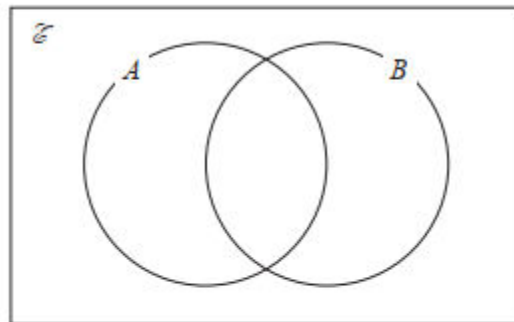**VENN DIAGRAMS**

Pearson Edexcel – Thursday 4 June 2020 - Paper 2 (Calculator) Higher Tier

1.

2   $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
    $A = \{\text{even numbers}\}$
    $B = \{\text{factors of 10}\}$

(a) Complete the Venn diagram for this information.

(3)

A number is chosen at random from the universal set, $\mathcal{E}$

(b) Find the probability that this number is in the set $A \cap B$

(2)

(Total for Question 2 is 5 marks)

Pearson Edexcel - Tuesday 11 June 2019 - Paper 3 (Calculator) Higher Tier

2.

1 $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$
$A = \{1, 5, 6, 8, 9\}$
$B = \{2, 6, 9\}$

(a) Complete the Venn diagram to represent this information.

(3)

A number is chosen at random from the universal set $\mathscr{E}$.

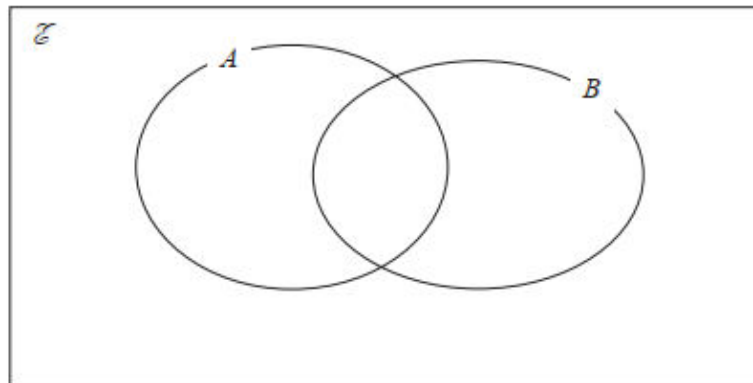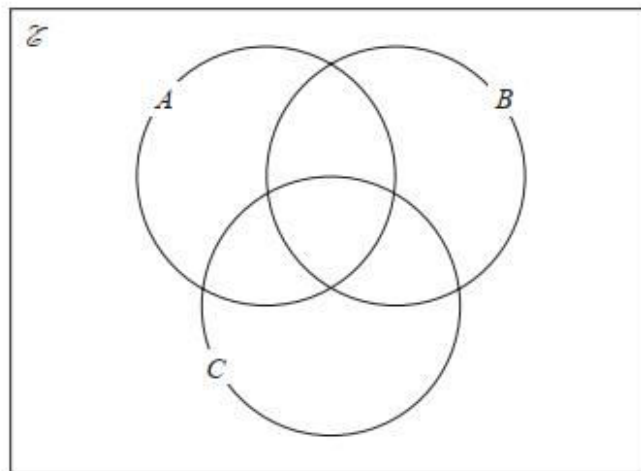(b) Find the probability that the number is in the set $A \cap B$

(2)

(Total for Question 1 is 5 marks)

Pearson Edexcel - Thursday 8 November 2018 - Paper 2 (Calculator) Higher Tier

3.

1   $\mathscr{E}$ = {even numbers between 1 and 25}
    A = {2, 8, 10, 14}
    B = {6, 8, 20}
    C = {8, 18, 20, 22}

(a) Complete the Venn diagram for this information.
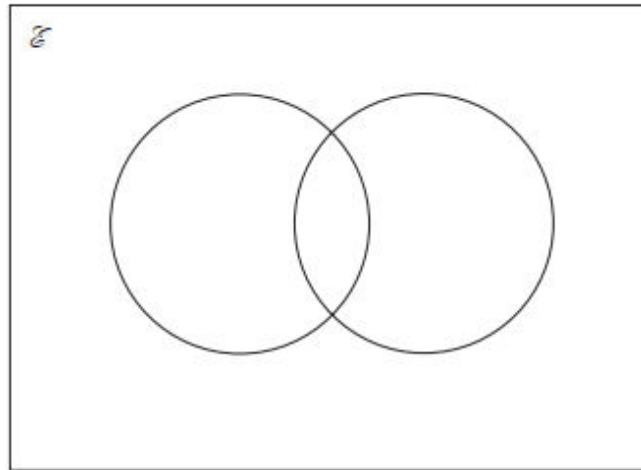

(4)

A number is chosen at random from $\mathscr{E}$.

