PROBABILITY OF INDEPENDENT EVENTS

Answer all of these questions. Remember to show your working out in all questions.

MAIN QUESTIONS

1. P(A) = 0.4, P(B) = 0.5. If independent, find P(A and B).
   0.2

2. P(A) = 0.6, P(B) = 0.3. If independent, find P(A and B).
   0.18

3. P(A) = 0.7, P(B) = 0.2. If independent, find P(A and B).
   0.14

4. P(A) = 0.9, P(B) = 0.1. If independent, find P(A and B).
   0.09

5. P(A) = 0.5, P(B) = 0.8. If independent, find P(A and B).
   0.4

6. P(A) = 0.2, P(B) = 0.3, P(C) = 0.4. If independent, find P(A and B and C).
   0.024

7. P(A) = 0.5, P(B) = 0.5, P(C) = 0.5. If independent, find P(A and B and C).
   0.125

8. P(A) = 0.1, P(B) = 0.2, P(C) = 0.3. If independent, find P(A and B and C).
   0.006

9. P(A) = 0.6, P(B) = 0.7, P(C) = 0.8. If independent, find P(A and B and C).
   0.336

10. P(A) = 0.4, P(B) = 0.4, P(C) = 0.4. If independent, find P(A and B and C).
    0.064

11. P(A) = 0.3, P(B) = 0.4. If independent, find P(neither A nor B). | 0.42

12. P(A) = 0.5, P(B) = 0.6. If independent, find P(neither A nor B). | 0.2

13. P(A) = 0.7, P(B) = 0.2. If independent, find P(neither A nor B). | 0.24

14. P(A) = 0.8, P(B) = 0.9. If independent, find P(neither A nor B). | 0.02

15. P(A) = 0.1, P(B) = 0.5. If independent, find P(neither A nor B). | 0.45

16. P(A) = 0.4, P(B) = 0.5. If independent, find P(at least one of A or B). | 0.7

17. P(A) = 0.3, P(B) = 0.3. If independent, find P(at least one of A or B). | 0.51

18. P(A) = 0.6, P(B) = 0.2. If independent, find P(at least one of A or B). | 0.68

19. P(A) = 0.5, P(B) = 0.5. If independent, find P(at least one of A or B). | 0.75

20. P(A) = 0.8, P(B) = 0.8. If independent, find P(at least one of A or B). | 0.96

21. P(A) = 1/2, P(B) = 1/2. If independent, find P(A and B). | 1/4

22. P(A) = 1/3, P(B) = 1/4. If independent, find P(A and B). | 1/12

23. P(A) = 3/5, P(B) = 1/3. If independent, find P(A and B). | 1/5

24. P(A) = 2/3, P(B) = 3/4. If independent, find P(neither A nor B). | 1/12

25. P(A) = 1/5, P(B) = 1/5. If independent, find P(at least one of A or B). | 9/25

26. P(A) = 0.2, P(B) = 0.3, P(C) = 0.4. If independent, find P(at least one of A, B, or C). | 0.664

27. P(A) = 0.5, P(B) = 0.5, P(C) = 0.5. If independent, find P(at least one of A, B, or C). | 0.875

28. P(A) = 0.1, P(B) = 0.1, P(C) = 0.1. If independent, find P(at least one of A, B, or C). | 0.271

29. P(A) = 0.6, P(B) = 0.7, P(C) = 0.8. If independent, find P(at least one of A, B, or C). | 0.976

30. P(A) = 0.05, P(B) = 0.1, P(C) = 0.2. If independent, find P(at least one of A, B, or C). | 0.316

MASTER QUESTIONS

M1. A fair six-sided die is rolled twice. Find the probability of getting a six on both rolls. | 1/36

M2. A bag contains 4 red marbles and 6 blue marbles. A marble is drawn at random, its colour noted, replaced, and another drawn. Find the probability both are red. | 4/25

M3. The probability of rain on any day is 0.3. Find the probability it rains on two consecutive days, assuming independence. | 0.09

M4. A biased coin has P(heads)=2/3. Find the probability of three heads in three tosses. | 8/27

M5. A spinner has three equal sectors: red, blue, green. Spun twice, find the probability of the same colour both times. | 1/3

M6. Machine A breaks down with probability 0.02, machine B with 0.03. Find P(both break down on the same day), assuming independence. | 0.0006

M7. A student guesses randomly on two multiple-choice questions with four options each. Find P(both correct). | 1/16

M8. A box has 5 white and 5 black balls. Two balls are drawn with replacement. Find P(they are different colours).

1/2

M9. The probability a bus is not late is 0.9. Find P(not late on two consecutive days), assuming independence.

0.81

M10. A fair coin is tossed until a head appears or three tosses are made. Find P(no head appears).

1/8