Name: _____

GCSE (1 – 9)

Venn Diagrams

Instructions

• Use **black** ink or ball-point pen.
• Answer all questions.
• Answer the questions in the spaces provided
– *there may be more space than you need.*
• Diagrams are **NOT** accurately drawn, unless otherwise indicated.
• You must **show all your working out.**

Information

• The marks for each question are shown in brackets
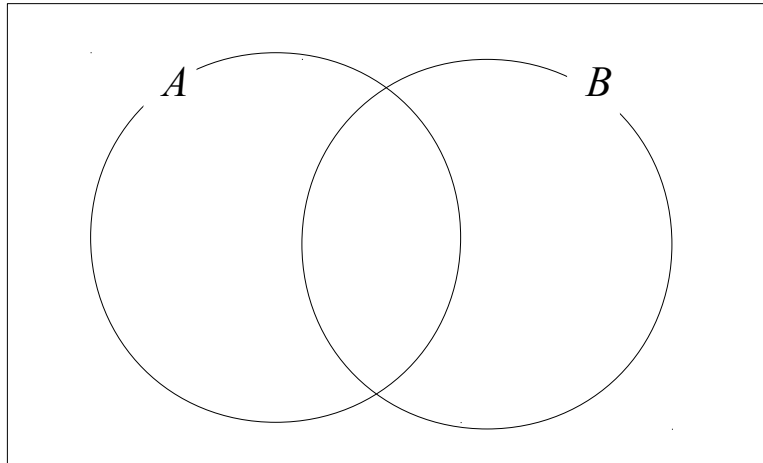– *use this as a guide as to how much time to spend on each question.*

Advice

• Read each question carefully before you start to answer it.
• Keep an eye on the time.
• Try to answer every question.
• Check your answers if you have time at the end

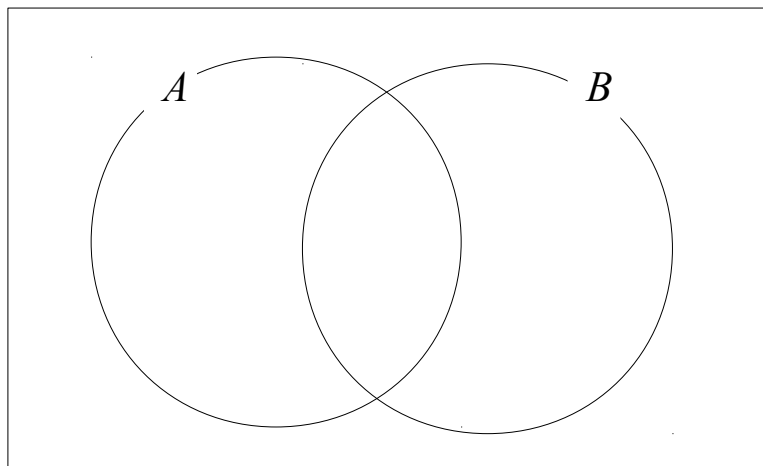**1**   Given that $P(A) = 0.9$, find $P(A')$

…..

(Total for question 1 is 1 mark)