(b) Find the probability that the number is a member of $A \cap B$.

....

(2)

(Total for Question 1 is 6 marks)

Pearson Edexcel - Tuesday 13 June 2017 - Paper 3 (Calculator) Higher Tier

4.

1 $\mathscr{E}$ = {odd numbers less than 30}
   $A = \{3, 9, 15, 21, 27\}$
   $B = \{5, 15, 25\}$

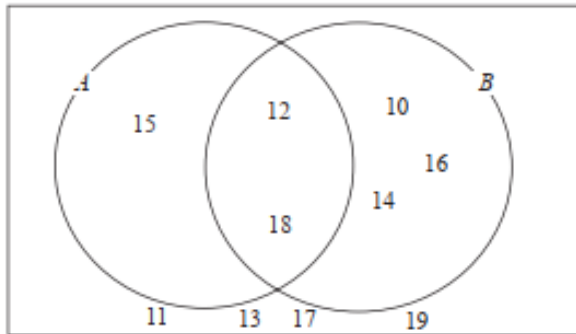(a) Complete the Venn diagram to represent this information.

(4)

A number is chosen at random from the universal set, $\mathscr{E}$.

(b) What is the probability that the number is in the set $A \cup B$?

(2)

(Total for Question 1 is 6 marks)

Pearson Edexcel - Specimen Papers Set 2 - Paper 2 (Calculator) Higher Tier

5.

5 Here is a Venn diagram.

(a) Write down the numbers that are in set

(i) $A \cup B$

....

(ii) $A \cap B$

....

(2)

One of the numbers in the diagram is chosen at random.

(b) Find the probability that the number is in set A'

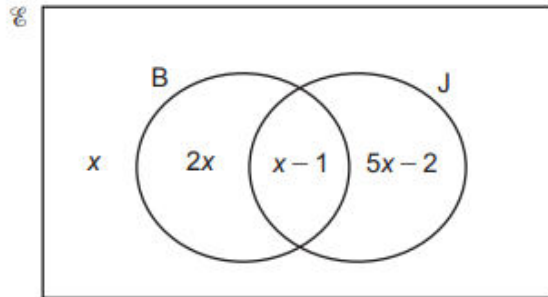..

(2)

(Total for Question 5 is 4 marks)

OCR GSCE – Tuesday 3 November 2020 – Paper 4 (Calculator) Higher Tier

6.

4 In a survey, 60 students were asked whether they have a bank account (B) and whether they have a part-time job (J).

The number of students who had neither a bank account nor a part-time job was x.
The Venn diagram shows the results in terms of x.

One of the 60 students is chosen at random.

Find the probability that they have a bank account.
Show your working.

7.

9 72 children are asked whether they have a laptop or an iPad.
- 31 have a laptop.
- 48 have an iPad.
- 12 have both.
- 5 have neither.

(a) Represent this information on a Venn diagram.

$\mathscr{E}$
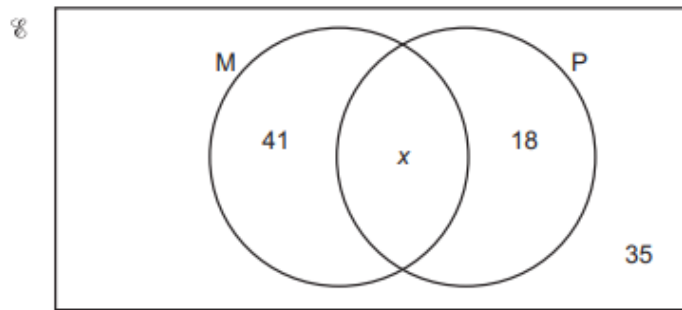
[3]

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

Write down the probability that they have an iPad but not a laptop.

(b) .... [2]

8.

14 The Venn diagram shows the number of students studying Mathematics (M) and the number of students studying Physics (P) in a college.
35 students do not study either subject.

