Venn Diagrams

SCAN ME

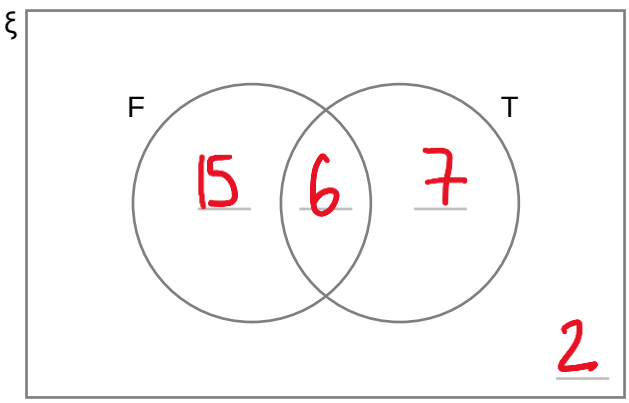
REVISE THIS TOPIC

1 Here is some information about 30 students in a class.

21 students like football
13 students like tennis
6 students like both football and tennis.

Complete the Venn diagram to represent the information. **[3 marks]**

ξ = 30 students in the class
F = students who like football
T = students who like tennis.



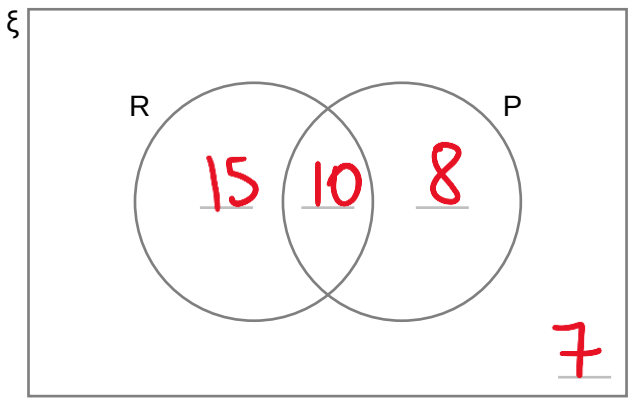
3

2 Here is some information about 40 students in a class.

25 students like rock music.
18 students like pop music.
10 students like both rock and pop music.

2 (a) Complete the Venn diagram to represent the information. **[3 marks]**

ξ = 40 students in the class
R = students who like rock music
P = students who like pop music.



2 (b) One of the students from the class is chosen at random.

Write down the probability that this student likes rock music. **[1 mark]**

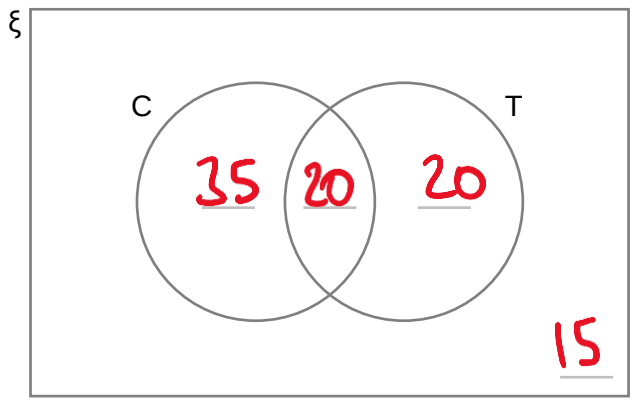
Answer $\frac{25}{40}$

3 Here is some information about 90 customers at a café.

55 customers ordered coffee.
40 customers ordered tea.
20 customers ordered both coffee and tea.

3 (a) Complete the Venn diagram to represent the information. **[3 marks]**

ξ = 90 café customers
C = customers who ordered coffee
T = customers who ordered tea.



3 (b) One of the customers is chosen at random.

