5.23 Venn Diagrams: 10-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 In a survey 12 people like tea, 9 people like coffee and 4 like both tea and coffee. How many people like tea or coffee (or both)?

(Total for Question 1 is 1 mark)

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2 The universal set is E = {1, 2, 3, ..., 15}.
A is the set of multiples of 3 in E.
B is the set of multiples of 5 in E.

(a) Write down the elements of set A. **(1)**

.....

(b) Write down the elements of A intersect B. **(1)**

.....

(c) List the elements of A union B. **(2)**

(Total for Question 2 is 4 marks)

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3 A ball is drawn at random from a bag containing only red, blue and green balls. Event R is that the ball is red. Event Bl is that the ball is blue.

(a) Explain why events R and Bl are mutually exclusive. **(1)**

(b) On a Venn diagram, state how you would show that two events are mutually exclusive. **(1)**

(Total for Question 3 is 2 marks)

4 There are 32 students in a class. 6 students study both Art and Drama.

(a) Show that the probability that a randomly selected student studies both Art and Drama is 3/16. **(2)**

(Total for Question 4 is 2 marks)

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Mark scheme · 5.23 Venn Diagrams: 10-minute Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

17 cao **B1**

Answer: 17 (12 + 9 - 4 = 17).

Question 2

(a) {3, 6, 9, 12, 15} cao **B1**

(a) Answer: A = {3, 6, 9, 12, 15}

(b) {15} cao **B1**

(b) Answer: A intersect B = {15}

(c) at least 5 correct elements of A union B listed **M1**

(c) {3, 5, 6, 9, 10, 12, 15} cao **A1**

(c) Answer: A union B = {3, 5, 6, 9, 10, 12, 15}

Question 3

(a) correct reason, e.g. a single ball cannot be both red and blue at the same time / R intersect Bl = empty set, oe **B1**

(a) Answer: A ball has only one colour, so it cannot be both red and blue.

(b) the two circles do not overlap / have no intersection, oe **B1**

(b) Answer: The circles representing the two events would not overlap.

Question 4

(a) 6/32 seen **M1**

(a) cso, correctly simplified to 3/16 with working shown **A1**

(a) Answer: 3/16

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