

Suppose an experiment has sample space $S = \{a, b, c, d, e, f, g\}$ with equiprobable outcomes. Define the following three events:

$$\begin{aligned}R &= \{a, b, c, d\} \\W &= \{b, d, e\} \\T &= \{a, e\}.\end{aligned}$$

Which of the following events is independent of the event $R^c W^c T^c$?

- (a) None of these
- (b) R
- (c) W
- (d) T
- (e) $R \cup W$
- (f) $R \cup W \cup T$
- (g) $W \cup T$
- (h) $R \cup T$
- (i) RW^c
- (j) TW^c

If A and B are independent events in a sample space such that $P(AB) = P(A^cB) = 1/3$, then what is $P(AB^c)$?

- (a) $1/6$
- (b) $1/2$
- (c) $1/3$
- (d) $2/3$
- (e) $5/6$
- (f) $1/12$
- (g) $1/4$
- (h) $3/4$
- (i) $1/8$
- (j) None of these

A bucket contains four rocks. One is blue, one is green, and two are red. All four rocks are removed, one at a time without replacement. What is the probability the first two removed are red, followed by a blue, and then a green ?

- (a) $1/12$
- (b) $1/24$
- (c) $1/6$
- (d) $1/4$
- (e) $1/2$
- (f) $1/48$
- (g) $1/8$
- (h) 1
- (i) $2/3$
- (j) None of these