

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

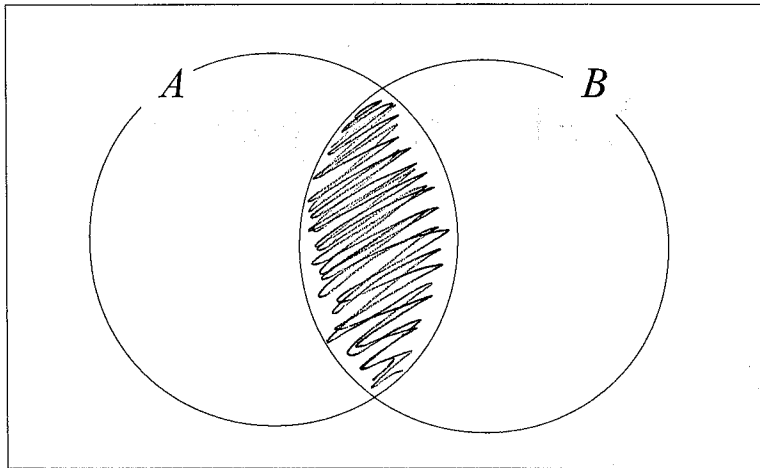
1 Given that $P(A) = 0.9$, find $P(A')$

$$1 - 0.9$$

.....
0.1

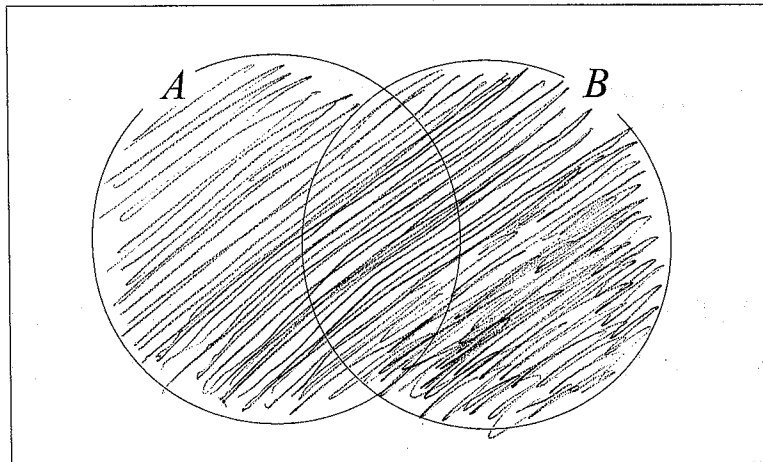
(Total for question 1 is 1 mark)

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



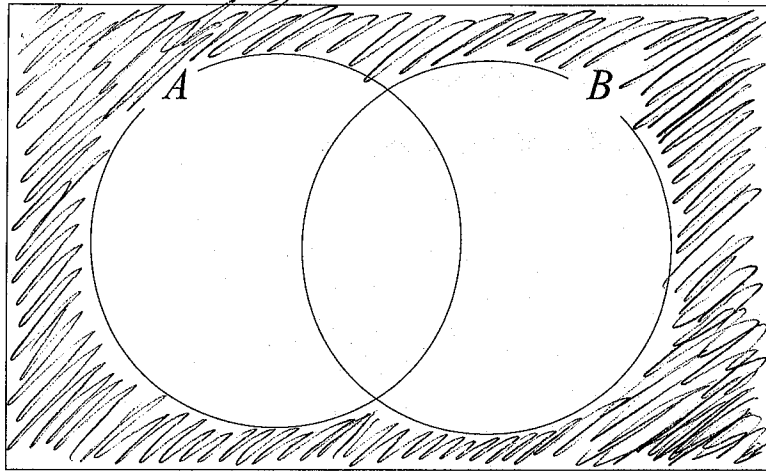
(Total for question 2 is 1 mark)

