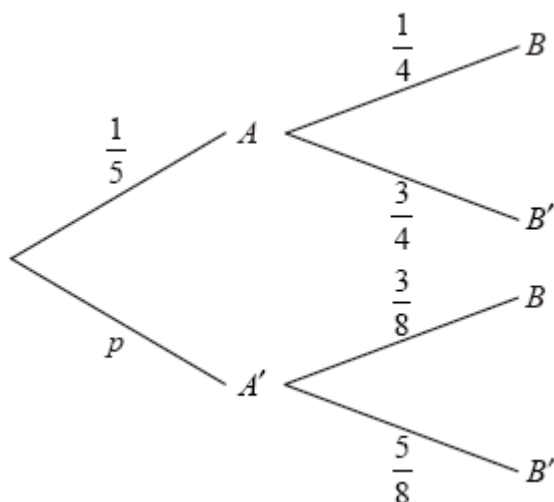


1. The diagram below shows the probabilities for events A and B , with $P(A') = p$.



- (a) Write down the value of p . (1)

- (b) Find $P(B)$. (3)

- (c) Find $P(A' | B)$. (3)

(Total 7 marks)

2. Two unbiased 6-sided dice are rolled, a red one and a black one. Let E and F be the events

E : the same number appears on both dice;

F : the sum of the numbers is 10.

Find

- (a) $P(E)$;

- (b) $P(F)$;

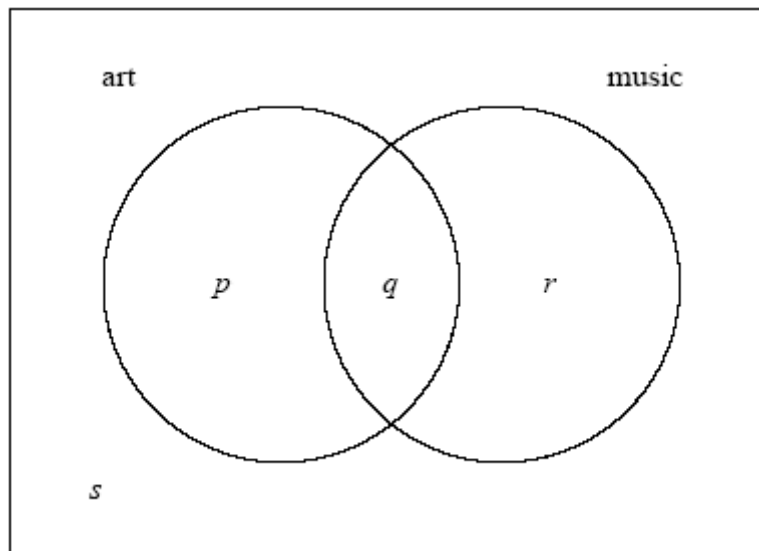
- (c) $P(E \cup F)$.

(Total 6 marks)

3. The events A and B are independent such that $P(B) = 3P(A)$ and $P(A \cup B) = 0.68$. Find $P(B)$

(Total 6 marks)

2. In a group of 16 students, 12 take art and 8 take music. One student takes neither art nor music. The Venn diagram below shows the events art and music. The values p , q , r and s represent numbers of students.



- (a) (i) Write down the value of s .
(ii) Find the value of q .
(iii) Write down the value of p and of r . (5)
- (b) (i) A student is selected at random. Given that the student takes music, write down the probability the student takes art.
(ii) **Hence**, show that taking music and taking art are **not** independent events. (4)
- (c) Two students are selected at random, one after the other. Find the probability that the first student takes **only** music and the second student takes **only** art. (4)
- (Total 13 marks)**

3. A company uses two machines, A and B, to make boxes. Machine A makes 60 % of the boxes.

80 % of the boxes made by machine A pass inspection.
90 % of the boxes made by machine B pass inspection.

A box is selected at random.

- (a) Find the probability that it passes inspection. (3)
- (b) The company would like the probability that a box passes inspection to be 0.87. Find the percentage of boxes that should be made by machine B to achieve this. (4)
- (Total 7 marks)**