

Q1 In testing a certain kind of truck tire over rugged terrain, it is found that 25% of the trucks fail to complete the test run without a blowout. Of the next 15 trucks tested, find the probability that

- (a) from 3 to 6 have blowouts;
- (b) fewer than 4 have blowouts;
- (c) more than 5 have blowouts.

Q3 The probabilities are 0.4, 0.2, 0.3, and 0.1, respectively, that a delegate to a certain convention arrived by air, bus, automobile, or train. What is the probability that among 9 delegates randomly selected at this convention, 3 arrived by air, 3 arrived by bus, 1 arrived by automobile, and 2 arrived by train?

Q5 The heights of 1000 students are normally distributed with a mean of 174.5 centimeters and a standard deviation of 6.9 centimeters. Assuming that the heights are recorded to the nearest half-centimeter, how many of these students would you expect to have heights

- (a) less than 160.0 centimeters?
- (b) between 171.5 and 182.0 centimeters inclusive?
- (c) equal to 175.0 centimeters?
- (d) greater than or equal to 188.0 centimeters?

Q2 From a lot of 10 missiles, 4 are selected at random and fired. If the lot contains 3 defective missiles that will not fire, what is the probability that

- (a) all 4 will fire?
- (b) at most 2 will not fire?

Q4 On average, 3 traffic accidents per month occur at a certain intersection. What is the probability that in any given month at this intersection

- (a) exactly 5 accidents will occur?
- (b) fewer than 3 accidents will occur?
- (c) at least 2 accidents will occur?

Q6 The weights of a large number of miniature poodles are approximately normally distributed with a mean of 8 kilograms and a standard deviation of 0.9 kilogram. If measurements are recorded to the nearest tenth of a kilogram, find the fraction of these poodles with weights

- (a) over 9.5 kilograms;
- (b) of at most 8.6 kilograms;
- (c) between 7.3 and 9.1 kilograms inclusive.