Write down the probability that this customer ordered a tea and a coffee. **[1 mark]**

Answer $\frac{20}{90}$

8

4 Here is some information about 60 tourists.

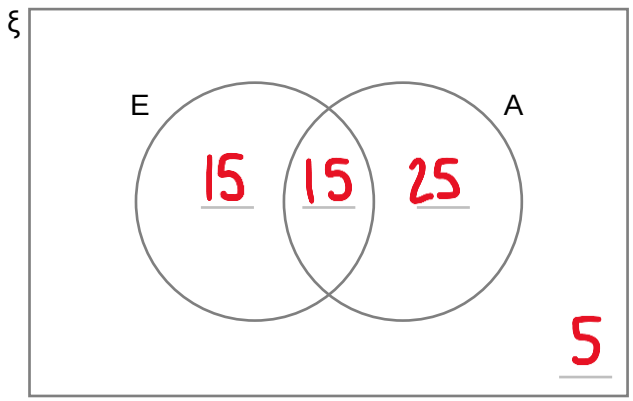
$\frac{1}{2}$ of the tourists have visited Europe. 30

$\frac{2}{3}$ of the tourists have visited Asia. 40

$\frac{1}{4}$ of the tourists have visited both Europe and Asia. 15

4 (a) Complete the Venn diagram to represent the information. **[3 marks]**

ξ = 60 tourists
E = tourists who have visited Europe
A = tourists who have visited Asia.



4 (b) One of the tourists is chosen at random.

Write down the probability that this tourist has visited Asia but not Europe.

[1 mark]

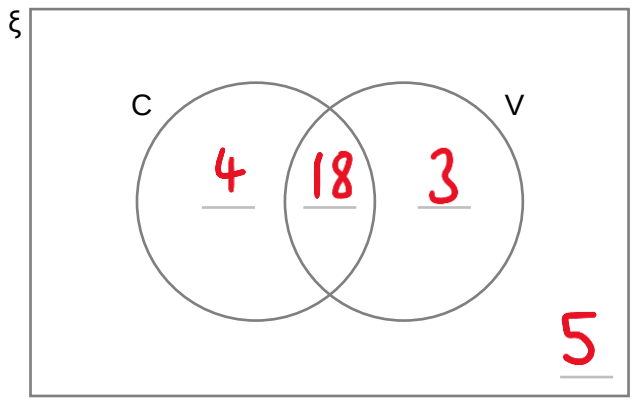
Answer $\frac{25}{60}$

5 Here is some information about 30 children at a birthday party.

21 of the children like vanilla ice cream.
60% of the children like both flavours. 18
$\frac{1}{6}$ of the children do not like either flavour. 5

5 (a) Complete the Venn diagram to represent the information. **[3 marks]**

ξ = 30 children at the party
C = children who like chocolate ice cream
V = children who like vanilla ice cream.



5 (b) One of the children is chosen at random.

Write down the probability that the child selected like vanilla ice cream. **[1 mark]**

Answer $\frac{21}{30}$

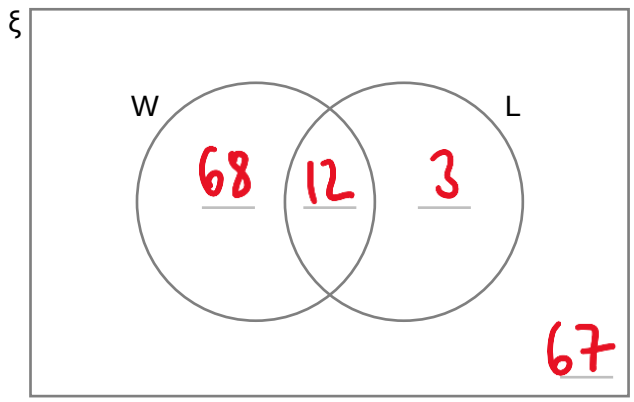
8

6 Here is some information about 150 students in Year 11.

70 students do not walk to school. 80 walk
15% of the students who walk to school are also late. 12
10% of students are late to school. 15

6 (a) Complete the Venn diagram to represent the information. **[3 marks]**

ξ = 150 students in Year 11.
W = students who walk to school.
L = students who are late.



