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GCSE MATHS

Probability

Edexcel 1MA1 | Subtopic collection Topic 54

# Venn diagrams and set notation

## Foundation tier

Past paper question booklet

| 9 | 2017-2024 | Foundation |
| --- | --- | --- |
| question groups | available papers | tier |

### Before you begin

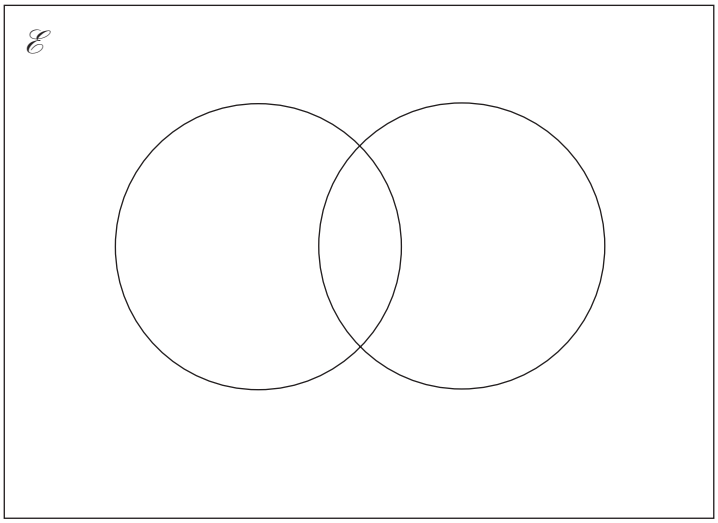
1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

**Name** _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

**15** $\mathscr{E}$ = {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 $A \cup B$?

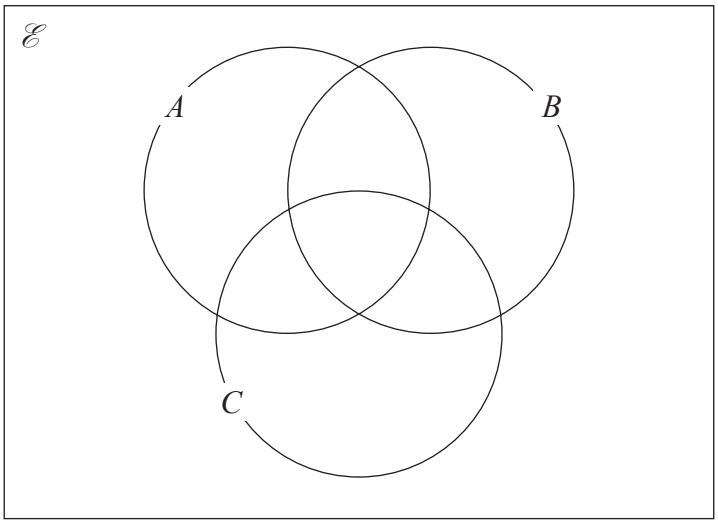
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**(2)**

**(Total for Question 15 is 6 marks)**

**20** $\mathscr{E}$ = {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 $\mathscr{E}$.

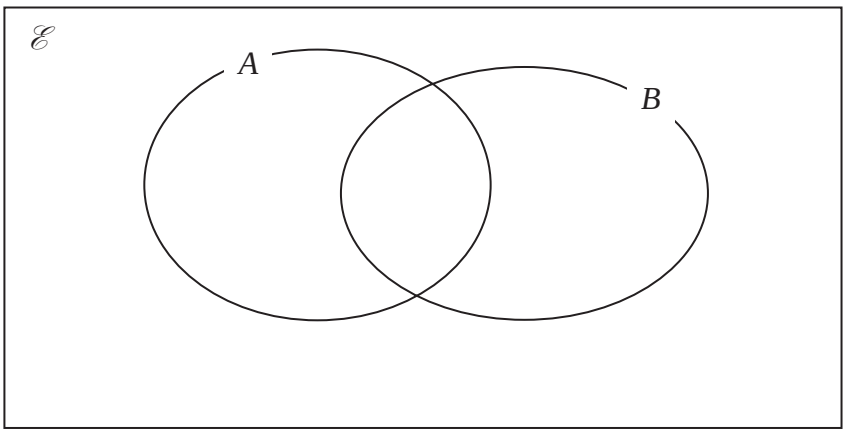
(b) Find the probability that the number is a member of $A \cap B$.

.....

