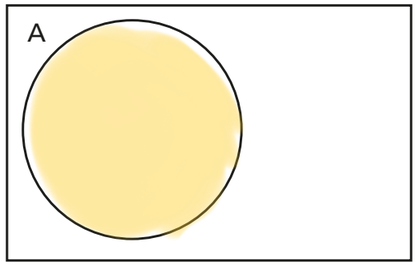
Understand and use the complement of a set

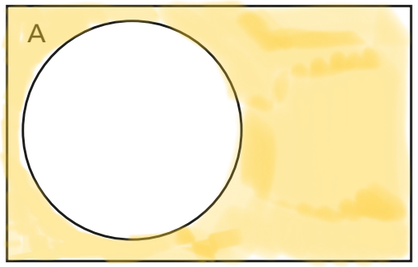
H

1 Shade the sets.

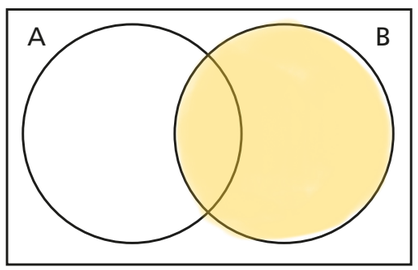
a) A



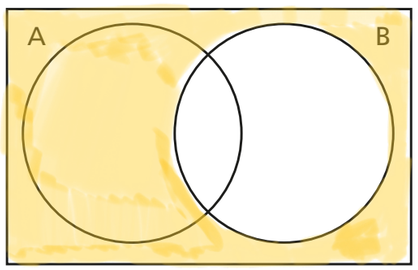
b) A′



c) B

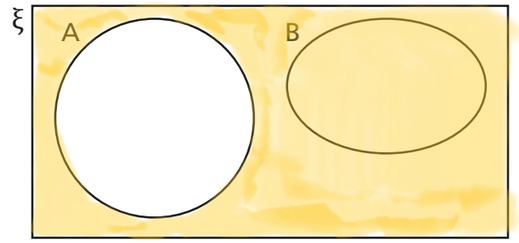


d) B′

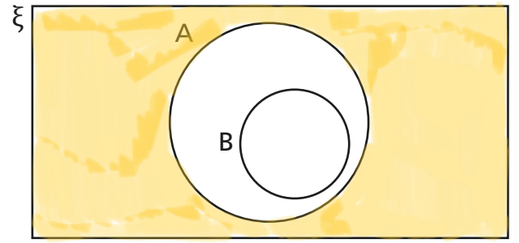


2 Shade A′.

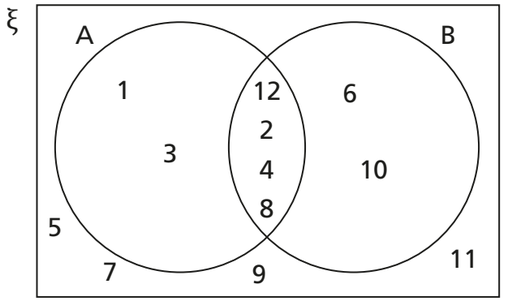
a)



b)



3 Here is a Venn diagram.



ξ = {numbers from 1 to 12 inclusive}

A = {factors of 24}

B = {even numbers}

List the members of the sets.

a) A = {1, 3, 12, 2, 4, 8}

b) A′ = {5, 7, 9, 6, 10, 11}

c) B′ = {1, 3, 5, 7, 9, 11}

d) A ∪ B = {1, 3, 12, 2, 4, 8, 6, 10}

e) A ∩ B = {12, 2, 4, 8}

4

ξ = {100, 101, 110, 1000, 1001, 1010, 1011, 1100, 1101, 1110, 1111}

A = {100, 110, 1000, 1111}

B = {100, 101, 110, 1000, 1001, 1010, 1100}

Give one member of each set. e.g.

a) A′ 1001

b) B′ 1111

c) (A ∪ B)′ 1011

d) (A ∩ B)′ 1011

e) A ∪ B′ 100

f) A′ ∪ B′ 1110

g) A ∩ B′ 1111

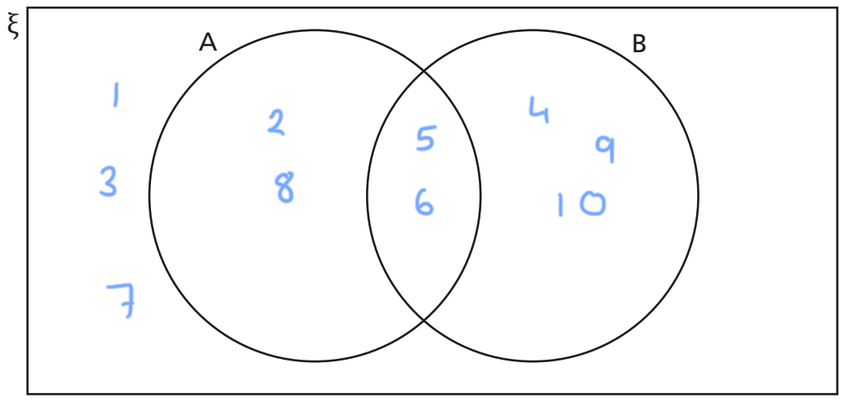
5

ξ = {numbers from 1 to 10 inclusive}

A = {2, 5, 6, 8}

B′ = {1, 2, 3, 7, 8}

a) Draw a Venn diagram to show this information.



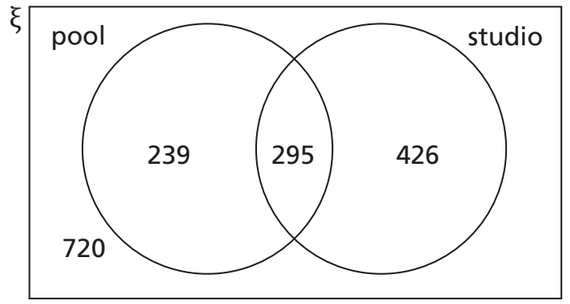
b) List the members of A ∩ B. 5, 6

c) List the members of (A ∪ B)′. 1, 3, 7

6

At a gym there is a swimming pool and a studio for classes.

The Venn diagram shows the number of people who use the pool and the studio during one week.



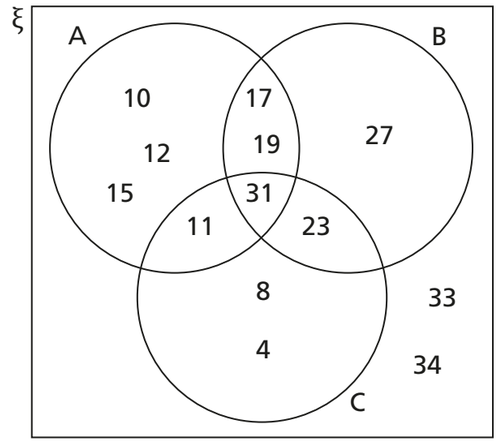
a) How many people do not use the pool but use the studio? 426

b) How many people do not use the pool? 1,146

c) How many people do not use either the pool or the studio? 720

7

List the members of the sets.



a) B′ = {10, 12, 15, 11, 8, 4, 33, 34}

b) A′ ∩ B′ = {8, 4, 33, 34}

c) (A ∩ B)′ = {10, 12, 15, 11, 23, 27, 8, 4, 33, 34}

d) B ∪ C′ = {17, 19, 31, 23, 27, 33, 34, 10, 12, 15}

Make up your own question like this for a partner.