6 (b) One of the students is chosen at random.

Write down the probability that this student did not walk to school. **[1 mark]**

Answer $\frac{70}{150}$

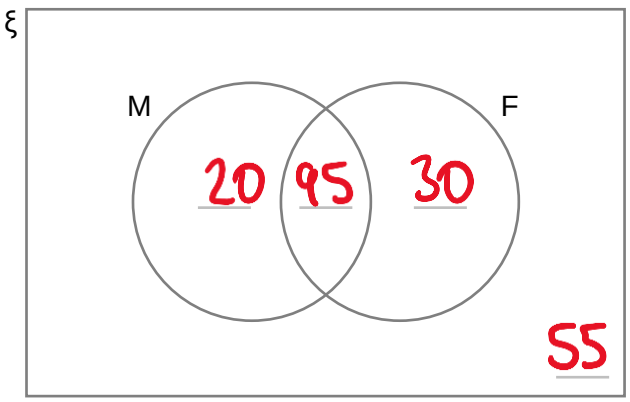
7 Here is some information about 200 guests at a party.

20 of the guests eat meat but do not eat fish.
30 of the guests eat fish but do not eat meat.

$\frac{5}{8}$ of the guests eat fish. 125

7 (a) Complete the Venn diagram to represent the information. **[3 marks]**

ξ = 200 guests at a party.
M = guests who eat meat.
F = guests who eat fish.



7 (b) One of the guests is chosen at random.

Write down the probability that this guest eats meat and fish. **[1 mark]**

Answer $\frac{95}{200}$

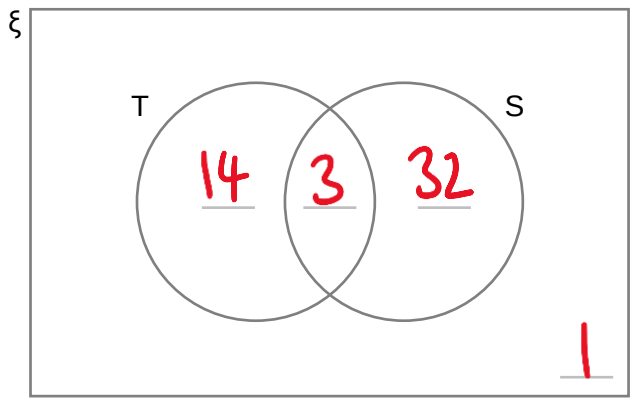
8

8 Here is some information about 50 customers at a supermarket.

33 of the customers did not use a trolley.
35 customers used a self-service checkout, 3 of which also used a trolley.

Complete the Venn diagram to represent the information.

8 (a) ξ = 50 customers at a supermarket. **[3 marks]**
T = customers who used a trolley.
S = customers who used a self-service checkout.



8 (b) One of the customers is chosen at random.

Write down the probability that this customer used a trolley. **[1 mark]**

Answer $\frac{17}{50}$

9 Here is some information about 60 learners taking a driving test.

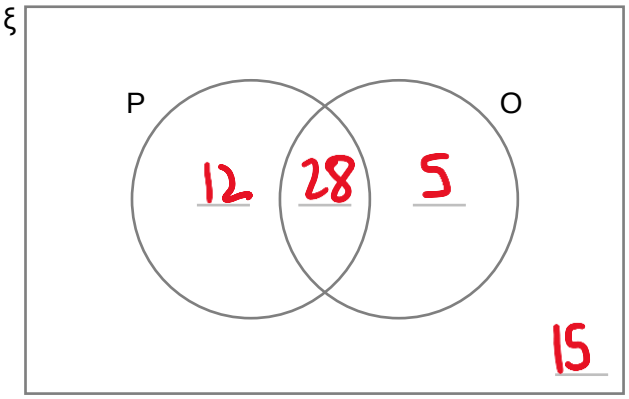
5 of the learners were over 35 years old and did not pass their test.

