



Sequences

- Drawing a dot pattern
- Finding and using a term-to-term rule
- Recognising increasing and decreasing sequences

Keywords

You should know

explanation 1

1 Here is a dot pattern.



- Draw the next two shapes in the pattern.
- What is the rule for this pattern?
- Write this pattern as a sequence.
- What is the name of this sequence of numbers?
- *e Will the number 15 ever be in this sequence? Explain how you know.

2 Repeat question 1 for this dot pattern.



3 Here is a different dot pattern.



- Draw the next two shapes in the pattern.
- What is the rule for this pattern?
- Write this pattern as a sequence of numbers.
- *d Will the number 21 ever be in this sequence? Explain how you know.

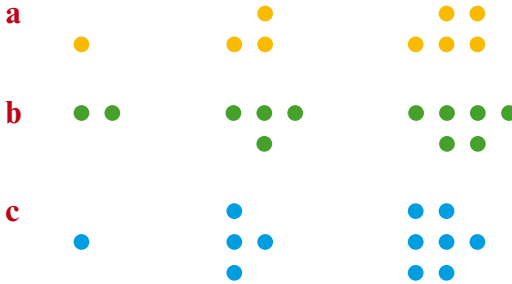
4 Repeat question 3 for this dot pattern.



5 Repeat question 3 for this dot pattern.



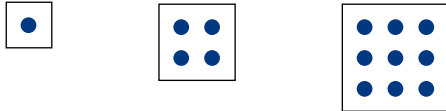
6 Draw the next dot pattern for each diagram.



7 Draw a dot pattern for the first four terms of each sequence.

- a 2, 5, 8, 11 b 3, 6, 9, 12 c 1, 5, 9, 13

8 In this dot pattern the dots are arranged to make squares.



- a Draw the next two shapes in the pattern.
- b Write this pattern as a sequence of numbers.
- c Describe the shape that has a total of 100 dots.
- d Explain why 40 will not be in the sequence.

explanation 2a

explanation 2b

9 Write the next two terms of each sequence. Write each term-to-term rule.

- a 4, 8, 12, 16, ... b 5, 10, 15, 20, ... c 4, 8, 16, 32, ...
- d 12, 14, 16, 18, ... e 24, 40, 56, 72, ... f 27, 24, 21, 18, ...
- g 79, 68, 57, 46, ... h 100, 200, 400, 800, ... i 1, 10, 100, 1000, ...
- j 318, 338, 358, 378, ... k 812, 712, 612, 512, ... l 0, 250, 500, 750, ...

10 Which of these sequences are decreasing sequences?

- a** 4, 8, 12, 16, ... **b** 20, 15, 10, 5, ... **c** 4, 8, 16, 32, ...
d 12, 14, 16, 18, ... **e** 24, 40, 56, 72, ... **f** 27, 24, 21, 18, ...
g 75, 64, 53, 42, ... **h** 10, 20, 40, 80, ... **i** 1, 10, 100, 1000, ...
j 398, 378, 358, 338, ... **k** 142, 242, 342, 442, ... **l** 0, 250, 500, 750, ...

11 Copy and complete these sequences.

- a** 1, 3, 5, , 9, **b** 2, 4, , 8, 10, **c** 3, , 9, , 15, 18,
d 8, , 16, , 24, **e** 33, 30, , 24, **f** 66, , , 33, , 11
g 1, 6, 11, , 21, **h** 4, 7, , 13, 16, **i** 2, , 8, , 14, 17,
j 8, , 18, , 28, **k** 40, 31, , 13, **l** 52, , 44, , 36,

12 Copy and complete this table.

	First term	Term-to-term rule	Next four terms
a	23	Add 4	
b	78	Subtract 6	
c	400	Divide by 2	
d	2	Double and then subtract 1	
e	72	Add 8 and then divide by 2	
f	2	Multiply by 3 and then subtract 3	

***13** Here is a term-to-term rule.

If the number is even divide by 2 but if the number is odd multiply it by 3 and add 1. If the number is 1, stop.

Use the rule above to find the rest of this sequence: 96, 48, 24, ...