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



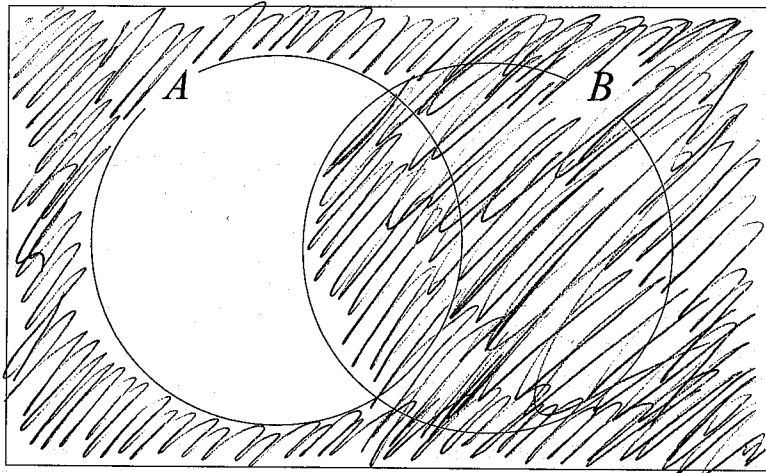
(Total for question 3 is 1 mark)

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



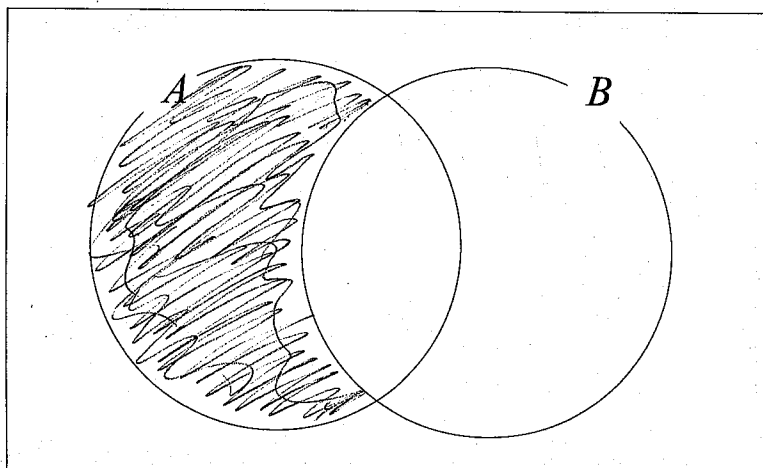
(Total for question 4 is 1 mark)

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



(Total for question 5 is 1 mark)

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



(Total for question 6 is 1 mark)

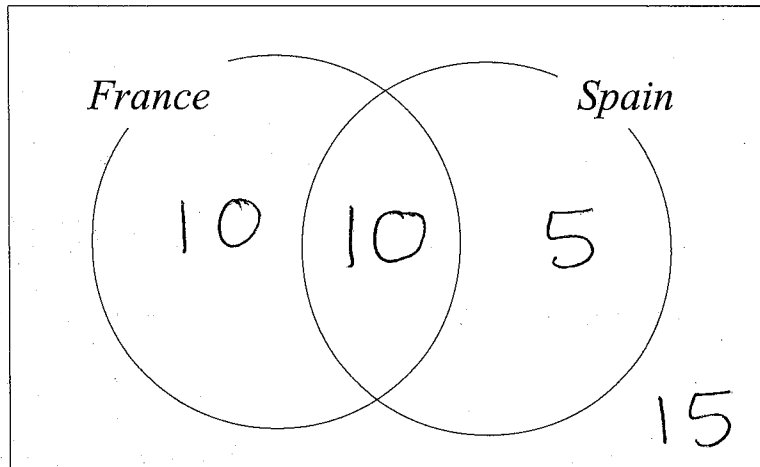
7 40 students were surveyed:

20 have visited France

15 have visited Spain

10 have visited both France and Spain

Use this information to complete the Venn Diagram



(Total for question 7 is 3 marks)

