Chhetri Academy

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GCSE MATHS

Probability

Edexcel 1MA1 | Subtopic collection Topic 55

Conditional probability

Higher tier

Past paper question booklet

5	2004-2025	Higher
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.

19. (a) (i) Factorise $2x^2 - 35x + 98$

.....

(ii) Solve the equation $2x^2 - 35x + 98 = 0$

.....

(3)

A bag contains $(n + 7)$ tennis balls.
n of the balls are yellow.
The other 7 balls are white.

John will take at random a ball from the bag.
He will look at its colour and then put it back in the bag.

(b) (i) Write down an expression, in terms of n, for the probability that John will take a white ball.

.....

Bill states that the probability that John will take a white ball is $\frac{2}{5}$

(ii) Prove that Bill's statement cannot be correct.

(3)

Blank

After John has put the ball back into the bag, Mary will then take at random a ball from the bag.
She will note its colour.

(c) Given that the probability that John and Mary will take balls with **different** colours is $\frac{4}{9}$,
prove that $2n^2 - 35n + 98 = 0$

(5)

(d) Using your answer to part (a) (ii) or otherwise, calculate the probability that John and Mary will both take white balls.

.....

(2)

Page Total

20 There are only red sweets and yellow sweets in a bag.

There are n red sweets in the bag.
There are 8 yellow sweets in the bag.

Sajid is going to take at random a sweet from the bag and eat it.

He says that the probability that the sweet will be red is $\frac{7}{10}$

(a) Show why the probability cannot be $\frac{7}{10}$

(3)

After Sajid has taken the first sweet from the bag and eaten it, he is going to take at random a second sweet from the bag.

Given that the probability that both the sweets he takes will be red is $\frac{3}{5}$

(b) work out the number of red sweets in the bag.
You must show all your working.

.....

(5)

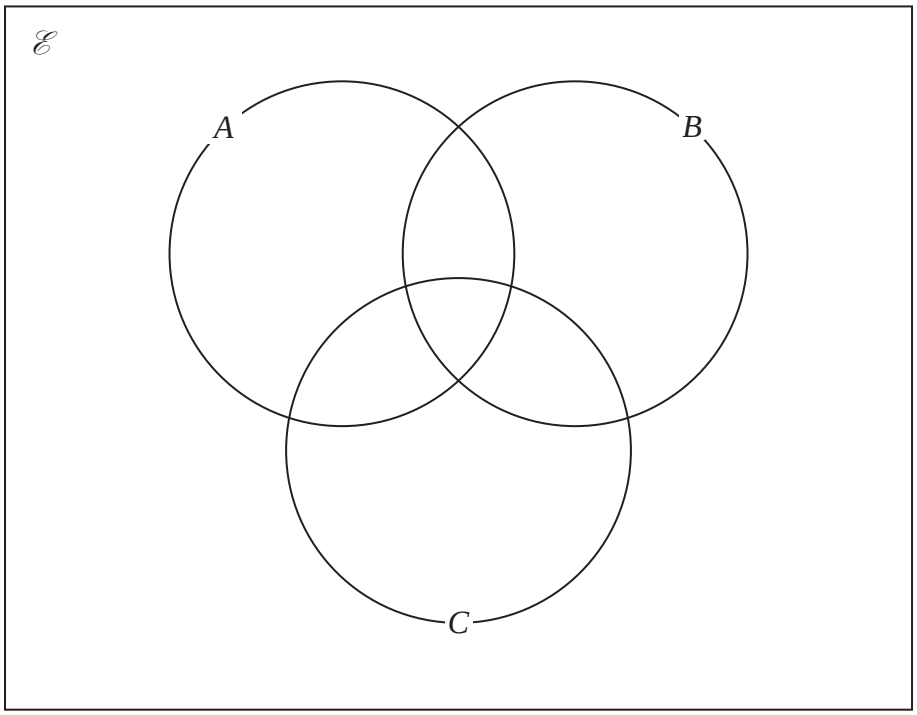
(Total for Question 20 is 8 marks)

16 A shop manager wants to advertise special offers on social media platforms.

The manager asks 100 customers which of type *A*, type *B* or type *C* they use.

