

# Identify and represent sets

1 Are the two sets the same or different? Tick your answers.  
Give reasons for your answers.

a)  $A = \{1, 2, 3, 4\}$        $B = \{4, 3, 2, 1\}$        same     different

The elements of A and B are identical.

b)  $A = \{-1, -2, -3, -4\}$        $B = \{1, 2, 3, 4\}$        same     different

The elements of A are negative whereas B are positive.

c)  $A = \{\text{even numbers}\}$        $B = \{2, 4, 6, 8\}$        same     different

B doesn't contain all even numbers, only 4

d)  $A = \{\text{names of pets}\}$        $B = \{\text{types of pets}\}$        same     different

The name of a pet is generally different than the type of pet.

e)  $A = \{\text{letters in "word scare"}\}$      $B = \{\text{letters in "word cares"}\}$      same     different

scare and cares contain the same letters.

f)  $A = \{\frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}, \frac{5}{5}\}$        $B = \{0.2, 0.4, 0.6, 0.8, 1\}$        same     different

$\frac{1}{5}$  is equivalent to 0.2 and so on.

2 List the elements of the sets.  
Use correct set notation.

a) Set A: months of the year

$A = \{\text{January, February, March, April, May, June, July, August, September, October, November, December}\}$

b) Set B: quadrilaterals with at least two right angles

$B = \{\text{square, rectangle, right-trapezium}\}$

c) Set C: factors of 27

$C = \{1, 3, 9, 27\}$

d) Set D: square numbers less than 100

$D = \{1, 4, 9, 16, 25, 36, 49, 64, 81, 100\}$

e) Set E: letters in "mathematics"

$E = \{m, a, t, h, e, i, c, s\}$

3

$\xi = \{\text{letters in the alphabet}\}$

a)  $A = \{\text{letters in "symmetry"}\}$

List the elements of set A.

s y m e t r

b)  $B = \{\text{letters in "proportion"}\}$

List the elements of set B.

p r o p o r t i o n

c) Which letters are in both set A and set B?

r and t

4

 $\xi = \{\text{integers between 1 and 20 inclusive}\}$ 

List the elements of the sets.

a)  $A = \{\text{odd numbers}\}$

1, 3, 5, 7, 9, 11, 13, 15, 17, 19

b)  $B = \{\text{even numbers}\}$

2, 4, 6, 8, 10, 12, 14, 16, 18, 20

c)  $C = \{\text{multiples of 8}\}$

8, 16

d)  $D = \{\text{factors of 40}\}$

1, 2, 4, 5, 8, 10, 20

5

Describe the sets in words.

a)  $\{4, 8, 12, 16, 20\}$

Multiples of 4 between 1 and 20 inclusive.

b)  $\{-4, -8, -12, -16, -20\}$

Multiples of -4 between -1 and -20 inclusive.

c)  $\{a, t, h, m, s\}$

Letters in the word maths.

d)  $\{1, 3, 7, 21\}$

Factors of 21

e)  $\{35, 70, 105, 140, 175\}$

Multiples of 35 between 1 and 175 inclusive.

Compare answers with a partner.

Do any of the sets have more than one solution?

6

 $\xi = \{\text{integers between 1 and 50 inclusive}\}$ 
 $A = \{\text{factors of 100}\}$     $C = \{\text{even numbers}\}$ 
 $B = \{\text{multiples of 5}\}$     $D = \{\text{odd numbers}\}$ 

a) List the elements in the sets.

A 1, 2, 4, 5, 10, 20, 25, 50

B 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

C 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50

D 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49

b) List the elements that are in both set A and set B.

5, 10, 20, 25, 50

c) Are any elements in both set C and set D? Explain your answer.

No. A number can't be both odd and even.

Compare answers with a partner.