(a) The total number of students is 121.

Find the value of x.

(a) $x =$ .... **[1]**

(b) One of the 121 students is selected at random.

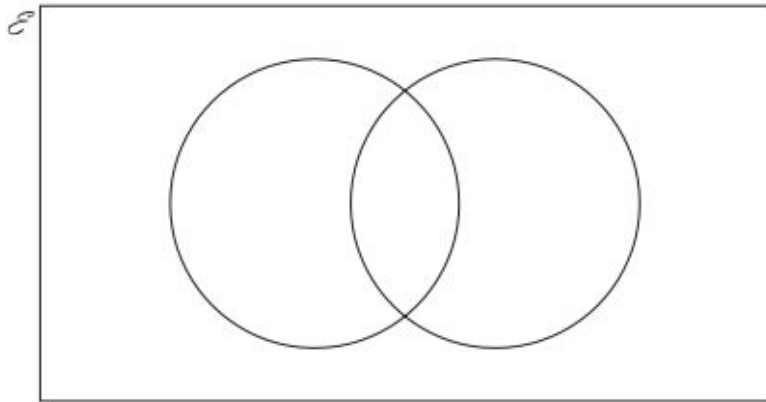Find the probability that this student studies Mathematics, given that they study Physics.

(b) .... **[2]**

9.

11 A skills test has two sections, literacy (L) and numeracy (N).
One day everyone who took the skills test passed at least one section.
88% passed the literacy section and 76% passed the numeracy section.

(a) Represent this information on a Venn diagram.
Show clearly the **percentage** in each section of the diagram.

[3]

(b) One person is chosen at random from all the people who took the skills test that day.

What is the probability that this person

(i) passed the numeracy section, given that they passed the literacy section,

(b)(i) .... [2]

(ii) passed the literacy section, given that they passed only one section?

(ii) .... [2]

10.

7 Here is some information about 80 people who play in bands.

12 are singers but not guitar players.

30% are neither a singer nor a guitar player.
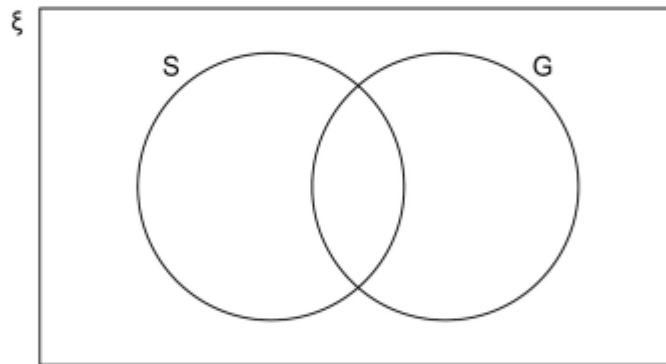
$\frac{1}{4}$ of the guitar players are also singers.

Complete this Venn diagram to represent the information.

[4 marks]

ξ = 80 people who play in bands

S = singers

G = guitar players

_____

_____

_____

_____

_____

_____

_____

AQA GSCE – Thursday 8 June 2020 – Paper 3 (Calculator) Higher Tier

11.

1 What does A U B represent in P(A U B) ?

Circle your answer.

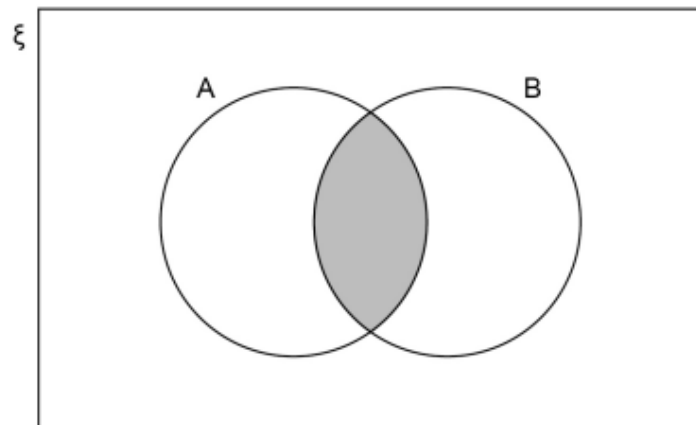[1 mark]

A or B or both   A but not B

not A and not B   A and B

AQA GSCE – Thursday 6 June 2019 – Paper 2 (Calculator) Higher Tier

12.