8 Out of 50 people surveyed:

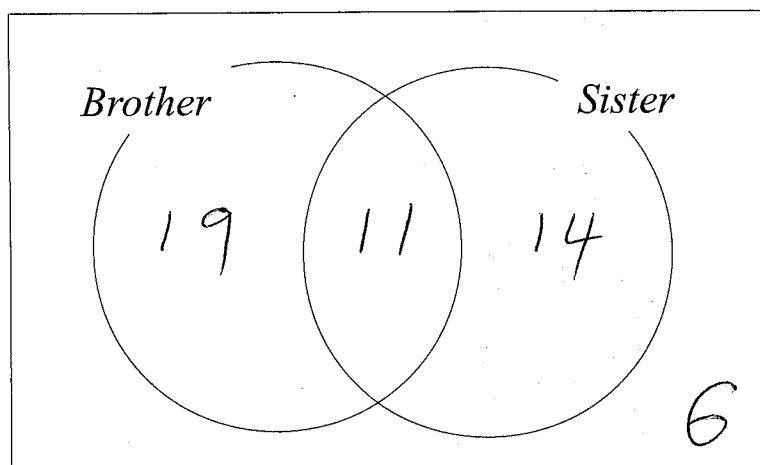
30 have a brother 55

25 have a sister

6 have neither a brother or a sister

Use this information to complete the Venn Diagram

$$55 - 44 = 11$$



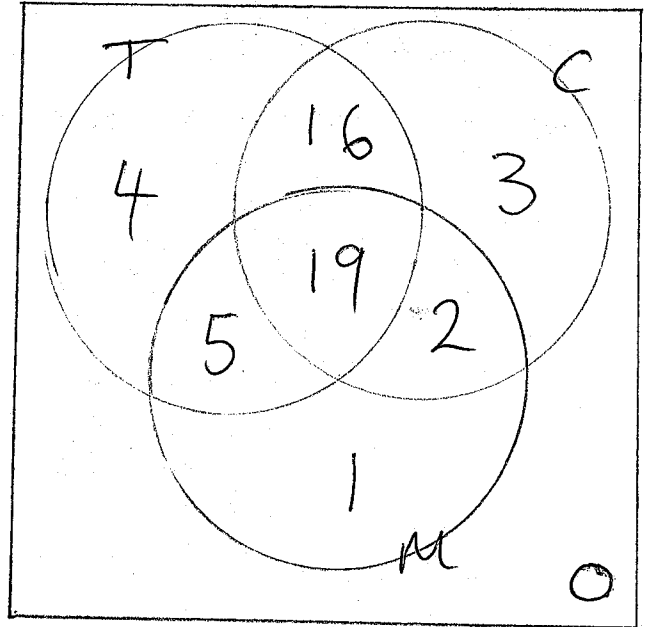
(Total for question 8 is 3 marks)

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.



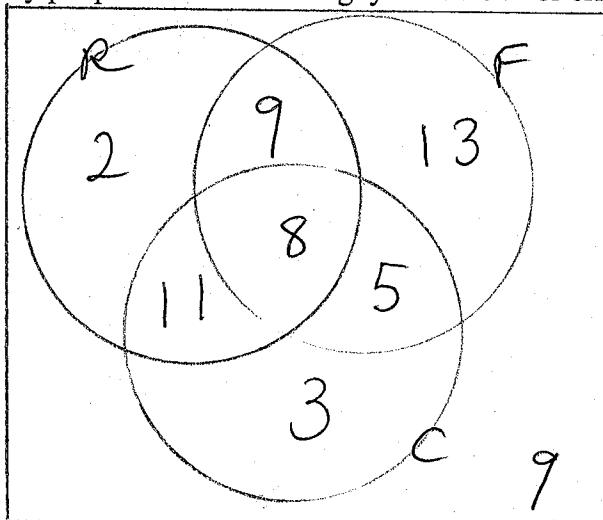
$$\frac{44}{50}$$

(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?



$$9$$

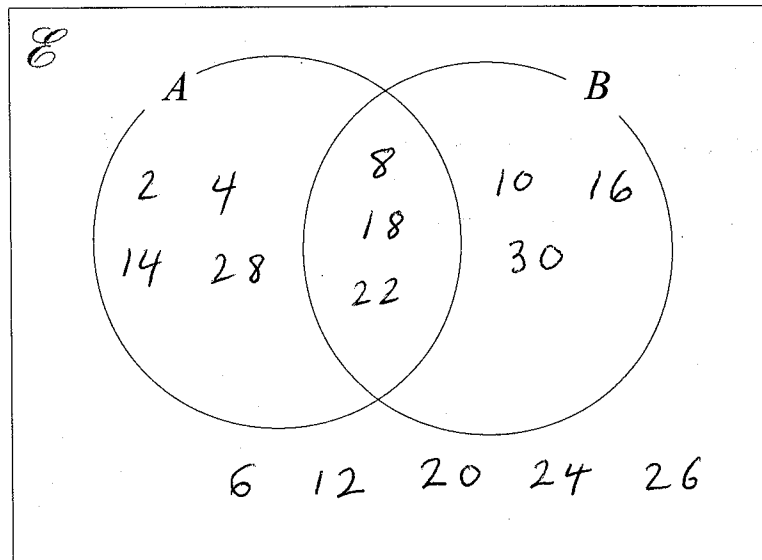
(Total for question 10 is 4 marks)

