\frac{n(n+1)}{2}$.

- a) Find the 12th triangular number.
b) Find a number between 2 and 50 that is a square number and a triangular number.

a) $12 \times 13 \div 2 = 78$
b) $36 = 6^2$ and the 8th triangular number

4 Fibonacci type sequences

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In each sequence, each term is the sum of the two terms before it.

- a) Fill in the gaps. 4, __, __, 18, __
b) The first two terms are a and $2a$. The 6th term is 52. Find a .

a) 4, 7, 11, 18, 29
b) $a, 2a, 3a, 5a, 8a, 13a$
 $13a = 52, a = 4$

Sequences revision mat answers

Higher A

5 The n th term of a linear sequence

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47, 40, 33, 26, ...

- a) Find the n th term.
b) Is -100 a term in this sequence? Show how you know.

a) $54 - 7n$
b) $54 - 7n = -100, n = 22$: yes, the 22nd term

6 The n th term: using it

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Sequence A has n th term $5n + 12$. Sequence B has n th term $7n - 4$.

- a) Which term number has the same value in A and B? What is the value?
b) Find the first term in B that is greater than 200.

a) $5n + 12 = 7n - 4, n = 8$, value 52
b) $7n - 4 > 200, n = 30$: 206

7 The n th term of a quadratic sequence

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4, 9, 18, 31, 48, ...

- a) Find the n th term.
b) Which term is equal to 234?

a) $2n^2$, then 2, 1, 0, -1, -2: $2n^2 - n + 3$
b) $(2n + 21)(n - 11) = 0$: the 11th term

8 Types of sequences

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P 7, 14, 28, 56 Q 21, 28, 36, 45 R 2, 9, 16, 23

- a) Name the type of sequence P, Q and R.
b) Find the first term of 5, 15, 45, ... that is greater than 10 000.

a) P geometric, Q triangular, R linear
b) 1215, 3645, 10935