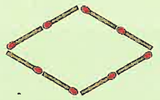
NUMBER SEQUENCES 1

TARGET To generate and describe number sequences.

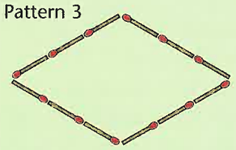
A

Pattern 1

Pattern 2



Pattern 3



1. Draw the next two diagrams in the above pattern.
2. Copy and complete the table.

Pattern	Matches
1	4
2	
3	
4	
5	

3. Copy and complete this sentence.

   The rule for the number of matches is ____ times the pattern number.

4. How many matches would there be in:
   - **a)** the 7th pattern
   - **b)** the 10th pattern
   - **c)** the 30th pattern
   - **d)** the 50th pattern?

B

Pattern 1

Pattern 2

Pattern 3

1. Draw the next two diagrams in the above pattern.
2. Copy and complete the table.

Pattern	Dots
1	5
2	
3	
4	
5	

3. Copy and complete.

   The rule for the number of dots is ____ times the pattern number plus ____.

4. How many dots would there be in:
   - **a)** the 10th pattern
   - **b)** the 15th pattern
   - **c)** the 43rd pattern?

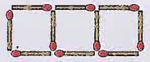
5. Which pattern has:
   - **a)** 23 dots
   - **b)** 38 dots
   - **c)** 56 dots?

C

Pattern 1

Pattern 2

Pattern 3



1. How many matches would there be in:
   - **a)** the 9th pattern
   - **b)** the 17th pattern
   - **c)** the 28th pattern?
2. Which pattern has
   - **a)** 40 matches
   - **b)** 67 matches
   - **c)** 100 matches?
3. Pattern 1

Pattern 2

Pattern 3

Copy and complete.

The rule for the number of dots is ____ times the pattern number minus ____.

4. How many dots would there be in the 25th pattern?
5. Which pattern has:
   - **a)** 60 dots
   - **b)** 92 dots?

NUMBER SEQUENCES 2

TARGET To generate and describe number sequences.

Examples

To find the rule that links the numbers study the gaps.					The rule is:	The *n*th term is:
	1	3	5	7	add 2	$2n - 1$
	3	0	-3	-6	subtract 3	$6 - 3n$
	$\frac{4}{9}$	$\frac{8}{9}$	$1\frac{3}{9}$	$1\frac{7}{9}$	add $\frac{4}{9}$.	$\frac{4n}{9}$.

A

Write the first six numbers in each sequence.

	Start at	Rule		Start at	Rule		Start at	Rule
1	4	+10	6	65	−7	11	26	+9
2	38	−2	7	15	+20	12	30	−3
3	7	+3	8	110	−11	13	$\frac{1}{2}$	$+\frac{1}{2}$
4	29	−4	9	21	+2	14	80	−5
5	0·5	+1	10	948	−101	15	25	+25

B

Complete these sequences by filling in the boxes. Write the rule each time.

1. 44 47 50 53 □ □ □
2. 89 85 81 77 □ □ □
3. 115 140 165 190 □ □ □
4. 0·5 0·6 0·7 0·8 □ □ □
5. −2 −4 −6 □ □ □ −14
6. 119 114 □ □ □ 94 89
7. −9 −6 □ □ □ 6 9
8. $\frac{1}{5}$ $\frac{2}{5}$ $\frac{3}{5}$ $\frac{4}{5}$ □ □ □
9. 5 3 1 □ □ □ −7
10. 37 □ 55 □ 73 □ 91
11. 366 316 □ 216 □ □ 66
12. □ −15 −10 □ □ 5 10
13. $1\frac{6}{7}$ □ $1\frac{2}{7}$ 1 □ □ $\frac{1}{7}$
14. □ □ 4·5 5 □ 6 6·5
15. □ 182 □ 380 □ 578 677
16. 10 6 □ □ □ −10 −14

C

Copy these sequences and write the next three numbers. What is the rule for each sequence? Can you write the rule for the *n*th term?

1. 84 72 60 48
2. 64 71 78 85
3. 1·1 1·07 1·04 1·01
4. 4 $3\frac{5}{8}$ $3\frac{2}{8}$ $2\frac{7}{8}$
5. 165 146 127 108
6. −9 −7 −5 −3
7. 75 67 59 51
8. 0·02 0·04 0·06 0·08
9. 15 11 7 3
10. 43 55 67 79
11. −20 −14 −8 −2
12. 5 4·5 4 3·5
13. 135 156 177 198
14. 36 28 20 12
15. 50 175 300 425
16. 1·25 1·5 1·75 2
17. 10 $8\frac{3}{4}$ $7\frac{1}{2}$ $6\frac{1}{4}$
18. −11 −8 −5 −2