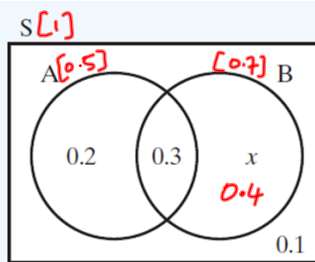


1

Use the given Venn diagram to answer these questions.

- (i) Find the value of x
- (ii) Find $P(A)$
- (iii) Find $P(A \cup B)$
- (iv) Find $P(A|B)$

(v) Verify that $P(A|B) = \frac{P(A \cap B)}{P(B)}$



(i) $x = 1 - (0.2 + 0.3 + 0.1) = 0.4$

(ii) $P(A) = 0.5$

(iii) $P(A \cup B) = 0.2 + 0.3 + 0.4 = 0.9$

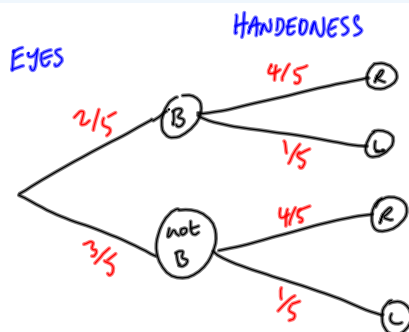
(iv) $P(A|B) = \frac{0.3}{0.7} = \frac{3}{7}$

2

The probability that a person has blue eyes is $\frac{2}{5}$ and the probability that a person is left-handed is $\frac{1}{5}$.

Find the probability that a person

- (i) is not left-handed
 - (ii) has blue eyes and is left-handed.
- (iii) Given that two people are chosen at random, find the probability that one of them has blue eyes and is left-handed and the other has blue eyes and is not left-handed.



(i) $P(\text{not } L) = \frac{4}{5}$

(ii) $P(B, L) = \frac{2}{25}$

(iii) $P(B, L \text{ and } BR)$
 $= \left(\frac{2}{25}\right) \left(\frac{8}{25}\right)$
 $= \frac{16}{625}$