

 **SCAN ME**

CHECK YOUR ANSWERS

A Venn diagram with two overlapping circles, labeled A and B . The region inside circle A but outside circle B is labeled 0.12. The intersection of circles A and B is labeled 0.18. The region inside circle B but outside circle A is labeled 0.42. The label 0.28 is placed to the right of circle B , indicating the total probability for event B (the sum of 0.18 and 0.42).

- (a) Find
 - (i) $P(A)$ (1)
 - (ii) $P(B)$ (1)
 - (iii) $P(A \text{ or } B \text{ or both})$ (1)
- (b) State, giving a reason, whether events A and B are mutually exclusive. (1)
- (c) State, giving a reason, whether events A and B are independent. (1)

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2

T

$$P(\text{large fish}) = 0.24$$

$$P(\text{medium fish}) = 0.72$$

$$P(\text{small fish}) = 0.04$$

F

F

- (c)

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(Total for Question 2 is 7 marks)



3

91 study maths or physics or both

One student from the college is selected at random.

M is the event that the student selected studies maths

P is the event that the student selected studies physics

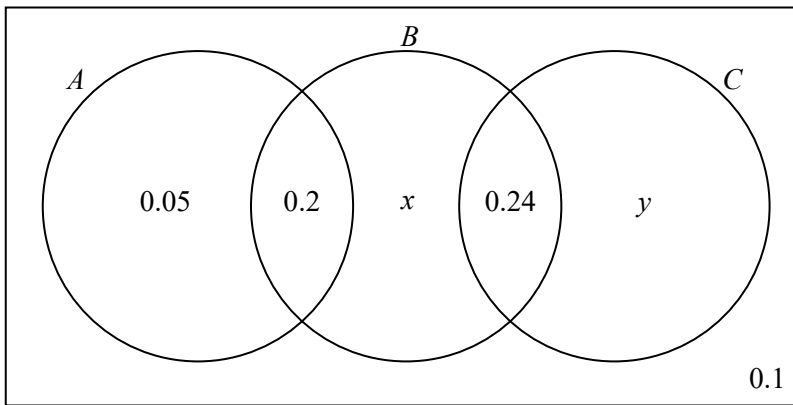
L is the event that the student selected was late to school

- (c) Determine, by calculation, if the events M and P are independent. (3)

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(Total for Question 3 is 7 marks)

4 The Venn diagram shows the events A , B and C and their associated probabilities.



Events A and B are independent.

- (a) Find the value of x **(2)**
- (b) Find the value of y **(1)**
- (c) Determine, by calculation, if the events B and C are independent. **(1)**

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(Total for Question 4 is 4 marks)

5 Jeremy and Doug both play a computer game that has three levels.

If a player completes level 1 they progress to level 2.

If a player completes level 2 they progress to level 3.

If a player completes level 3 they complete the game.

If players fail to complete any of the levels the game is over and they stop playing.

The probabilities that Jeremy and Doug complete each of the levels of the game are shown below.

	Level 1	Level 2	Level 3
Jeremy	0.9	0.7	0.3
Doug	0.8	0.6	0.4

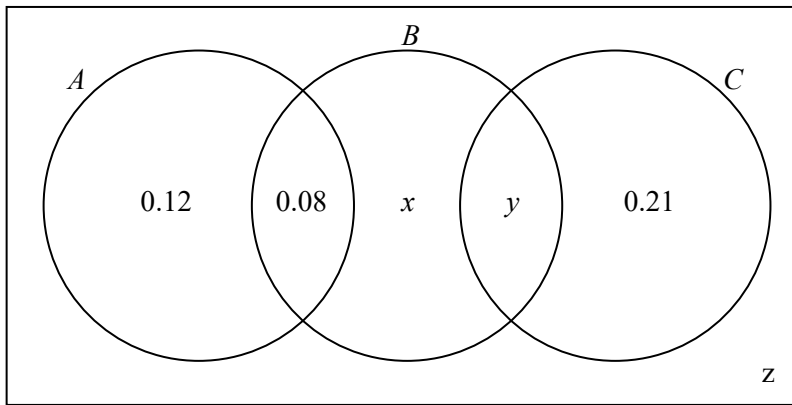
Both Jeremy and Doug make one attempt to complete the game.

- Work out who is more likely to complete the game. **(1)**
- Find, to 4 decimal places, the probability that exactly one of them completes the game. **(2)**
- Find, to 4 decimal places, the probability that at least one of them completes the game. **(2)**
- Find, to 4 decimal places, the probability that Jeremy fails on level 3 and Doug fails on level 2. **(2)**

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(Total for Question 5 is 7 marks)

6 The Venn diagram shows the events A , B and C and their associated probabilities.



Events A and B are independent.

