

Let $S = \{a, b, c, d, e, f\}$ be a sample space for an experiment and let $E = \{a, b, c\}$, $F = \{c, d, e\}$, and $G = \{a, b, f\}$. If we know that $E \cup F$ and EF both occurred, then which one of the following events also occurred?

- (a) $\{c, e\}$
- (b) $E^c F^c$
- (c) $E^c \cup F^c$
- (d) EG
- (e) FG
- (f) $E^c \cup G$
- (g) EFG
- (h) $\{a, b, d, e\}$
- (i) $\{a, e, f\}$
- (j) \emptyset
- (k) None of these

Let $S = \{d, e, f, g, h, i\}$ be a sample space for an experiment and let $U = \{d, e, f\}$, $V = \{f, g, h\}$, and $W = \{d, e, i\}$. If we know that $U \cup V$ and UV both occurred, then which one of the following events also occurred?

- (a) $\{f, h\}$
- (b) $U^c V^c$
- (c) $U^c \cup V^c$
- (d) UW
- (e) VW
- (f) $U^c \cup W$
- (g) UVW
- (h) $\{d, e, g, h\}$
- (i) $\{d, h, i\}$
- (j) \emptyset
- (k) None of these

Let $S = \{a, b, c, d, e, f\}$ be a sample space for an experiment and let $K = \{a, b, c\}$, $L = \{c, d, e\}$, and $M = \{a, b, f\}$. If we know that $K \cup L$ and KL both occurred, then which one of the following events also occurred?

- (a) $\{c, e\}$
- (b) $K^c L^c$
- (c) $K^c \cup L^c$
- (d) KL
- (e) LM
- (f) $K^c \cup M$
- (g) KLM
- (h) $\{a, b, d, e\}$
- (i) $\{a, e, f\}$
- (j) \emptyset
- (k) None of these

Solution: $EF = \{c\}$ so c was the outcome. Thus, $\{c, e\}$ also occurred.