

Laws of Probability

4. The events A and B are such that $P(A) = 0.5$, $P(B) = 0.7$ and $P(A \cap B) = 0.2$.
Find

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

(b) $P(B')$

(c) $P(A' \cap B)$

5. The events A and B are such that $p(A) = 0.35$, $p(B) = 0.5$ and $p(A \cap B) = 0.15$. Using a Venn diagram (where appropriate) find:
- (a) $p(A')$ (b) $p(A \cup B)$ (c) $p(A \cup B')$.

- 6.** The events A and B are such that $p(A) = 0.45$, $p(B) = 0.7$ and $p(A \cap B) = 0.20$. Using a Venn diagram (where appropriate) find:
- (a) $p(A \cup B)$ (b) $p(A' \cap B')$ (c) $p((A \cap B)')$.

1. Two events A and B are such that $p(A) = 0.6$, $p(B) = 0.4$ and $p(A \cap B) = 0.3$. Find the probability of the following events:

- (a) $A \cup B$ (b) $A|B$ (c) $B|A$ (d) $A|B'$

2. A and B are two events such that $p(A) = 0.3$, $p(B) = 0.5$ and $p(A \cup B) = 0.55$
Find the probability of the following events:

- (a) $A|B$ (b) $B|A$ (c) $A|B'$ (d) $A'|B'$

9. Given that $p(A) = 0.6$, $p(B) = 0.7$ and that A and B are independent events. Find the probability of the event
- (a) $A \cup B$ (b) $A \cap B$ (c) $A|B'$ (d) $A' \cap B$

1. The events A and B are such that $p(A) = 0.3$, $p(B) = 0.5$ and $p(A \cap B) = 0.1$
Find:
- i. $p(A \cup B)$ ii. $p(B')$ iii. $p(A' \cap B)$

1. Two events A and B are such that $p(A) = 0.5$, $p(B) = 0.4$ and $p(A \cap B) = 0.3$
Find:

i. $p(A|B)$

ii. $p(B|A)$

iii. Are the events A & B independent?

- 1.** Given that $p(A) = 0.6$, $p(B) = 0.4$ and that A and B are independent events. Find the probability of the events:
- i. $A \cup B$ ii. $A \cap B$ iii. $A|B'$

3. Given that $p(A) = 0.2$, $p(B) = 0.8$ and that A and B are independent events.

i. Show the data as a Venn diagram.

Find the probability of the events:

ii. $A \cup B$

iii. $A \cap B$

iv. $A|B$

[7 marks]

1. Let $P(A) = 0.5$, $P(B) = 0.6$ and $P(A \cup B) = 0.8$.

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

(2)

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

(2)

(c) Decide whether A and B are independent events. Give a reason for your answer.

(2)

(Total 6 marks)

2. For events A and B , the probabilities are $P(A) = \frac{4}{13}$ and $P(B) = \frac{5}{13}$.

(a) If events A and B are mutually exclusive, write down the value of $P(A \cap B)$. (1)

(b) If events A and B are independent, find the value of $P(A \cap B)$. (2)

(c) If $P(A \cup B) = \frac{7}{13}$, find the value of $P(A \cap B)$.

(3)
(Total 6 marks)

3. Events A and B have probabilities $P(A) = 0.4$, $P(B) = 0.65$, and $P(A \cup B) = 0.85$.

(a) Calculate $P(A \cap B)$.

(b) State with a reason whether events A and B are independent.

(c) State with a reason whether events A and B are mutually exclusive.

(Total 6 marks)