4

Which of these represents the shaded region?
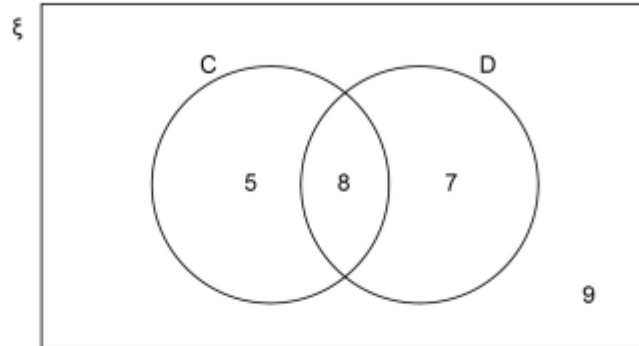
Circle your answer.

[1 mark]

A U B   (A ∩ B)′   A ∩ B   A′ U B′

AQA GSCE – Tuesday 11 June 2019 – Paper 3 (Calculator) Higher Tier

13.

22   ξ = 29 students in a class

C = students who own a cat

D = students who own a dog

22 (a)   A student is chosen at random.

Circle the probability that the student owns a cat or a dog but not both.

[1 mark]

$$\frac{12}{29} \qquad \frac{13}{29} \qquad \frac{15}{29} \qquad \frac{20}{29}$$

22 (b)   A student who owns a dog is chosen at random.

Circle the probability that the student also owns a cat.

[1 mark]

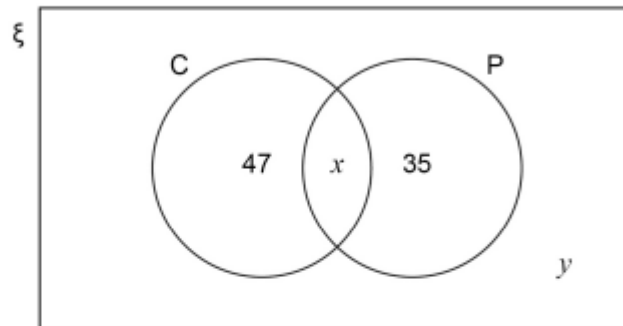$$\frac{7}{15} \qquad \frac{8}{15} \qquad \frac{7}{29} \qquad \frac{8}{29}$$

14.

25 The Venn diagram shows some information about 150 students.

ξ = 150 students

C = students who study Chemistry

P = students who study Physics

The probability that a Physics student, chosen at random, also studies Chemistry is $\dfrac{5}{12}$
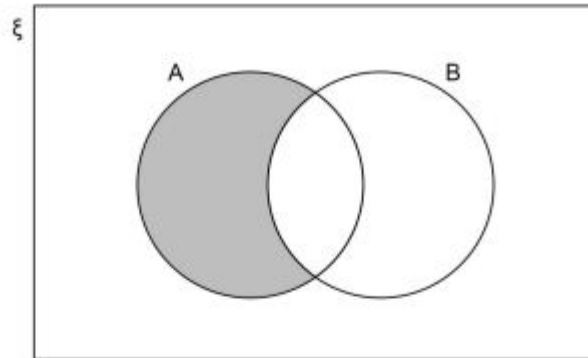
One of the 150 students is chosen at random.

Work out the probability that the student does **not** study either Chemistry or Physics.
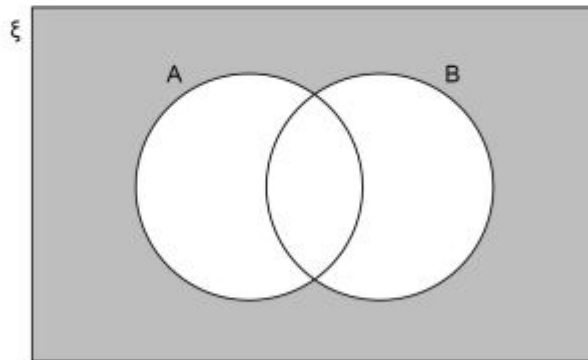
[4 marks]

18 (a)

Which of these represents the shaded region?
Circle your answer.

