

Three coins are tossed. Find the probability of getting

- a. Two heads and a tail in any order.
- b. Three heads.
- c. No heads.
- d. At least two tails.
- e. At most two tails

1

A class has 60 students. Of these, 35 students are male, and 20 students know how to play a musical instrument. Of the male students, five can play musical instruments. Find the probability that a randomly selected student is male or can play a musical instrument.

2

The table shows the results of survey that asked 2850 people whether they were involved in any type of charity work. A person is selected at random from the sample. Find the probability of each event.

- The person is male or frequently involved in charity work.
- The person is female or not involved in charity work at all.
- The person is frequently or occasionally involved in charity work.
- The person is female or not frequently involved in charity

	Frequently	Occasionally	Not at all	Total
Male	221	456	795	1472
Female	207	430	741	1378
Total	428	886	1536	2850

3

When two dice are rolled, find the probability of getting a sum of nine.

4

We are given three boxes as follows:

Box1 has 10 light bulbs of which 4 are defective

Box2 has 6 light bulbs of which 1 are defective

Box3 has 8 light bulbs of which 3 are defective

We select a box at random and then draw a bulb at random. What is the probability that the bulb is defective?

5

An urn contains 2 red balls, 3 green balls, and 5 blue balls. A ball is selected at random, and its color is noted. Then, it is replaced, and another ball is selected, and its color is noted. Find the probability of each of these:

- a. Selecting 2 blue balls
- b. Selecting a blue ball and then a red ball
- c. Selecting a green ball and then a blue ball

6

A total of 46% of voter in a certain city classify themselves as Independents , whereas 30% of voter classify themselves as Liberals, 24% of voter classify themselves as Conservatives. In a recent local election, 35% of the Independents, 62% of the Liberals and 58% of the Conservatives voted. A voter is chosen at random given that this person is voted in the local election, what is the probability that the person is Independents/ Liberals/ Conservatives?

7

Three machines A, B, and C produce respectively 50%, 30%, and 20% of the total number of items of a factory. The percentages of defective output of these machines are 3%, 4%, and 5%.

- a. If an item is selected at random, find the probability that the item is defective.
- b. Suppose an item is selected at random and is found to be defective. Find the probability that the item was produced by machine A.

8

We are given three boxes as follows:

BoxA has 2 white balls and 4 red balls

BoxB has 8 white balls and 4 red balls

BoxC has 1 white balls and 3 red balls

If one ball is selected from each urn, what is the probability that the ball chosen from BoxA was white given that exactly 2 white balls were selected?

9

Three designers A, B, and C work independently on solving a particular design problem. The probability that A will solve the problem is  $P(A)=2/3$ , the probability that B will solve the problem is  $P(B)=3/4$ , and the probability that C will solve the problem is  $P(C)=4/5$

Determine the probability that the problem will be solved.

10

The probability that a regularly scheduled flight departs on time is  $P(D)=0.83$ ; the probability that it arrives on time is  $P(A)=0.82$ ; and the probability that it departs and arrives on time is  $P(D \cap A)=0.78$ . Find the probability that a plane

- a. Arrives on time, given that it departed on time.
- b. Departed on time, given that it has arrived on time.

11

One bag contains 4 white balls and 3 black balls, and a second bag contains 3 white balls and 5 black balls. One ball is drawn from the first bag and placed unseen in the second bag. What is the probability that a ball now drawn from the second bag is black?

12

In a certain assembly plant, three machines, B1, B2, and B3, make 30%, 45%, and 25%, respectively, of the products. It is known from past experience that 2%, 3%, and 2% of the products made by each machine, respectively, are defective. Now, suppose that a finished product is randomly selected.

- a. What is the probability that it is defective?
- b. If a product was chosen randomly and found to be defective, what is the probability that it was made by machine B3?

13

The employees of a company are given a 4-digit identification number. How many different numbers are available if repetitions are permitted?

The employees of a company are given a 4-digit identification number; however, repetitions are not allowed. How many different numbers are available?

14

In a poker hand consisting of 5 cards, find the probability of holding 2 aces and 3 jacks.

15

A student has a choice of selecting 3 courses for the next semester. He can choose from 6 humanities or 4 psychology courses. Find the probability that all 3 courses selected will be humanities courses assuming he selects them at random.

16



A panel consists of six male and four female experts. Four experts are chosen at random from this panel to serve in a selection committee. What is the probability of choosing

- a. four men?
- b. four women?
- c. two men and two woman?
- d. one man and three women?

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From a group of 8 women and 6 men, a committee consisting of 3 women and 3 men is to be formed. How many different committees are possible if

- a. 2 men refuse to serve together.
- b. 2 women refuse to serve together.
- c. 1 men and 1 women refuse to serve together.
- d. Calculate the probabilities of these forms of committees.

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