Mathematics

Sequences
Finding the term-to-term rule

Downloadable Resource

Ms Jones

Try This

What is the same or different about the sequences below?

1, -2, 4, -8, 16, -32, ...

1, 3, 6, 10, 15, 21, ...

$1 \quad \dfrac{1}{2} \quad \dfrac{1}{4} \quad \dfrac{1}{8} \quad \dfrac{1}{32} \quad \dfrac{1}{64} \quad ...$

1, 4, 7, 11, 14, 17, ...

What could the next term be in each?

Independent task

1. Write out the first 5 terms of sequences described by:

   a) Start at 2, term-to-term rule: triple the current term.

   b) Start at 5, term-to-term rule: add double the current term number.

   c) Start at -3, term-to-term rule: double the current term and add 1.

2. What are the term-to-term rules for these sequences?

a) -1, -2, -4, -8, -16, ...

b) 3, 9, 81, 6561, ...

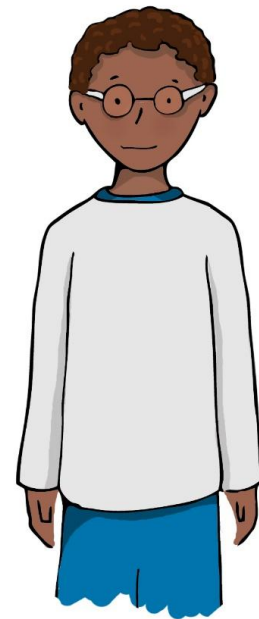c) -5, -2, 4, 13, 25, ...

d) 1, -1, 1, -1, 1, ...

Explore

Cala and Xavier have come up with term-to-term rules. They want to try their rules on different starting numbers as the first term.

To generate a new term I square the current term.

To generate a new term I double the current term and then add 5.

Starting numbers

0   -2

$\frac{1}{2}$

2   -10

What's the same or different about the sequences they form?