$\frac{2}{3}$ of the learners passed their driving test. 40

70% of those that passed their test were over 35 years old. 28

9 (a) Complete the Venn diagram to represent the information. **[3 marks]**

ξ = 60 learners taking a driving test.
P = learners who pass their test.
O = learners who are over the age of 35 years.



9 (b) One of the learners is chosen at random.

Write down the probability that this learner passed their test. **[1 mark]**

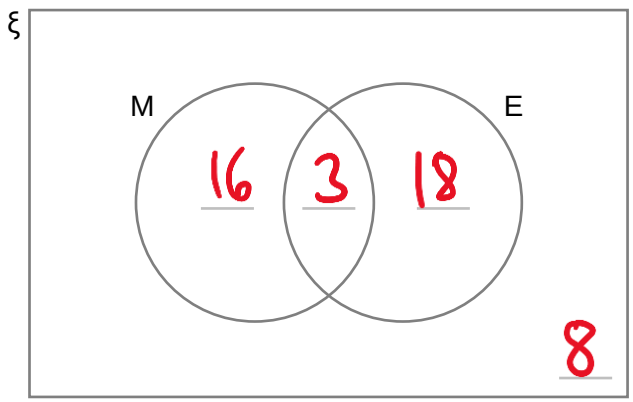
Answer $\frac{40}{60}$

10 Here is some information about 45 students in year 11.

19 students passed their maths test.
21 students passed their English test.
8 students did not pass either of their tests.

10 (a) Complete the Venn diagram to represent the information. **[3 marks]**

ξ = 45 students in year 11.
M = students who passed their maths test.
E = students who passed their English test.



10 (b) One of the students is chosen at random.

Write down the probability that this student did not pass either test. **[1 mark]**

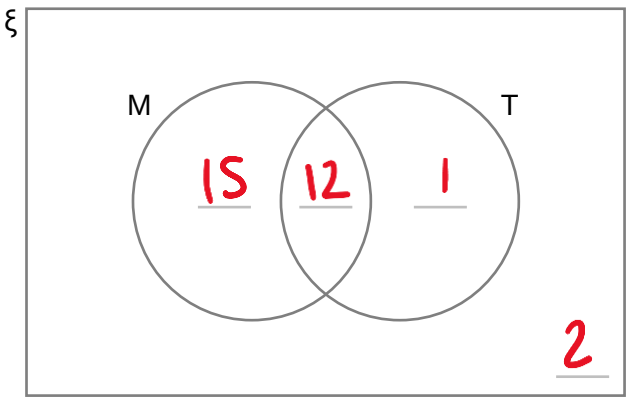
Answer $\frac{8}{45}$

11 Here is some information about 30 students in a form group.

27 students own a mobile phone.
13 students own a tablet.
28 students own either a mobile phone, a tablet or both.

11 (a) Complete the Venn diagram to represent the information. **[3 marks]**

ξ = 30 students in a form group.
M = students who own a mobile phone.
T = students who own a tablet.



11 (b) One of the students is chosen at random.

Write down the probability that this student owns a mobile phone. **[1 mark]**

Answer $\frac{27}{30}$

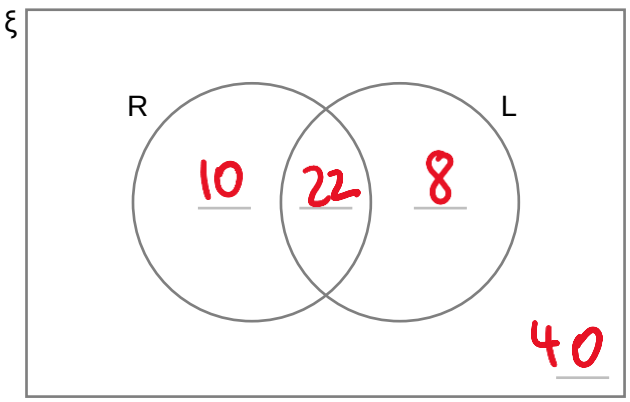
8

12 Here is some information about 80 counters in a box.

The counters are coloured either red or green and are either large or small.
Red counters : green counters = 2 : 3 32:48
10 of the red counters are small.
8 of the green counters are large.

