4.19 Probability (Higher): 30-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 This question is about basic probability.

(a) An event is described as 'unlikely'. Which of these values could be the probability of this event? **(1)**

- ☐ A) 0
- ☐ B) 0.15
- ☐ C) 0.6
- ☐ D) 0.95

(b) A fair six-sided dice, with faces numbered 1 to 6, is rolled once. Write down the probability that the score is a multiple of 3. **(1)**

.....

(c) Write down the probability that the score is not a multiple of 3. **(1)**

.....

(Total for Question 1 is 3 marks)

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2 A bag contains only red, blue and green counters. A counter is taken from the bag at random. P(red) = 0.25 and P(blue) = 0.45.

(a) Work out P(green). **(2)**

.....

(b) There are 40 counters in the bag. Work out the number of green counters. **(2)**

.....

(Total for Question 2 is 4 marks)

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3 The probability that Tom passes his maths test is 0.7. The probability that he passes his science test is 0.8. The two events are independent.

(a) Work out the probability that Tom passes both tests. **(2)**

.....

(b) Work out the probability that Tom fails both tests. **(2)**

.....

(Total for Question 3 is 4 marks)

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4 Priya rolls an ordinary six-sided dice 150 times. It lands on a six 40 times.

(a) Calculate the experimental probability of getting a six. **(1)**

.....

(b) Priya says, 'this shows the dice is definitely biased.' Comment on whether Priya is correct. **(2)**

(Total for Question 4 is 3 marks)

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5 Two fair, six-sided dice are rolled and the scores are added together.

(a) Show that there are 6 ways of getting a total of 7. **(2)**

(b) Find the probability that the total is at least 10. **(2)**

(Total for Question 5 is 4 marks)

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6 The two-way table shows how 100 people travel to work.

	Car	Bus	Walk	Total
Full-time	38	12	10	**60**
Part-time	17	8	15	**40**
Total	**55**	**20**	**25**	**100**

(a) Write down the number of part-time workers who walk to work. **(1)**

(b) A person is picked at random from the 100 people. Find the probability that the person is full-time and travels by car. **(2)**

(c) Given that the person picked works full-time, find the probability that they travel by bus. **(2)**

(Total for Question 6 is 5 marks)

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Mark scheme · 4.19 Probability (Higher): 30-minute Pack

Question 1

(a) B (0.15) selected **B1**

(a) Answer: B) 0.15

(b) 1/3 oe (accept 2/6, 0.333, 33.3%) **B1**

(b) Answer: 1/3

(c) 2/3 oe, ft: 1 - (b) **B1**

(c) Answer: 2/3

Question 2

(a) 1 - 0.25 - 0.45 oe **M1**

(a) 0.3 cao **A1**

(a) Answer: 0.3

(b) 0.3 x 40 oe, ft their (a) **M1**

(b) 12 cao **A1**

(b) Answer: 12

Question 3

(a) 0.7 x 0.8 **M1**

(a) 0.56 cao **A1**

(a) Answer: 0.56

(b) 0.3 x 0.2 **M1**

(b) 0.06 cao **A1**

(b) Answer: 0.06

Question 4

(a) 4/15 oe (accept awrt 0.27, 26.7%) **B1**

(a) Answer: 4/15

(b) states or uses the theoretical probability 1/6 (awrt 0.167) for comparison **C1**

(b) valid conclusion with reason, e.g. 'No - the experimental probability is higher than 1/6, but 150 trials may not be enough to be certain the dice is biased' oe **C1**

(b) Answer: No, not definitely - more trials would be needed to be sure

Question 5

(a) at least 4 correct pairs listed, e.g. (1,6), (2,5), (3,4), (4,3) **M1**

(a) all six pairs listed with no repeats: (1,6), (2,5), (3,4), (4,3), (5,2), (6,1) cso **A1**

(a) Answer: 6 ways (shown)

(b) identifies 6 outcomes: (4,6), (5,5), (6,4), (5,6), (6,5), (6,6) **M1**

(b) 1/6 cao **A1**

(b) Answer: 1/6

Question 6

(a) 15 cao **B1**

(a) Answer: 15

(b) 38/100 oe **M1**

(b) 19/50 cao **A1**

(b) Answer: 19/50

(c) 12/60 oe **M1**

(c) 1/5 cao **A1**

(c) Answer: 1/5

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