

Exercises 1

1. The probability of drawing a pink chip from a bowl of different-colored chips is 0.35, the probability of a blue chip is 0.46, the probability of a green chip is 0.15, the probability of a purple chip is 0.04. What is the probability of a blue or purple chip? What is the probability of a pink or blue chip?
2. If the probability of obtaining 1 nonconforming unit in a sample of 2 from a large lot of gaskets is 0.18 and the probability of 2 nonconforming units 0.25, what is the probability of 0 nonconforming units?
3. A small model-airplane motor has 4 starting components: key, battery, wire, and glow plug. What is the probability that the system will work if the probability that each component will work is as follows: key (0.998), battery (0.997), wire (0.999), and plug (0.995)?
4. A sample of 4 is selected from a lot of 20 piston rings. How many different sample combinations are possible?
5. A lot of 15 has 3 nonconforming units. i) What is the probability that a sample of 3 will have 1 nonconforming unit? ii) What is the probability that the same sample will have less than 2 nonconforming units?
6. A sample of 4 medicine bottles is taken from an injection molding machine that is 10% nonconforming. i) What is the probability of 1 nonconforming medicine bottle in the sample? ii) What is the probability of 3 nonconforming medicine bottles in the sample?
7. If the average of number of nonconforming units is 1.6, what is the probability that a sample will contain less than 4 units? Use the poisson distribution. Use tables to check the obtained results.
8. A company that manufactures cylinders found the population mean of the inner diameter to be 49.15 mm, the population standard deviation to be 0.5 mm, and the data is normally distributed i) What percentage of the cylinders are expected to have a diameter of more than 49.80 mm?