11 $\mathcal{E} = \{\text{even numbers between 1 and 31}\}$

$A = \{2, 4, 8, 14, 18, 22, 28\}$

$B = \{8, 10, 16, 18, 22, 30\}$

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



(4)

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

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

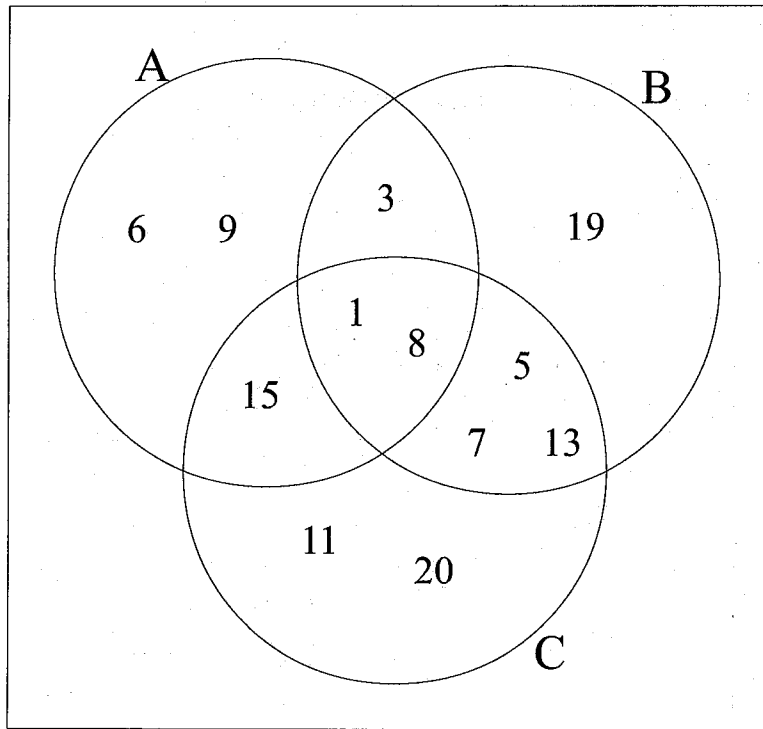
$$\frac{10}{15}$$

(2)

(Total for question 11 is 6 marks)

$$\left[\frac{2}{3} \right]$$

12 Here is a Venn diagram.



(a) List the members of $A \cap B$

1, 3 and 8
.....
(1)

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

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

$\frac{10}{12}$
.....
(2)

(Total for question 12 is 3 marks)

$\left[\frac{5}{6} \right]$

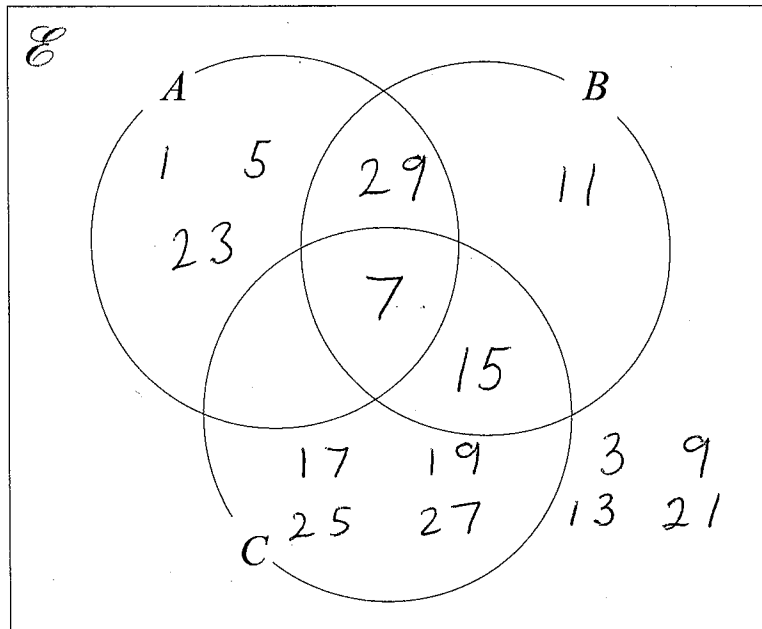
13 $\mathcal{E} = \{\text{odd numbers less than } 30\}$

$A = \{1, 5, 7, 23, 29\}$

$B = \{7, 11, 15, 29\}$

$C = \{7, 15, 17, 19, 25, 27\}$

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



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

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

$$\frac{2}{15}$$

.....
(Total for question 26 is 3 marks)