12 (a) Complete the Venn diagram to represent the information. **[4 marks]**

ξ = 80 counters in a box
R = red counters
L = large counters



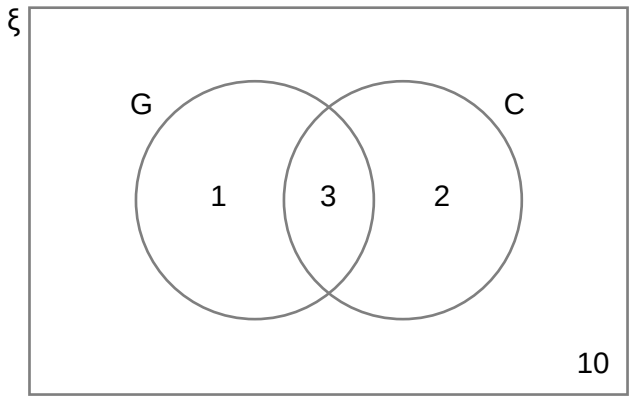
12 (b) One of the counters is chosen at random.

Write down the probability that this counter is a large green counter. **[1 mark]**

Answer $\frac{8}{80}$

13 Here is some information about 16 players in a football team on matchday.

ξ = 16 players in a football team.
G = scored a goal in the match.
C = received a card in the match.



13 (a) One of the players is chosen at random.

Write down the probability that this player scored a goal. **[1 mark]**

Answer $\frac{4}{16}$

13 (b) One of the players is chosen at random.

Write down the probability that this player received a card. **[1 mark]**

Answer $\frac{5}{16}$

13 (c) One of the players is chosen at random.

Write down the probability that this player scored a goal and received a card. **[1 mark]**

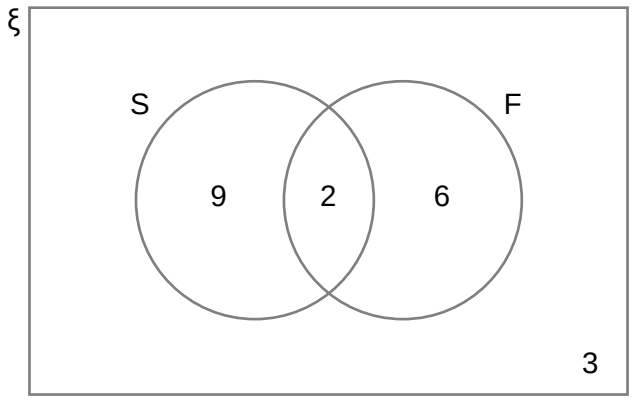
Answer $\frac{3}{16}$

8

Turn over ►

14 Here is some information about 20 students at a college.

ξ = 20 students at a college.
S = studies Spanish.
F = studies French.



14 (a) One of the students is chosen at random.

Write down the probability that this student studies Spanish. **[1 mark]**

Answer $\frac{11}{20}$

14 (b) One of the students is chosen at random.

Write down the probability that this student studies French but not Spanish. **[1 mark]**

Answer $\frac{6}{20}$

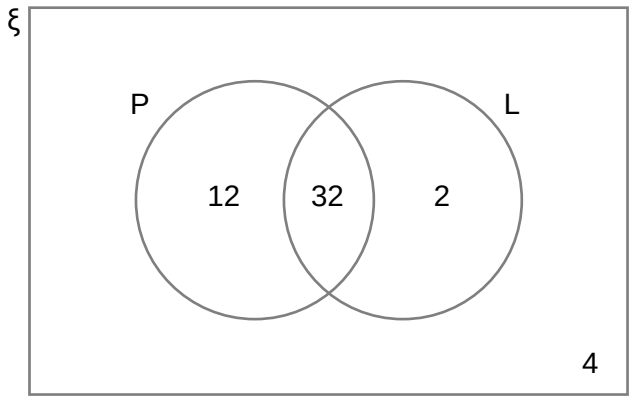
14 (c) One of the students is chosen at random.

