2.3 Statistics: Probability: 30-minute Pack

EDEXCEL 9MA0 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A bag contains 6 red counters and 3 blue counters. Two counters are taken at random from the bag, one after the other, without replacement.

(a) Draw a tree diagram, labelling each branch with its probability, and state the probability that both counters are red. **(4)**

(b) Find the probability that the two counters are the same colour. **(2)**

(c) Given that the two counters are different colours, find the probability that the first counter was red. **(2)**

(Total for Question 1 is 8 marks)

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2 136 club members were asked which of three sports they prefer, and whether they are left-handed or right-handed. The results are:
Sport: Swimming, Tennis, Golf
Left-handed: 19, 38, 10
Right-handed: 18, 34, 17

(a) A member is chosen at random. Find the probability that the member prefers tennis. **(2)**

(b) Given that the member prefers tennis, find the probability that the member is left-handed. **(2)**

(c) Given that the member is left-handed, find the probability that the member prefers swimming. **(2)**

(Total for Question 2 is 6 marks)

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3 112 club members were asked which of three sports they prefer, and whether they are left-handed or right-handed. The results are:

Sport: Swimming, Tennis, Golf

Left-handed: 22, 9, 34

Right-handed: 28, 8, 11

(a) A member is chosen at random. Find the probability that the member prefers tennis. **(2)**

(b) Given that the member prefers tennis, find the probability that the member is left-handed. **(2)**

(c) Given that the member is left-handed, find the probability that the member prefers swimming. **(2)**

(Total for Question 3 is 6 marks)

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4 A bag contains 5 red counters and 7 blue counters. Two counters are drawn at random, one after another, without replacement.

(a) Find the probability that both counters drawn are the same colour. **(3)**

(b) Find the probability that at least one of the two counters drawn is red. **(3)**

(c) Given that both counters drawn are the same colour, find the probability that both are red. **(3)**

(Total for Question 4 is 9 marks)

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Mark scheme · 2.3 Statistics: Probability: 30-minute Pack

Question 1

(a) first branches 2/3 (red) and 1/3 (blue)	**B1**
(a) second branches 5/8, 3/8 after red; 3/4, 1/4 after blue	**B1**
(a) P(RR) = 2/3 x 5/8	**M1**
(a) 5/12	**A1**
(a) Answer: 5/12	
(b) P(RR) + P(BB)	**M1**
(b) 1/2	**A1**
(b) Answer: 1/2	
(c) conditional probability: P(RB)/P(different)	**M1**
(c) 1/2	**A1**
(c) Answer: 1/2	

Question 2

(a) tennis total = 38 + 34	**M1**
(a) 72/136 = 9/17	**A1**
(a) Answer: 9/17	
(b) conditional probability: left-handed tennis players / all tennis players	**M1**
(b) 38/72 = 19/36	**A1**
(b) Answer: 19/36	
(c) left-handed swimmers / all left-handed members	**M1**
(c) 19/67 = 19/67	**A1**
(c) Answer: 19/67	

Question 3

(a) tennis total = 9 + 8	**M1**
(a) 17/112 = 17/112	**A1**
(a) Answer: 17/112	
(b) conditional probability: left-handed tennis players / all tennis players	**M1**
(b) 9/17 = 9/17	**A1**
(b) Answer: 9/17	
(c) left-handed swimmers / all left-handed members	**M1**
(c) 22/65 = 22/65	**A1**
(c) Answer: 22/65	

Question 4

(a) P(RR) = 5/12 x 4/11, oe	**M1**
(a) P(BB) = 7/12 x 6/11, oe	**M1**
(a) cao 31/66 (awrt 0.470)	**A1**
(a) Answer: P(same colour) = 31/66 (awrt 0.470)	
(b) P(BB) = 7/12 x 6/11	**M1**
(b) 1 - P(BB)	**M1**
(b) cao 15/22 (awrt 0.682)	**A1**
(b) Answer: P(at least one red) = 15/22 (awrt 0.682)	
(c) identify P(RR) = 5/33 (ft from a)	**M1**
(c) divide by P(same colour) = 31/66 (ft from a)	**M1**
(c) cao 10/31 (awrt 0.323)	**A1**
(c) Answer: P(both red | same colour) = 10/31 (awrt 0.323)	

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