

## Practice

## 1A Sequences and rules

- 1** Use each of the following term-to-term rules with 1st term 2. Create the sequences with 5 terms each.
- a** add 3                      **b** add 6                      **c** treble  
**d** multiply by 5            **e** add 100                **f** multiply by 10
- 2** Write the next two terms in each sequence. Describe the term-to-term rule you have used.
- a** 1, 3, 5, 7, ...            **b** 20, 30, 40, 50, ...    **c** 5, 13, 21, 29, ...  
**d** 5, 10, 15, 20, ...       **e** 6, 13, 20, 27, ...    **f** 10, 110, 210, 310, ...
- 3** Fill in the gap to make at least one sequence, fully describing the term-to-term rule you have used.
- a** 3, ..., 7                    **b** 1, ..., 9                    **c** 10, ..., 50  
**d** 2, ..., 14                   **e** 6, ..., 16                   **f** 20, ..., 100
- 4** **a** Add any two sequences from question 2, term-by-term.  
**b** Write down the 1st term and term-to-term rule.  
**c** You could answer part **b** without adding the sequences. How?

## Practice

## 1B Finding missing terms

- 1** In each of the following sequences, find the 5th and 50th terms.
- a** 1, 5, 9, 13, ...            **b** 3, 5, 7, 9, ...            **c** 4, 12, 20, 28, ...  
**d** 5, 15, 25, 35, ...        **e** 2, 8, 14, 20, ...        **f** 10, 30, 50, 70, ...  
**g** 2, 5, 8, 11, ...            **h** 0, 5, 10, 15, ...        **i** 4, 11, 18, 25, ...
- 2** In each of the following sequences, find the missing terms and the 30th term.

Term	1st	2nd	3rd	4th	5th	6th	7th	8th	...	30th
Sequence A	—	—	—	13	16	19	22	—	...	—
Sequence B	—	9	16	—	30	37	—	—	...	—
Sequence C	—	—	25	—	45	—	65	—	...	—
Sequence D	—	11	—	19	—	27	—	—	...	—

3

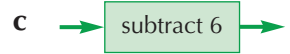
1 Use the function to complete the output for each of the following function machines.



<i>input</i>	<i>output</i>
6 →	?
7 →	?
8 →	?
9 →	?



<i>input</i>	<i>output</i>
20 →	?
30 →	?
40 →	?
50 →	?



<i>input</i>	<i>output</i>
6 →	?
7 →	?
8 →	?
9 →	?

2 Express these simple functions in words.



<i>input</i>	<i>output</i>
3 →	9
4 →	12
5 →	15
6 →	18



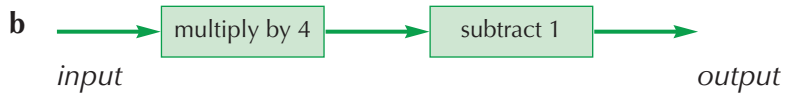
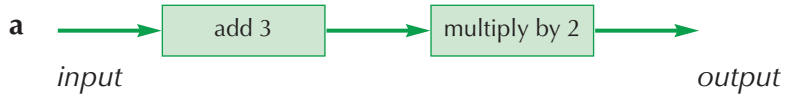
<i>input</i>	<i>output</i>
3 →	10
4 →	11
5 →	12
6 →	13



<i>input</i>	<i>output</i>
8 →	2
12 →	3
16 →	4
20 →	5

4

3 Draw diagrams to illustrate the following functions. Start with any numbers you like for the input, but remember, the larger the numbers the more difficult the problem.



5

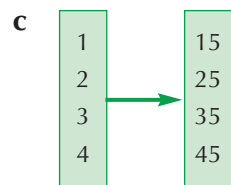
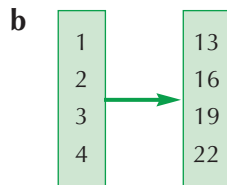
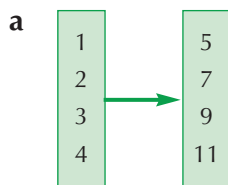
4 Write down the inverse function of

a subtract 8

b multiply by 4.

6

5 Each of the following functions are made up from two operations as above. Find the combined functions.



## Practice

## 1D Using letter symbols to represent functions

- 1 Write down what the expression  $x + 10$  is equal to when:  
 i  $x = 3$     ii  $x = 10$     iii  $x = 18$     iv  $x = 50$     v  $x = 120$
- 2 Write down what the expression  $4n$  is equal to when:  
 i  $n = 4$     ii  $n = 1$     iii  $n = 7$     iv  $n = 12$     v  $n = 0$
- 3 Write the following rules in symbolic form, e.g.  $x \rightarrow x + 4$   
 a subtract 5    b treble    c add 9    d divide by 3
- 4 Draw mapping diagrams to illustrate the following functions:  
 a  $x \rightarrow x + 25$     b  $x \rightarrow 3x$     c  $x \rightarrow 3x - 1$     d  $x \rightarrow 4x + 4$
- 5 Express the following functions in symbols as in question 3.
- |   |         |
|---|---------|
| a | 8 → 12  |
|   | 9 → 13  |
|   | 10 → 14 |
|   | 11 → 15 |
- |   |        |
|---|--------|
| b | 2 → 12 |
|   | 3 → 18 |
|   | 4 → 24 |
|   | 5 → 30 |
- |   |        |
|---|--------|
| c | 1 → 5  |
|   | 2 → 7  |
|   | 3 → 9  |
|   | 4 → 11 |
- |   |        |
|---|--------|
| d | 1 → 1  |
|   | 2 → 4  |
|   | 3 → 7  |
|   | 4 → 10 |

## Practice

1E The general term ( $n$ th term)

- 1 Find **i** the first three terms and **ii** the 100th term, of sequences whose  $n$ th term is given by:
- |             |            |                                 |  |
|-------------|------------|---------------------------------|--|
| a $3n - 1$  | b $5n + 2$ | c $6n - 5$                      |  |
| d $10n - 1$ | e $3n + 8$ | f $\frac{1}{2}n + 1\frac{1}{2}$ |  |

3

4

5

6