Write down the probability that this student does not study Spanish or French. **[1 mark]**

Answer $\frac{3}{20}$

15 Here is some information about 50 books for sale in a shop.

ξ = 50 books for sale in a shop.
P = over £10 in price.
L = over 200 pages in length.



15 (a) One of the books is chosen at random.

Write down the probability that this book is over 200 pages in length. **[1 mark]**

Answer 34/50

15 (b) One of the books is chosen at random.

Write down the probability that this is over £10 in price.

[1 mark]

Answer 44/50

15 (c) One of the books is chosen at random.

Write down the probability that this book is **not** over 200 pages in length.

[1 mark]

Answer 16/50

6

16 What does A ∩ B mean in P(A ∩ B) **[1 mark]**

A and B

A or B or both

not A and not B

A but not B

17 What does A U B mean in P(A U B) **[1 mark]**

A and B

A or B or both

not A and not B

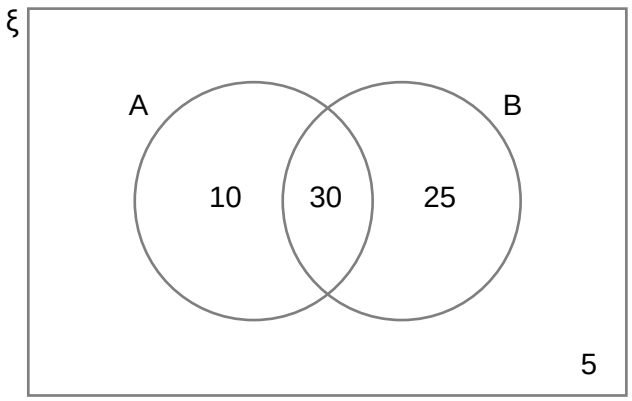
A but not B

18 P(A) means the probability of event A. **[1 mark]**

Complete the sentence below.