2   Shade the region that represents $(A \cap B)$
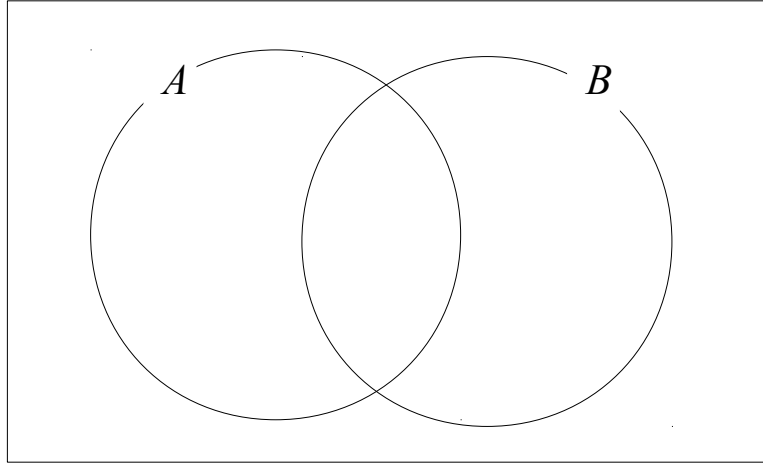

(Total for question 2 is 1 mark)
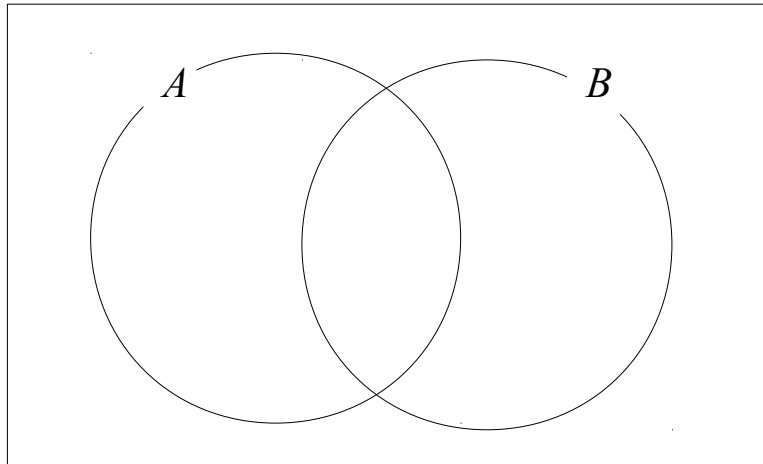
3   Shade the region that represents $(A \cup B)$

(Total for question 3 is 1 mark)

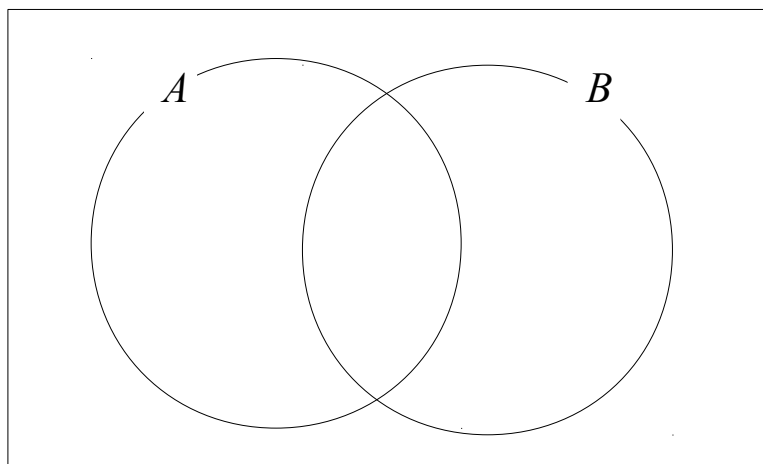**4**   Shade the region that represents $(A'\cap B')$

5   Shade the region that represents $(A'\cup B)$

6   Shade the region that represents $(A\cap B')$
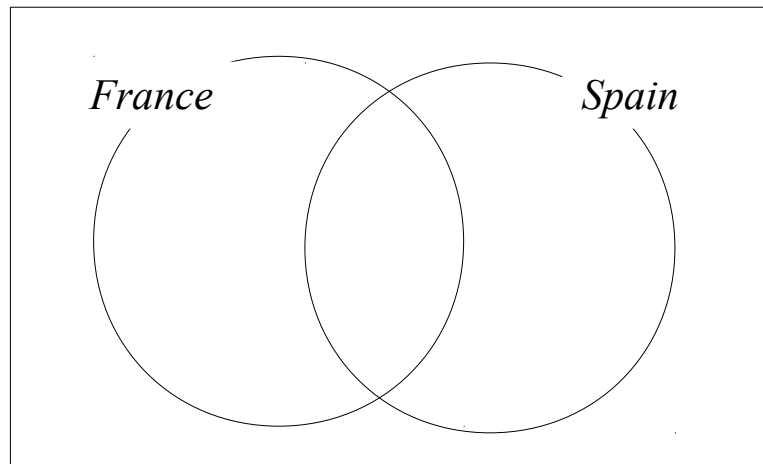
7   40 students were surveyed:

       20 have visited France
       15 have visited Spain
       10 have visited both France and Spain

Use this information to complete the Venn Diagram

France   *Spain*

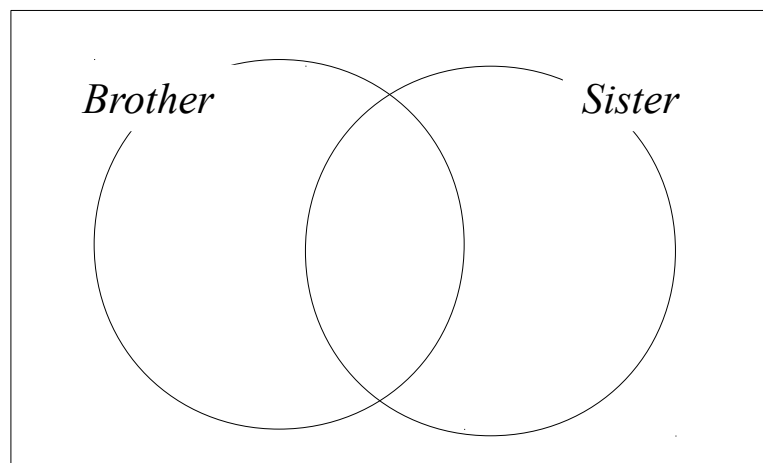**(Total for question 7 is 3 marks)**

8   Out of 50 people surveyed:

       30 have a brother
       25 have a sister
       6 have neither a brother or a sister

Use this information to complete the Venn Diagram

Brother   *Sister*

(Total for question 8 is 3 marks)

9 Sami asked 50 people which drinks they liked from tea, coffee and milk.

All 50 people like at least one of the drinks
19 people like all three drinks.
16 people like tea and coffee but do not like milk.
21 people like coffee and milk.
24 people like tea and milk.
40 people like coffee.
1 person likes only milk.

Sami selects at random one of the 50 people.

Work out the probability that this person likes tea.

…......................................……

(Total for question 9 is 4 marks)

10 Sami asked 60 people which sports they liked from rugby, football and cricket.

8 people like all three sports.
17 people like rugby and football.
13 people like football and cricket.
19 people like rugby and cricket.
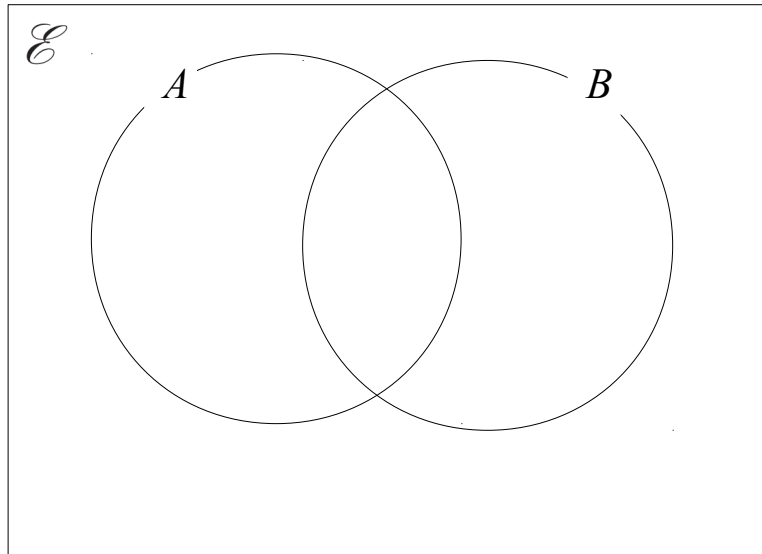35 people like football.
27 people like cricket
30 people like rugby.

a) How many people liked neither rugby or football or cricket?

