Class 12 Mathematics · Chapter 13: Probability

Worksheet · 20 marks · about 40 minutes · based on NCERT

Name _____ Class and section _____ Date _____

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1. In a town in Assam, the probability that it rains on a given morning is 0.3, and the probability that the school bus is late on a rainy morning is 0.6. The probability that on a given morning it rains and the bus is late is [1]

(a) 0.9 (b) 0.18
(c) 0.5 (d) 0.42

2. A jar at a school fair holds n coupons, exactly 2 of which win a prize. Two coupons are drawn one after the other without replacement. If the probability that both coupons win is $\frac{1}{15}$, then n is [1]

(a) 5 (b) 15
(c) 6 (d) 30

3. In a lucky draw at a mela in Varanasi, one token is drawn at random from 40 tokens numbered 1 to 40, and E is the event 'the number is even'. The announcer gives one clue about the number. After which clue is the probability of E the greatest? [1]

(a) P(E | the number is prime) (b) P(E | the number is a multiple of 3)
(c) P(E | the number is a perfect square) (d) P(E | the number is less than 6)

4. A and B are independent events with P(A) = 0.3 and P(A ∩ B) = 0.12. Then P(B′) is [1]

(a) 0.6 (b) 0.4
(c) 0.88 (d) 0.036

5. For events E and F of a sample space, P(F) = 0.4 and P(E′|F) = 0.35. Then P(E ∩ F) is [1]

(a) 0.26 (b) 0.14
(c) 0.65 (d) 0.05

6. For events A and B, P(A) = 0.5, P(B) = 0.4 and P(A ∪ B) = 0.7. Find P(A′|B′). [2]

7. A and B are independent events with P(A) = 0.6 and P(A′ ∩ B) = 0.24. Find P(B) and P(A ∪ B). [2]

8. A number is chosen at random from {1, 2, 3, 4}. Let A = {1, 2}, B = {1, 3} and C = {1, 4}. Show that each pair of these events is independent, but A, B and C are not mutually independent. [2]

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9. A survey of 200 commuters in Hyderabad gave the table shown, by mode of travel and arrival. A commuter is chosen at random. Find (i) P(on time | travels by metro), (ii) P(travels by metro | on time), and (iii) state, with reason, whether 'travels by metro' and 'on time' are independent. [3]

Mode	On time	Late
Metro	72	8
Bus	84	36

10. Meera's alarm rings on a school day with probability 0.9. If it rings, she catches the 7:10 bus with probability 0.8; if it does not, with probability 0.3. (i) Find the probability that she catches the bus. (ii) On a day she missed the bus, find the probability that her alarm had rung. [3]

11. Of the calls to a mobile network's helpline, 60% are about billing, 25% about the network and 15% about other matters. A billing call is resolved in the first call with probability 0.9 and any other call with probability 0.5. The network team resolves a fraction r of its calls in the first call. Find r if a call chosen at random that was not resolved in the first call is equally likely to have been about billing or about the network. [3]

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