P(A') means the probability of event not A

19 The Venn diagram represents 70 items.



19 (a) Write down P(A U B) **[1 mark]**

Answer 65/70

19 (b) Write down P(A ∩ B) **[1 mark]**

Answer 30/70

19 (c) Write down P(A) **[1 mark]**

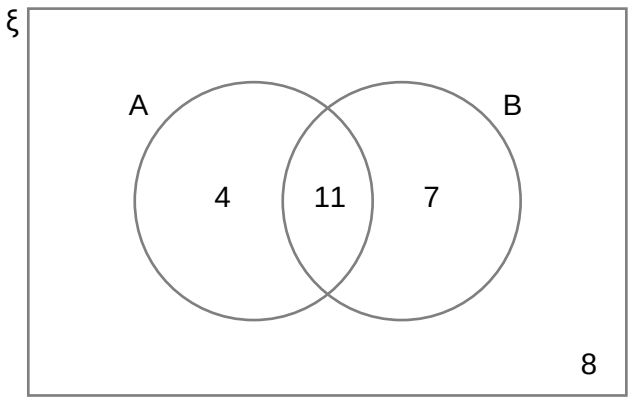
Answer 40/70

19 (d) Write down P(B′) **[1 mark]**

Answer 15/70

7

20 The Venn diagram represents 30 items.



20 (a) Write down P(A ∩ B) **[1 mark]**

Answer 11/30

20 (b) Write down P(A U B) **[1 mark]**

Answer 22/30

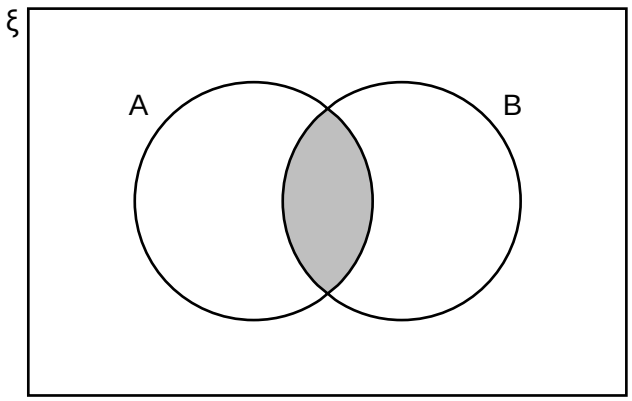
20 (c) Write down P(B) **[1 mark]**

Answer 18/30

20 (d) Write down P(A′) **[1 mark]**

Answer 15/30

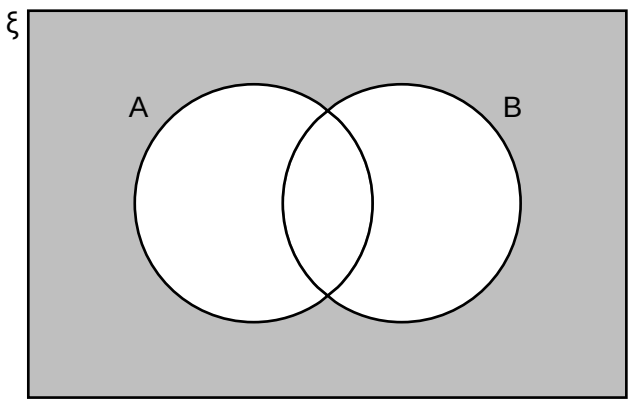
21 Here is a Venn diagram.



Which of these represents the shaded region. **[1 mark]**

A ∩ B A U B (A ∩ B)′ (A U B)′

22 Here is a Venn diagram.

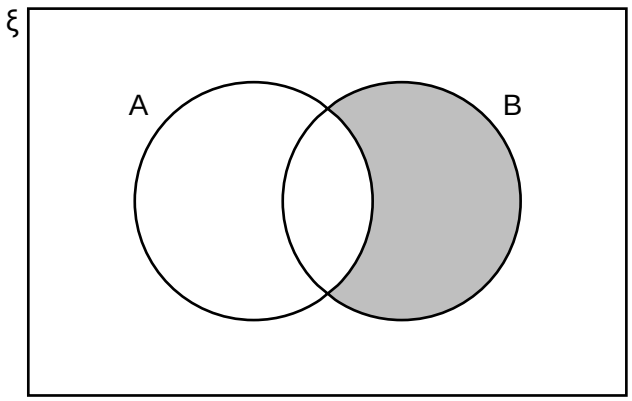


Which of these represents the shaded region. **[1 mark]**

A ∩ B A U B (A ∩ B)′ (A U B)′

6

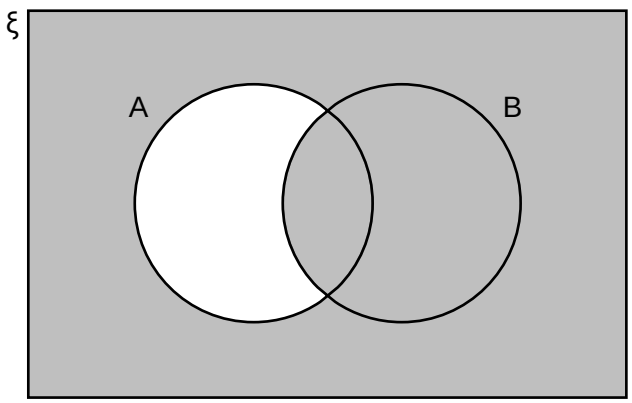
23 Here is a Venn diagram.



Which of these represents the shaded region. **[1 mark]**

A′ U B A′ ∩ B A′ U B′ A′ ∩ B′

24 Here is a Venn diagram.



Which of these represents the shaded region. **[1 mark]**

A′ U B A′ ∩ B A′ U B′ A′ ∩ B′

2