Events B and C are independent.

Find the values of x , y and z

(5)

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(Total for Question 6 is 5 marks)



9 A bag contains 16 red dice, 5 blue dice and 3 green dice.

Each red die is fair and 4-sided, with faces numbered 1, 2, 5 and 6

Each blue die is fair and 5-sided, with faces numbered 1, 2, 3, 4 and 5

Each green die is fair and 3-sided, with faces numbered 1, 2 and 3

One of the dice is selected at random and then rolled.

R is the event the dice selected is red.

X is the event the number rolled is 2.

(a) Show that events R and X are independent. (3)

The first die is not returned to the bag.

A second die is selected at random and then rolled.

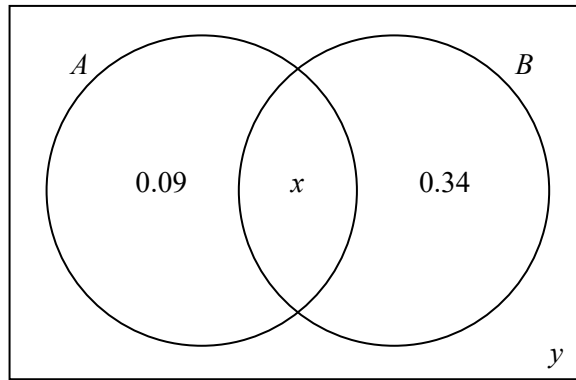
(b) Work out the probability that the total of both rolls is 11. (3)
 Give your answer as a fraction in its simplest form.

(This area contains horizontal lines for writing the solution to Question 9.)

(Total for Question 9 is 6 marks)



10 The Venn diagram shows the events A and B and their associated probabilities.



Events A and B are independent.

Give that $x > y$, find the value of x and y .

(4)

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(Total for Question 10 is 4 marks)



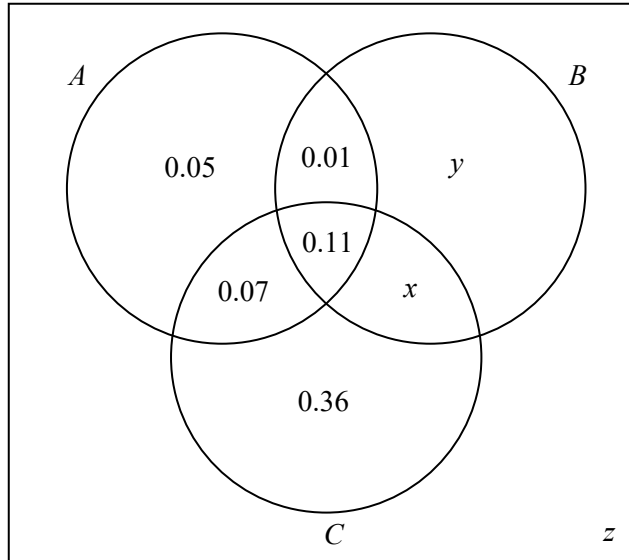
(5)

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(Total for Question 11 is 5 marks)



12 The Venn diagram shows the events A , B and C and their associated probabilities.



Events A and B are independent.

Events B and C are independent.

Events A and C are independent.

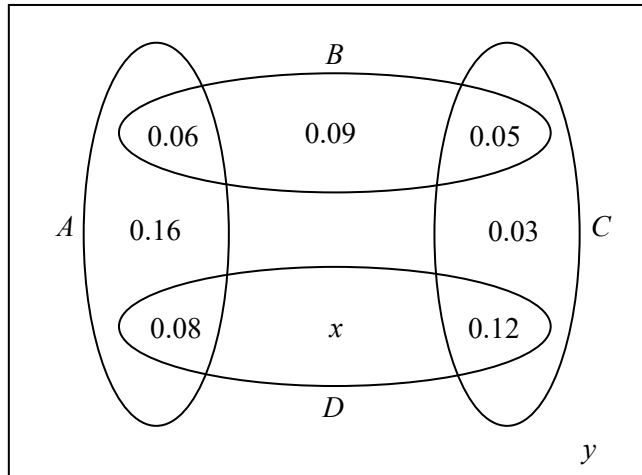
Find the values of x , y and z

(5)

[illegible]

(Total for Question 12 is 5 marks)

13 The Venn diagram shows the events A , B , C and D and their associated probabilities.



- (a) Write down all pairs of mutually exclusive events from A , B , C and D . **(1)**
- (b) Show that events A and B are independent. **(1)**
- (c) Show that events B and C are not independent. **(1)**
- Events C and D are independent.
- (d) Work out the values of x and y . **(3)**

Events C and D are independent.

[illegible]

(Total for Question 13 is 6 marks)