**(2)**

**(Total for Question 20 is 6 marks)**

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




(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 $A \cap B$

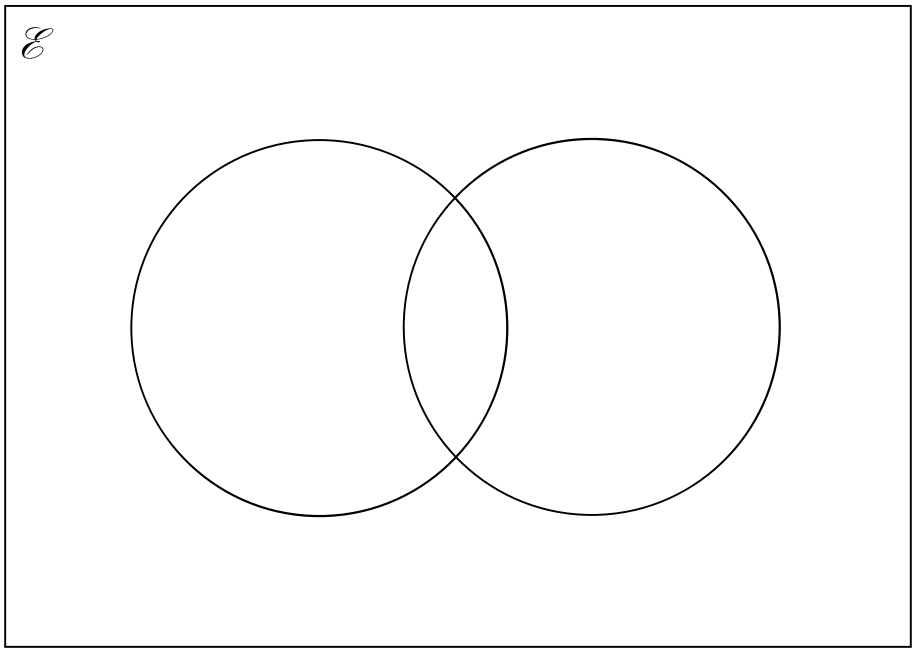
.....

**(2)**

**(Total for Question 24 is 5 marks)**

**20** $\mathscr{E}$ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13}
$A$ = {multiples of 3}
$B$ = {even numbers}

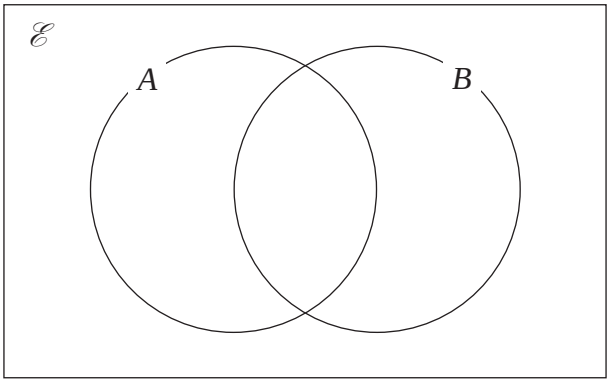
Complete the Venn diagram for this information.




**(Total for Question 20 is 4 marks)**

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

(a) Complete the Venn diagram for this information.




**(3)**

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

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

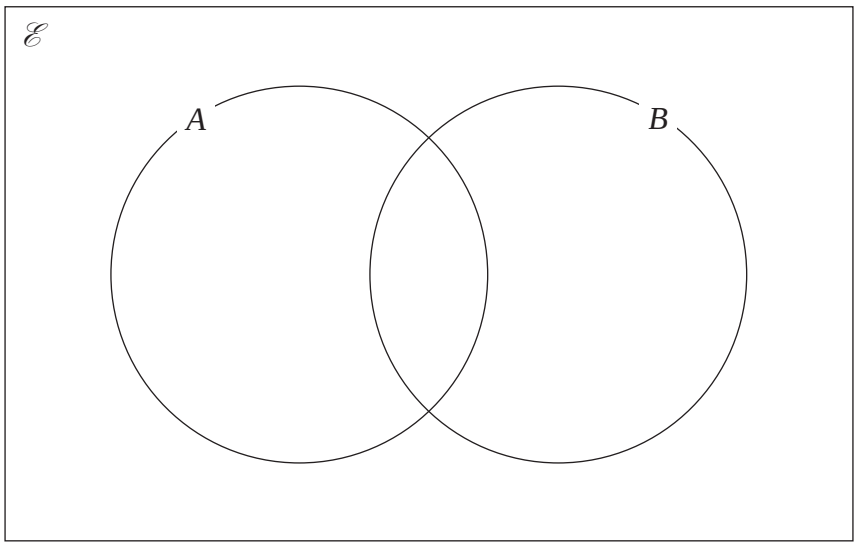
.....

