HIGHER ONLY
HIGHER TIER

Name ..... Class .....

P9: Conditional probability

Conditional probability from two-way tables, tree diagrams and Venn diagrams

20 marks · 25 minutes · Non-calculator

1) 100 students were asked if they want a school trip.

	Yes	No	Total
Year 10	32	18	50
Year 11	26	24	50
Total	58	42	100

(a) A Year 10 student is chosen at random. Find the probability they said yes.

.....

(1)

(b) A student who said yes is chosen at random. Find the probability they are in Year 11.

.....

(1)

(c) A student is chosen at random. Find the probability they said no.

.....

(1)

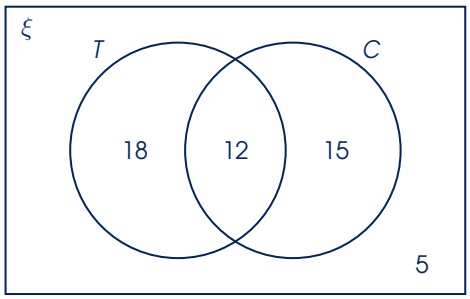
(d) A student is chosen at random. Find the probability they are in Year 10 and said yes.

.....

(1)

[Question 1: 4 marks]

2) The Venn diagram shows the drinks chosen by 50 people.



(a) A person who chose tea (T) is picked at random. Find the probability they also chose coffee (C).

.....

(2)

(b) A person who chose coffee is picked at random. Find the probability they also chose tea.

.....

(2)

[Question 2: 4 marks]

3) The probability that it rains is 0.3. If it rains, the probability that Ben is late is 0.4. If it does not rain, the probability that he is late is 0.1.

(a) Find the probability that Ben is late.

.....

(2)

(b) Ben is late. Find the probability that it rained.

.....

(2)

[Question 3: 4 marks]

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4) A bag has 5 red and 3 blue balls. A red ball is taken out and not replaced. Find the probability that the next ball is red.

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[Question 4: 1 marks]

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5) 200 people are tested for a condition. 40 have the condition. 36 of these test positive. Of the 160 without the condition, 16 test positive.

(a) Find the probability that a person tests positive.

.....

(1)

(b) A person tests positive. Find the probability they have the condition.

.....

(2)

[Question 5: 3 marks]

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6) $P(A \cap B) = 0.12$ and $P(B) = 0.4$. Find $P(A \mid B)$.

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[Question 6: 2 marks]

7) In a class, 6 girls and 9 boys are left-handed. A left-handed student is chosen at random. Find the probability that it is a girl.

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[Question 7: 1 marks]

8) If $P(A \mid B) = P(A)$, what does this tell you about events A and B?

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[Question 8: 1 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	(a) $\frac{16}{25}$ (b) $\frac{13}{29}$ (c) $\frac{21}{50}$ (d) $\frac{8}{25}$	B1 each.
2	(a) $\frac{2}{5}$ (b) $\frac{4}{9}$	(a) $\frac{12}{30}$ (M1); A1. (b) $\frac{12}{27}$ (M1); A1.
3	(a) 0.19 (b) $\frac{12}{19}$	(a) 0.12 + 0.07 (M1); A1. (b) $\frac{0.12}{0.19}$ (M1); A1.
4	$\frac{4}{7}$	B1.
5	(a) $\frac{13}{50}$ (b) $\frac{9}{13}$	(a) B1. (b) $\frac{36}{52}$ (M1); A1.
6	0.3	$\frac{0.12}{0.4}$ (M1); A1.
7	$\frac{2}{5}$	B1.
8	They are independent	B1.