5.10 Venn Diagrams: 1-hour Pack

EDEXCEL 1ST0 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 41 people were asked about two activities: A is that they take the bus; B is that they cycle. 13 people do A only, 7 do both A and B, 18 do B only, and 3 do neither.

(a) Work out the probability that a person chosen at random is in at least one of A and B.

(b) Given that a person is in B, what is the probability that they are also in A?

(c) Work out the probability that a person chosen at random is in neither A nor B.

Give each answer as a fraction in its simplest form.

(Total for Question 1 is 6 marks)

2 43 people were asked about two activities: A is that they study French; B is that they study Spanish. 4 people do A only, 11 do both A and B, 16 do B only, and 12 do neither.

(a) Work out the probability that a person chosen at random is in A.

(b) Work out the probability that a person chosen at random is in both A and B.

(c) Work out the probability that a person chosen at random is in neither A nor B.

Give each answer as a fraction in its simplest form.

(Total for Question 2 is 6 marks)

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3 39 people were asked about two activities: A is that they take the bus; B is that they cycle. 9 people do A only, 7 do both A and B, 20 do B only, and 3 do neither.

(a) Work out the probability that a person chosen at random is in at least one of A and B.

(b) Given that a person is in B, what is the probability that they are also in A?

(c) Work out the probability that a person chosen at random is in neither A nor B.

Give each answer as a fraction in its simplest form.

(Total for Question 3 is 6 marks)

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4 25 people were asked about two activities: A is that they study French; B is that they study Spanish. 4 people do A only, 8 do both A and B, 9 do B only, and 4 do neither.

(a) Work out the probability that a person chosen at random is in A.

(b) Work out the probability that a person chosen at random is in both A and B.

(c) Work out the probability that a person chosen at random is in at least one of A and B.

Give each answer as a fraction in its simplest form.

(Total for Question 4 is 6 marks)

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5 32 people were asked about two activities: A is that they play football; B is that they play tennis.
4 people do A only, 1 do both A and B, 20 do B only, and 7 do neither.
(a) Work out the probability that a person chosen at random is in A.
(b) Work out the probability that a person chosen at random is in both A and B.
(c) Work out the probability that a person chosen at random is in at least one of A and B.
Give each answer as a fraction in its simplest form.

(Total for Question 5 is 6 marks)

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6 35 people were asked about two activities: A is that they play football; B is that they play tennis.
14 people do A only, 4 do both A and B, 2 do B only, and 15 do neither.
(a) Work out the probability that a person chosen at random is in A.
(b) Work out the probability that a person chosen at random is in both A and B.
(c) Work out the probability that a person chosen at random is in at least one of A and B.
Give each answer as a fraction in its simplest form.

(Total for Question 6 is 6 marks)

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7 37 people were asked about two activities: A is that they take the bus; B is that they cycle. 13 people do A only, 5 do both A and B, 13 do B only, and 6 do neither.

(a) Work out the probability that a person chosen at random is in A.

(b) Work out the probability that a person chosen at random is in both A and B.

(c) Work out the probability that a person chosen at random is in at least one of A and B.

Give each answer as a fraction in its simplest form.

(Total for Question 7 is 6 marks)

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8 48 people were asked about two activities: A is that they study French; B is that they study Spanish. 8 people do A only, 10 do both A and B, 17 do B only, and 13 do neither.

(a) Work out the probability that a person chosen at random is in A.

(b) Work out the probability that a person chosen at random is in both A and B.

(c) Work out the probability that a person chosen at random is in at least one of A and B.

Give each answer as a fraction in its simplest form.

(Total for Question 8 is 6 marks)

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9 30 people were asked about two activities: A is that they like tea; B is that they like coffee. 10 people do A only, 6 do both A and B, 11 do B only, and 3 do neither.

(a) Work out the probability that a person chosen at random is in A.

(b) Work out the probability that a person chosen at random is in both A and B.

(c) Work out the probability that a person chosen at random is in at least one of A and B.

Give each answer as a fraction in its simplest form.

(Total for Question 9 is 6 marks)

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10 The two-way table shows information about 85 people.

	vaccinated	not vaccinated	Total
boys	8	37	45
girls	9	31	40
Total	17	68	85

(a) A person is chosen at random. Find the probability that they are in the group 'boys'.

(b) A person is chosen at random. Find the probability that they are in the group 'vaccinated'.

Give each answer as a fraction in its simplest form.

(Total for Question 10 is 4 marks)

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Mark scheme · 5.10 Venn Diagrams: 1-hour Pack

Question 1

identifies the relevant frequencies	**M1**
38/41 oe	**A1**
identifies the restricted group (the denominator)	**M1**
7/25 oe	**A1**
identifies the relevant frequencies	**M1**
3/41 oe	**A1**

Answer: (a) 38/41; (b) 7/25; (c) 3/41

Question 2

identifies the relevant frequencies	**M1**
15/43 oe	**A1**
identifies the relevant frequencies	**M1**
11/43 oe	**A1**
identifies the relevant frequencies	**M1**
12/43 oe	**A1**

Answer: (a) 15/43; (b) 11/43; (c) 12/43

Question 3

identifies the relevant frequencies	**M1**
12/13 oe	**A1**
identifies the restricted group (the denominator)	**M1**
7/27 oe	**A1**
identifies the relevant frequencies	**M1**
1/13 oe	**A1**

Answer: (a) 12/13; (b) 7/27; (c) 1/13

Question 4

identifies the relevant frequencies	**M1**
12/25 oe	**A1**
identifies the relevant frequencies	**M1**
8/25 oe	**A1**
identifies the relevant frequencies	**M1**
21/25 oe	**A1**

Answer: (a) 12/25; (b) 8/25; (c) 21/25

Question 5

identifies the relevant frequencies	**M1**
5/32 oe	**A1**
identifies the relevant frequencies	**M1**
1/32 oe	**A1**
identifies the relevant frequencies	**M1**
25/32 oe	**A1**

Answer: (a) 5/32; (b) 1/32; (c) 25/32

Question 6

identifies the relevant frequencies	**M1**
18/35 oe	**A1**
identifies the relevant frequencies	**M1**
4/35 oe	**A1**
identifies the relevant frequencies	**M1**
4/7 oe	**A1**

Answer: (a) 18/35; (b) 4/35; (c) 4/7

Question 7

identifies the relevant frequencies	**M1**
18/37 oe	**A1**
identifies the relevant frequencies	**M1**
5/37 oe	**A1**
identifies the relevant frequencies	**M1**
31/37 oe	**A1**

Answer: (a) 18/37; (b) 5/37; (c) 31/37

Question 8

identifies the relevant frequencies	**M1**
3/8 oe	**A1**
identifies the relevant frequencies	**M1**
5/24 oe	**A1**
identifies the relevant frequencies	**M1**
35/48 oe	**A1**

Answer: (a) 3/8; (b) 5/24; (c) 35/48

Question 9

identifies the relevant frequencies	**M1**
8/15 oe	**A1**
identifies the relevant frequencies	**M1**
1/5 oe	**A1**
identifies the relevant frequencies	**M1**
9/10 oe	**A1**

Answer: (a) 8/15; (b) 1/5; (c) 9/10

Question 10

45/85	**M1**
9/17 oe	**A1**
17/85	**M1**
1/5 oe	**A1**

Answer: (a) 9/17; (b) 1/5

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