Suppose the possible outcomes of an experiment are $\frac{1}{15}, \frac{2}{15}, \frac{1}{5}, \frac{4}{15}, \frac{1}{3}$, whose probabilities are $\frac{1}{16}, \frac{1}{16}, \frac{1}{8}, \frac{1}{4}, \frac{1}{2}$, respectively. How many different events have a probability less than $1/2$?

(a) 15

(b) 0

(c) 1

(d) 2

(e) 3

(f) 4

(g) 8

(h) 16

(i) 32

(j) 7

(k) 31

(l) None of these

Suppose an experiment has sample space $S = \{a, b, c\}$. Define the three events $E = \{a, b\}$, $F = \{b, c\}$, and $G = \{a, c\}$. If the probability that event G and event $E \cup F$ both occur is $3/4$, and the probability that EF occurs is twice the probability that FE^cG occurs, then what is the probability the experiment's outcome is c ?

(a) 1/8

(b) 3/8

(c) 3/4

(d) 1/4

(e) 1/2

(f) 0

(g) 5/8

(h) 1/3

(i) 2/3

(j) 7/8

(k) 3/16

(l) None of these

Suppose E, F, and G are events in a sample space S. If $E-F$ and $G-F$ both occur, but $(E \cup F \cup G)^c$ does not occur, then which of the following events also must occur?

(a) $E(F \cup G)$

(b) EFG

(c) FG

(d) FG^c

(e) $F - E$

(f) E^cFG

(g) E^cF^cG

(h) E^cG

(i) $E^c \cup G^c$

(j) S^c

(k) None of these