[1 mark]

A   B′   A ∩ B′   A ∪ B′

18 (b)

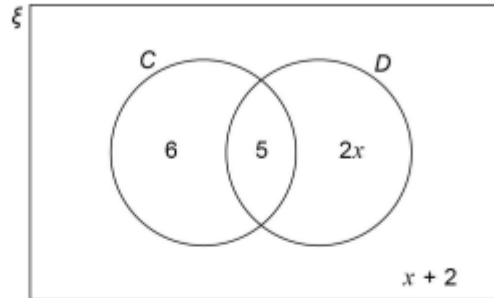Which of these represents the shaded region?
Circle your answer.

[1 mark]

(A ∪ B)′   (A ∩ B)′   A′ ∩ B   A′ ∪ B′

14 In the Venn diagram

ξ represents 31 students in a class

C is students who have a cat

D is students who have a dog

14 (a) One student from the class is picked at random.

Work out the probability that the student has a dog.

[3 marks]

_____

_____

_____

_____

Answer _____

14 (b) One of the students who has a cat is picked at random.

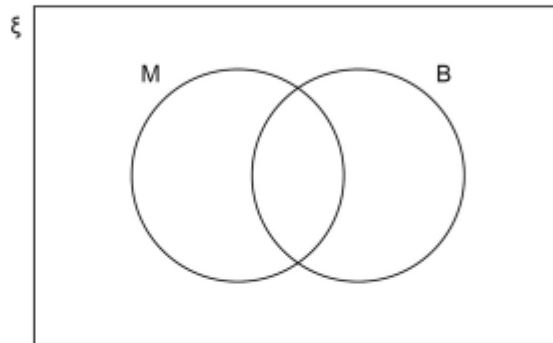Work out the probability that this student has a dog.

[1 mark]

_____

Answer _____

18   A school has 86 teachers.

42 are male and 44 are female.

$\frac{1}{3}$ of the male teachers have blue eyes.

$\frac{1}{4}$ of the female teachers have blue eyes.

18 (a)   ξ = teachers in the school
M = male teachers
B = teachers who have blue eyes

Complete the Venn diagram.

[3 marks]

_____

_____

_____

18 (b)   One teacher who has blue eyes is chosen at random.

Work out the probability that the teacher is male.

[1 mark]

Answer _____

18.
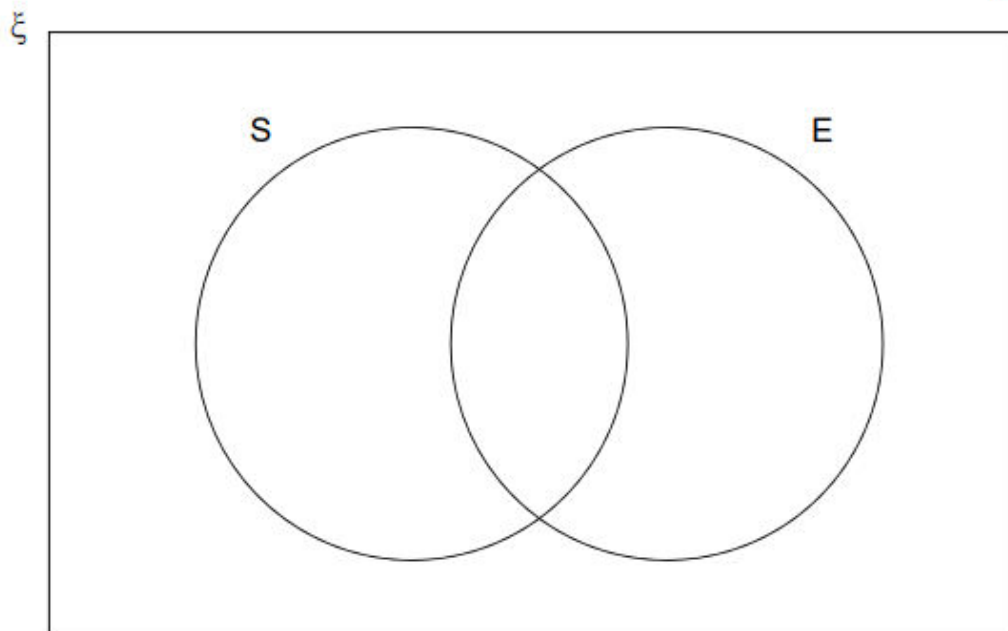
6   ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}

          S = square numbers

          E = even numbers

6 **(a)** Complete the Venn diagram.

[3 marks]

ξ

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

          Write down $P(S \cap E)$

[1 mark]

Answer _____