…..............................……

(Total for question 10 is 4 marks)

11 $\mathscr{E}$ = {even numbers between 1 and 31}
A = {2, 4, 8, 14, 18, 22, 28}
B = {8, 10, 16, 18, 22, 30}

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

(4)

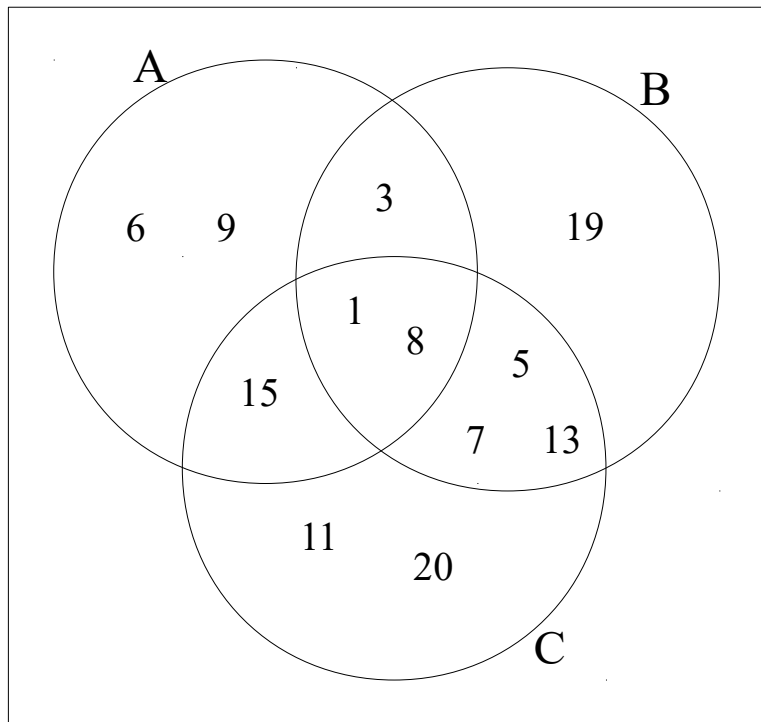A number is chosen at random from the universal set, $\mathscr{E}$

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

…...…

(2)

(Total for question 11 is 6 marks)

11 $\mathscr{E}$ = {even numbers between 1 and 31}
A = {2, 4, 8, 14, 18, 22, 28}
B = {8, 10, 16, 18, 22, 30}

12   Here is a Venn diagram.

(a)   List the members of A ∩ B

….........…...
(1)

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

(b)   Find $P(B \cup C)$

….........…...
(2)

(Total for question 12 is 3 marks)

13 $\mathscr{E}$ = {odd numbers less than 30}
     A = {1, 5, 7, 23, 29}
     B = {7, 11, 15, 29}
     C = {7, 15, 17, 19, 25, 27}

(a) Complete the Venn diagram to represent this information.
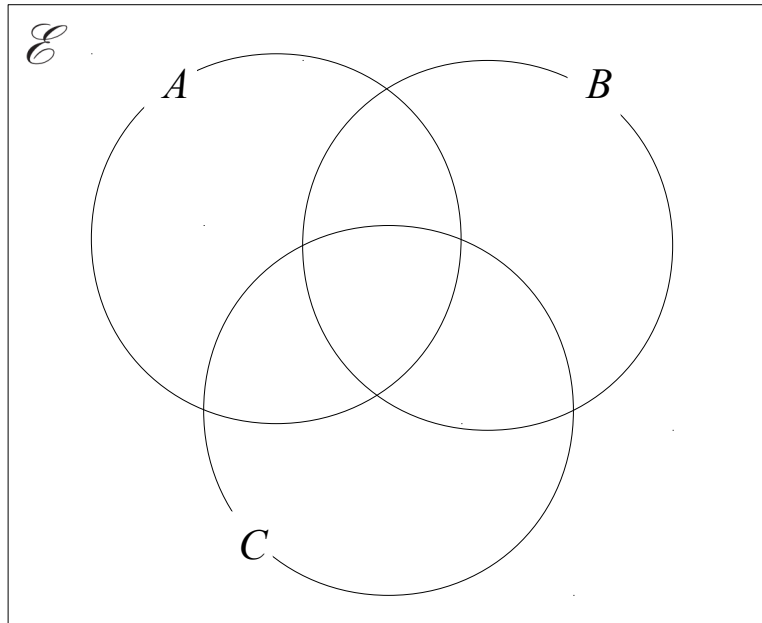
A number is chosen at random from $\mathscr{E}$.

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

…….....…..

(Total for question 26 is 3 marks)