**(2)**

**(Total for Question 22 is 5 marks)**

**21** $\mathscr{E}$ = {even numbers less than 19}
$A$ = {6, 12, 18}
$B$ = {2, 6, 14, 18}

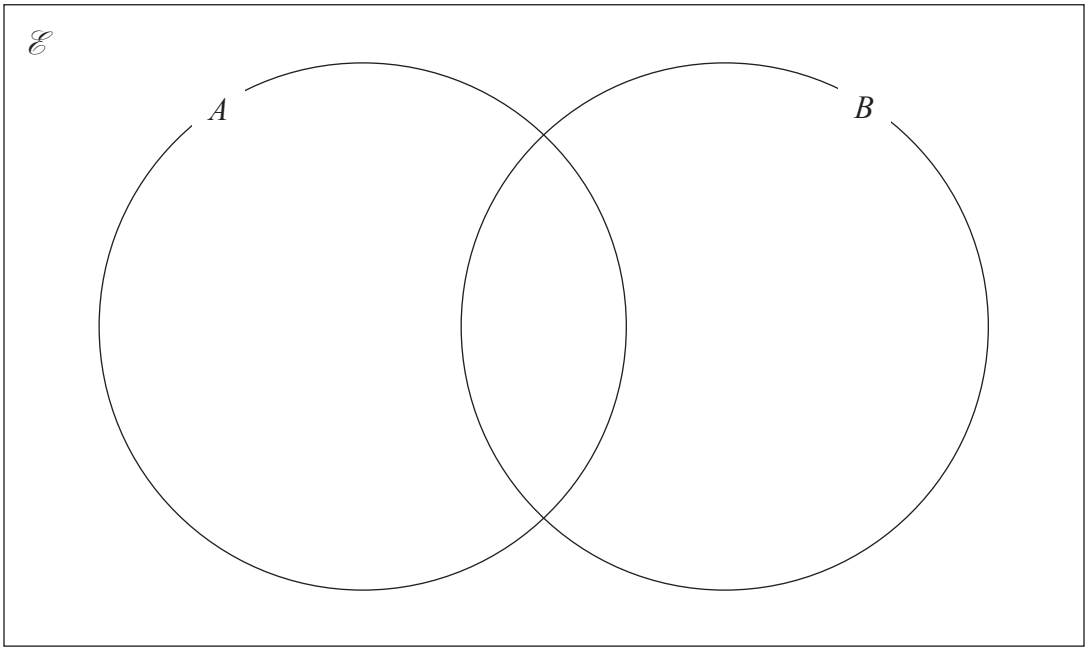
Complete the Venn diagram for this information.




**(Total for Question 21 is 3 marks)**

**24** $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
$A = \{\text{odd numbers}\}$
$B = \{\text{square numbers}\}$

(a) Complete the Venn diagram for this information.




**(3)**

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

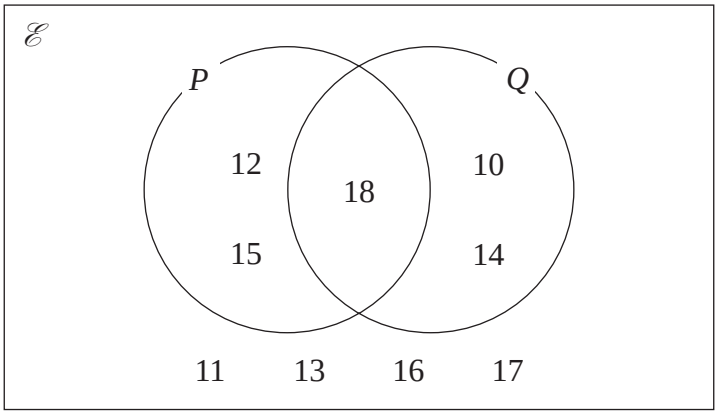
(b) Find the probability that this number is in the set $B'$

.....

**(2)**

**(Total for Question 24 is 5 marks)**

**23** Here is a Venn diagram.




(a) Write down the numbers that are in set $P'$

.....

**(1)**

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

(b) Find the probability that this number is in the set $P \cup Q$

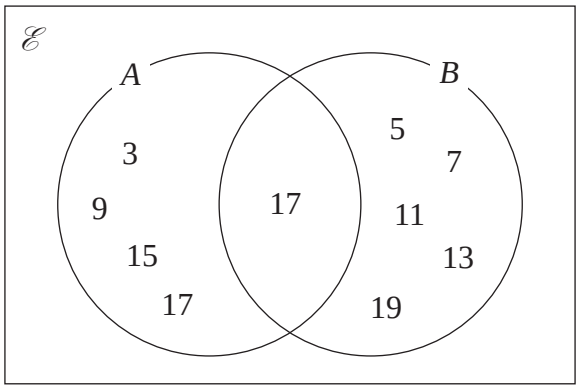
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**(2)**

**(Total for Question 23 is 3 marks)**

**23** $\mathscr{E}$ = {odd numbers between 0 and 20}
$A$ = {3, 9, 15, 17}
$B$ = {5, 7, 11, 13, 17, 19}

Tom was asked to draw a Venn diagram for this information.
Here is his answer.




Write down two things Tom should do to make his answer fully correct.

1 .....

.....

2 .....

.....

**(Total for Question 23 is 2 marks)**