

# 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

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

e) Set E: letters in "mathematics"

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

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

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, 19b)  $B = \{\text{even numbers}\}$ 2, 4, 6, 8, 10, 12, 14, 16, 18, 20c)  $C = \{\text{multiples of 8}\}$ 8, 16d)  $D = \{\text{factors of 40}\}$ 1, 2, 4, 5, 8, 10, 20

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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 21e)  $\{35, 70, 105, 140, 175\}$ Multiples of 35 between 1 and 175 inclusive.

Compare answers with a partner.

Do any of the sets have more than one solution?

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

a) List the elements in the sets.

A 1, 2, 4, 5, 10, 20, 25, 50B 5, 10, 15, 20, 25, 30, 35, 40, 45, 50C 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50D 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.