



## Practice Assignment 1A

1. Given that  $A$  and  $B$  are events such that  $P(A) = 0.4$ ,  $P(B) = 0.7$ ,  $P(A \cap B) = 0.3$ , find  $P(A | B)$  and  $P(B | A)$ .

2. Compute  $P(C | D)$ , if  $P(D) = 0.72$ ,  $P(C \cap D) = 0.08$ .

3. If  $P(E) = 0.7$ ,  $P(F) = 0.4$ , and  $P(F | E) = 0.3$ , find

(i)  $P(E \cap F)$

(ii)  $P(E | F)$

(iii)  $P(E \cup F)$

4. If  $P(C) = \frac{4}{9}$ ,  $P(D) = \frac{5}{9}$  and  $P(C \cup D) = \frac{7}{9}$ , find

(i)  $P(C \cap D)$

(ii)  $P(C | D)$

(iii)  $P(D | C)$

5. If  $P(E) = \frac{3}{7}$  and  $P(F) = \frac{2}{7}$ , find  $P(E \cap F)$  if  $E$  and  $F$  are independent events.

6. Let  $A$  and  $B$  be events with  $P(A) = \frac{5}{7}$  and  $P(B) = \frac{5}{14}$  and  $P(A \cap B) = \frac{2}{7}$ .

Are  $A$  and  $B$  independent?

7. Let  $C$  and  $D$  be independent events with  $P(C) = 0.5$  and  $P(D) = 0.7$ . Find

(i)  $P(C \cap D)$

(ii)  $P(C | D)$

(iii)  $P(D | C)$

8. Given two independent events  $E$  and  $F$  such that  $P(E) = 0.2$ ,  $P(F) = 0.4$ . Find  $P(E \text{ and } F)$ .

9. A random variable  $X$  has the following probability distribution:

$X$	0	1	2	3	4	5	6	7
$P(X)$	0	$m$	$m$	$2m$	$2m$	$3m^2$	$7m^2$	$8m^2 + m$

Determine  $m$ .

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10. The probability that a bulb produced by a factory will fuse after 100 days of use is 0.04. What is the probability that out of 5 such

bulbs.

- (i) None
- (ii) Not more than one
- (ii) More than one
- (iv) At least one

will fuse after 100 days of use.

11. In a box containing 100 bulbs, 20 are defective. The probability that out of a sample of 10 bulbs, none is defective is

- (a)  $10^{-1}$
- (b)  $\left(\frac{1}{2}\right)^{10}$
- (c)  $\left(\frac{4}{5}\right)^{10}$
- (d)  $\frac{4}{5}$

12. The probability that a student is not a footballer is  $\frac{1}{4}$ . Then the probability that out of six students, five are footballers is

- (a)  ${}^6C_5 \left(\frac{3}{4}\right)^5 \frac{1}{4}$
- (b)  $\left(\frac{3}{4}\right)^5 \frac{1}{4}$
- (c)  ${}^6C_1 \frac{1}{4} \left(\frac{3}{4}\right)^5$
- (d) None of these