

1 The events A and B are such that $P(A) = 0.4$, $P(B) = 0.5$, $P(A \cap B) = 0.3$.

(a) Find $P(A \cup B)$

(2)

(b) Find $P(A|B)$

(3)

(c) Find $P(A'|B')$

(3)

(Total for question 1 is 8 marks)

2 The events A and B are such that $P(A) = \frac{5}{16}$, $P(B) = \frac{1}{2}$ and $P(A|B) = \frac{1}{4}$.

(a) Find $P(A \cap B)$

(2)

(b) Find $P(B'|A)$

(3)

(c) Find $P(A' \cup B)$

(2)

(d) Determine whether the events A and B are independent, give a reason for your answer.

(3)

(Total for question 2 is 10 marks)

3 The events A and B are such that $P(A) = 0.3$ and $P(A \cup B) = 0.7$.

(a) Find $P(A' \cap B')$

(2)

(b) Find $P(A' \cap B)$

(2)

(c) Given also that the events A and B are independent, find $P(B)$

(4)

(d) Find $P(A' \cup B')$

(2)

(Total for question 3 is 10 marks)

4 The events A and B are such that $P(A) = \frac{3}{20}$, $P(A \cap B) = \frac{1}{20}$, $P(A|B) = \frac{5}{14}$.

(a) Find $P(B)$

(3)

(b) Find $P(A \cup B)$

(3)

(c) Find $P(B|A')$

(3)

(Total for question 4 is 9 marks)

- 5** A company has three machines that produce a component. Machine A produces 40% of the components. Machine B produces 35% of the components and machine C produces 25% of the components.

If a component is produced by machine A the chance that it will be faulty is 3%. If a component is produced by machine B the chance that it will be faulty is 2%. If a component is produced by machine C the chance that it will be faulty is 1%.

- (a) Draw a tree diagram to show this information.

(3)

- (b) A component is selected at random. Find the probability it is faulty.

(2)

- (c) Given that the component is faulty, find the probability it was produced by machine C.

(3)

(Total for question 5 is 8 marks)

6 A bag contains 10 blue counters, 8 red counters and 6 green counters. Two counters are removed from the bag at random.

(a) Draw a tree diagram to represent this information

(3)

(b) Find the probability that the two counters removed are both green

(2)

- (c) Given that at least one of the counters removed is red, find the probability that both counters are red.

(3)

(Total for question 6 is 8 marks)

- 7 Leroy asks 50 people which sports they watch. They can choose from football, golf and hockey. 5 people watch all three sports. 8 people watch football and golf. 7 people watch golf and hockey. 9 people watch football and hockey. 31 people watch football. 13 people watch golf. 17 people watch hockey.

(a) Draw a Venn diagram for this information.

(3)

- (b) One of the people is selected at random. Given they watch football, find the probability they do not watch hockey.

(3)

(Total for question 7 is 6 marks)

- 8** Two bags, A and B , contain red, green and yellow counters. Bag A contains 3 red, 2 green and 4 yellow. Bag B contains 5 red, 4 green and 1 yellow. Taylor picks one counter at random from bag A and places it into bag B . She then picks one counter at random from bag B .

(a) Draw a tree diagram to represent this information.

(2)

(b) Find the probability that Taylor picks two counters of the same colour.

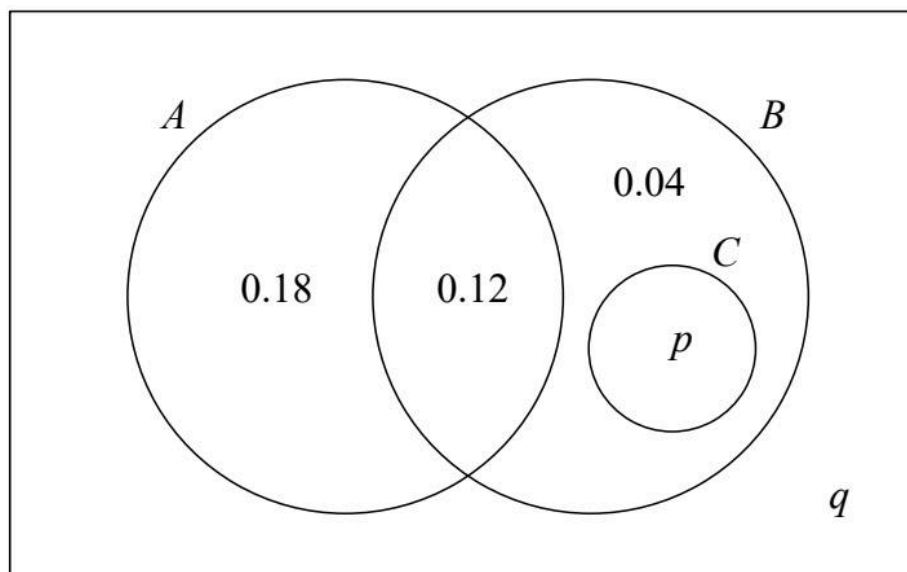
(2)

(c) Given that both counters are the same colour, find the probability they are both yellow.

(2)

(Total for question 8 is 6 marks)

- 9 The Venn diagram shows the probabilities associated with three events, A , B and C .



- (a) Write down the two events that are mutually exclusive.

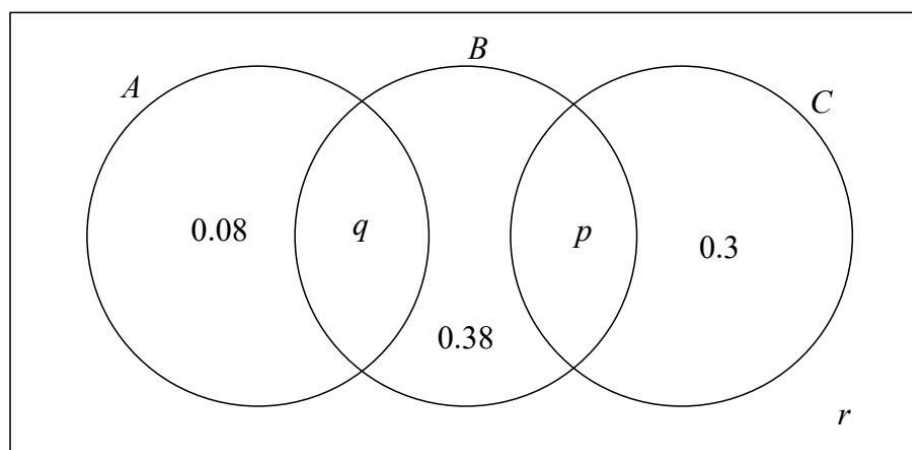
(1)

- (b) Given that A and B are independent, find the values of p and q .

(3)

(Total for question 9 is 4 marks)

- 10 The Venn diagram shows the probabilities associated with three events, A , B and C .



- (a) Write down the two events that are mutually exclusive.

(1)

- (b) Given that $P(B|C) = 0.25$, find the value of p .

(2)

(c) Given also that A and B are independent find the values of q and r .

(4)

(Total for question 10 is 7 marks)
