**Probability Questions**

**Q1.** In a school of 200 students, 120 like math and 80 like science. 50 like both math and science.  
What is the probability that a randomly selected student likes both subjects?

**Q2.** A factory produces 60% of items from Machine A and 40% from Machine B. Machine A has a 5% defect rate, and Machine B has a 10% defect rate.  
If an item is found defective, what is the probability it came from Machine B?

**Q3.** A basket contains 6 apples and 4 oranges. One fruit is picked at random.  
What is the probability it is an orange?

**Q4.** A test is 90% accurate. 1 in 100 people has a certain condition.  
A person tests positive. What is the probability they actually have the condition?

**Q5.** In a company of 300 employees, 180 can code in Python, 100 can code in Java, and 50 can code in both languages.  
What is the probability that an employee can code in Python or Java?

**Q6.** The probability that it rains today is 0.6. The probability that you carry an umbrella given it rains is 0.9.  
What is the probability that it rains and you carry an umbrella?

**Q7.** In a class, 70% of students passed the exam. Of those who passed, 80% studied the night before.  
What is the probability a student studied the night before **given** they passed the exam?

**Q8.** You roll two fair dice. What is the probability that the sum is 7?

**Q9.** A bag contains 3 red, 2 green, and 5 blue balls. One ball is drawn randomly.  
What is the probability that it is either red or green?

**Q10.** In a city, 30% of the population uses public transport. Of these, 60% are students.  
What is the probability that a randomly selected person is a student who uses public transport?

**Q11.** In a survey, 40% of participants like tea, 50% like coffee, and 20% like both.  
What is the probability a person likes at least one of the two drinks?

**Q12.** A fair coin is flipped three times. What is the probability of getting exactly two heads?

**Q13.** A company has a dataset of customer feedback on a new product. 50% of customers who bought the product provided positive feedback, and 60% of customers who provided positive feedback also made a second purchase. If a customer made a second purchase, what is the probability that they provided positive feedback?

**Q14.** A survey shows that 40% of people prefer vegetarian food, 35% prefer non-vegetarian food, and 20% like both. What is the probability that a randomly selected person likes vegetarian or non-vegetarian food?

**Q15.** In a dataset of 1000 customers, 300 are repeat buyers, 400 are new buyers, and 200 of the repeat buyers also registered for a loyalty program. What is the probability that a customer is both a repeat buyer and a member of the loyalty program?

**Q16.** A healthcare dataset shows that 90% of people who exercise regularly have a lower risk of heart disease, while only 10% of people who don’t exercise regularly have a lower risk. If 60% of people in the dataset exercise regularly, what is the probability that a randomly selected person has a lower risk of heart disease?

**Q17.** In a dataset of 500 students, 150 are enrolled in both Computer Science and Mathematics courses, 250 are enrolled only in Computer Science, and 100 are enrolled only in Mathematics. What is the probability that a randomly selected student is enrolled in either Computer Science or Mathematics?

**Q18.** A company tracks employee performance, and 30% of employees exceed expectations, while 50% of employees with excellent performance also receive a promotion. What is the probability that an employee receives a promotion, given that they exceed expectations?

**Q19.** A data analysis shows that 25% of people who take an online quiz also complete a survey at the end, and 40% of people who complete the survey also share their results on social media. What is the probability that a person takes the quiz and shares their results on social media?

**Q20.** In a dataset of 500 people, 60% own a smartphone, 40% own a tablet, and 25% own both a smartphone and a tablet. What is the probability that a randomly selected person owns either a smartphone or a tablet?

**Q21.** A marketing team analyzes the behavior of customers who engage with a new promotional offer. 70% of customers who receive the offer visit the website, and 50% of those who visit the website make a purchase. What is the probability that a customer both visits the website and makes a purchase?

**Q22.** In a dataset of 1000 employees, 700 are satisfied with their job, and 500 of those employees are also highly productive. What is the probability that an employee is both satisfied with their job and highly productive?

**Q23.** A survey of 800 customers shows that 50% prefer product A, 30% prefer product B, and 20% prefer both. What is the probability that a customer prefers either product A or product B?

**Q24.** A dataset of students shows that 40% of students excel in Math, 30% excel in Science, and 15% excel in both subjects. What is the probability that a randomly selected student excels in at least one of the subjects?