

136. Using Probability Tree Diagrams for Dependent Events

Practice Questions

1. A bag contains 5 red balls and 3 blue balls. If one ball is picked and not replaced, what is the probability of picking two red balls in a row?
2. A box contains 4 green marbles and 6 yellow marbles. If two marbles are drawn without replacement, find the probability of drawing two yellow marbles.
3. A class has 10 boys and 15 girls. If two students are picked at random without replacement, find the probability that both are girls.
4. A deck of 52 playing cards is shuffled. If one card is drawn and not replaced, what is the probability of drawing two aces in a row?
5. A factory produces 80% working bulbs and 20% faulty bulbs. If two bulbs are selected at random, what is the probability of choosing two working bulbs?
6. A shop has a 30% chance of selling a product in the morning and, if sold, a 60% chance of selling another in the afternoon. Draw a tree diagram and find the probability of selling both products.
7. A bag contains 7 red balls and 5 green balls. If two balls are drawn without replacement, find the probability of drawing one red and one green ball.
8. A school has a 55% chance of a student choosing Maths, and if they do, a 70% chance of also choosing Physics. Draw a tree diagram and find the probability of a student choosing both subjects.
9. A test consists of two questions. A student has a 75% chance of answering the first correctly, and if they do, an 80% chance of answering the second correctly. Find the probability of answering both correctly.
10. A machine has a 90% chance of producing a working part. If two parts are randomly selected, what is the probability that both are faulty?

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Scenario Questions

1. A company interviews job applicants. Each applicant has a 40% chance of passing the first round, and if they pass, a 70% chance of passing the second round. Draw a probability tree and find the probability of passing both rounds.
2. A student takes two tests. They have an 85% chance of passing the first test, and if they pass, a 90% chance of passing the second test. Find the probability of passing both tests.
3. A restaurant has a 60% chance of receiving a booking in the evening. If a booking is made, there is a 75% chance that the customer will show up. Find the probability of getting a booking and the customer showing up.
4. A bus arrives on time 70% of the time. If it is on time, there is an 80% chance that passengers will be on time for work. Find the probability that a passenger gets to work on time.
5. A store has a 30% chance of making a sale in the morning. If a sale is made, there is a 50% chance of making another sale in the afternoon. Find the probability of making both sales.
6. A footballer has a 65% chance of scoring a penalty. If they score the first, they have a 75% chance of scoring the second. Find the probability of scoring both penalties.
7. A hospital records that 20% of patients miss their appointment. If they miss it, there is a 50% chance they reschedule. Find the probability of a patient missing their appointment and not rescheduling.
8. A coin is biased with a 70% chance of landing on heads. If flipped twice, find the probability of getting heads both times.
9. A student has a 60% chance of completing their homework on time. If they do, there is an 80% chance they will score well on the test. Find the probability of completing homework on time and scoring well on the test.
10. A factory produces 90% working parts. If two parts are selected at random, what is the probability that both are working?

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Practice Questions

1. $\frac{5}{14}$
2. $\frac{1}{3}$
3. $\frac{7}{20}$
4. $\frac{1}{221}$
5. 0.64
6. 0.18
7. $\frac{35}{66}$
8. 0.385
9. 0.6
10. 0.01

Scenario Questions

1. 0.28
2. 0.765
3. 0.45
4. 0.56
5. 0.15
6. 0.4875
7. 0.1
8. 0.49
9. 0.48
10. 0.81

Answers