

A and B are independent events.

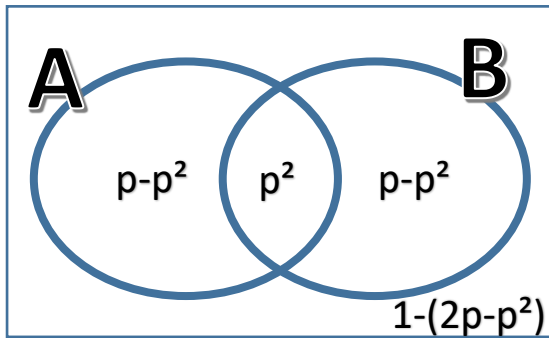
$$P(A) = P(B) = p$$

Show that $P(A'|B') = 1 - p$

Given that A and B are independent,

$$P(A \cap B) = P(A) \times P(B) = p^2$$

Put the information in a Venn diagram



$$P(A' \cap B') = 1 - (p + (p - p^2)) = 1 - 2p + p^2$$

$$P(A'|B') = \frac{P(A' \cap B')}{P(B')}$$

$$= \frac{1 - 2p + p^2}{1 - p}$$

$$= \frac{(1 - p)(1 - p)}{1 - p}$$

$$= 1 - p$$