Of these customers,
4 use all three types
16 do not use any of type *A*, type *B* or type *C*
8 use both type *A* and type *B*, but not type *C*
14 use both type *B* and type *C*
62 in total use type *A*
all 20 who use type *C* also use at least one of type *A* and type *B*.

(a) Complete the Venn diagram for this information.



(4)

One of the customers is chosen at random.

Given that this customer uses type *A*,

(b) find the probability that this customer also uses type *B*.

.....

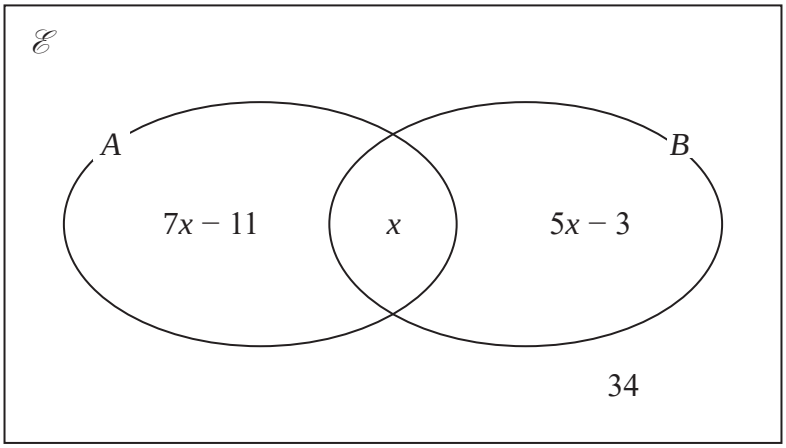
(2)

(Total for Question 16 is 6 marks)

21 Vicky has a collection of medals.

The Venn diagram gives information about the number of medals in her collection where

$\mathscr{E}$ = {all medals}
A = {English medals}
B = {gold medals}



Vicky is going to take at random a medal from her collection.

Given that the medal is gold, the probability that the medal is English is $\frac{2}{11}$

Work out the number of medals in Vicky's collection.

.....

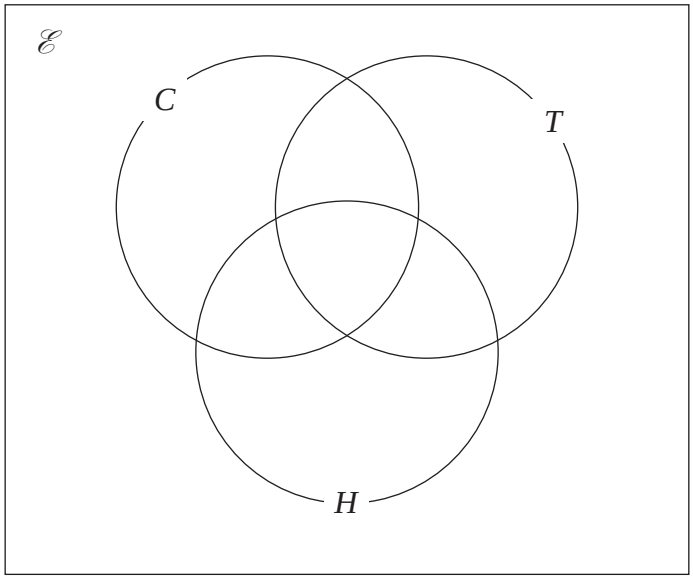
(Total for Question 21 is 4 marks)

18 Magda carried out a survey to find out the drinks that people like.

She asked 100 people if they like coffee (C) or tea (T) or hot chocolate (H).

32 people like all three drinks.
15 people like coffee and hot chocolate but **not** tea.
43 people like coffee and tea.
39 people like tea and hot chocolate.
67 people like coffee.
58 people like hot chocolate.
5 people like **only** tea.

(a) Complete the Venn diagram for this information.



(4)

One of the people is chosen at random.

Given that this person likes coffee,

(b) find the probability that this person also likes hot chocolate.

.....

(2)

(Total for Question 18 is 6 marks)