Chapter 7

Mathematics of Chance

Questions: 7.1–7.11

Concept : Probability as a number

Q.7.1 There are 24 beads in a box, some white and some black. The probability of drawing a white bead from it is $\frac{1}{3}$

(a) How many white beads are there in the box?

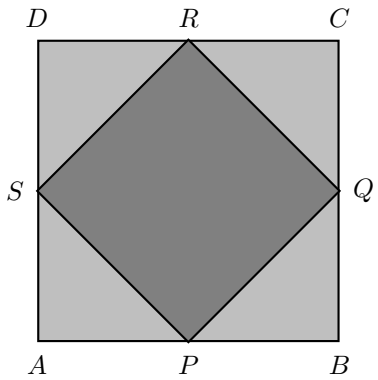
(b) How many black?

(c) How many black beads should be removed to make the probability of drawing a white bead $\frac{1}{2}$?

Score : 3, Time : 5 minutes

Concept : Probability as a number

Q.7.2 In the picture, P, Q, R, S are the mid-points of the square $ABCD$



(a) If the length of a side of the larger square is a, what is the length of a side of the smaller square?

(b) If a point is marked on the figure without looking, what is the probability of it to be within the small square?

Score : 3, Time : 5 minutes

Concept : Probability as a number

Q.7.3 In a box there are 6 black beads and 8 white beads and in another box, there are 8 black beads and 6 white beads.

(a) From which box is it more probable to draw a black bead?

(b) If all the beads are put together in a box, which colored bead is more probable to be drawn?

(c) What is the number denoting the probability of getting a white bead from this combined collection?

Score : 3, Time : 4 minutes

Concept : Probability as a number

Q.7.4 One says a three digit number. What is the probability of all digits being the same?

Score : 3, Time : 5 minutes

Concept : Counting techniques to compute probability

Q.7.5 Prime numbers less than 20 are written in paper slips and put in a box. All natural numbers upto 10 are written in another set of paper slips and put in a second box

(a) How many slips are there in the first box?

(b) How many slips in the second box have prime numbers on them?

(c) If one slip is drawn from each box, what is the probability of both being primes?

Score : 4, Time : 6 minutes

Concept : Counting techniques to compute probability

Q.7.6 Two boxes contain paper slips with numbers written on them. One box contains 10 even numbers and 15 odd numbers; the other has 20 even and 30 odd. If one slip is drawn from each box,

(a) what is the probability of both being odd?

(b) what is the probability of at least one of them being odd?

Score : 4, Time : 6 minutes

Concept : Counting techniques to compute probability

Q.7.7 In Class 10 A there are 20 boys and 15 girls and in Class 10 B, there are 15 boys and 15 girls. One student from each class is to be selected for participation in the Math Fair.

(a) What is the probability of both being boys?

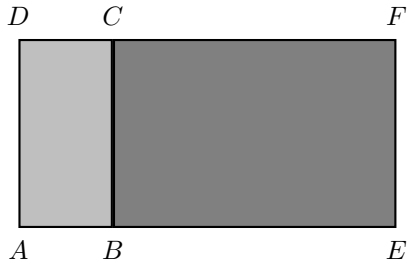
(b) What is the probability of both being girls?

(c) What is the probability of one being a boy and the other a girl?

Score : 5, Time : 10 minutes

Concept : Probability as number

Q.7.8 In the rectangles shown below, $AE = 10$ and $EF = 4$



Points are marked in it and it is found that the probability of a point being marked within the rectangle $ABCD$ is $\frac{1}{4}$

(a) What is the area of the rectangle $ABCD$?

(b) What is the probability of the point being marked within $BEFC$?

Score : 3, Time : 4 minutes

Concept : Probability as number

Q.7.9 A box contains 15 beads, some black and some white. The probability of drawing a black bead is known to be $\frac{1}{3}$

(a) How many black beads are there in the box?

(b) If one black bead is removed, what would be the probability of drawing a black bead from the remaining beads?

Score : 3, Time : 5 minutes

Concept : Probability as number

Q.7.10 Two boxes contain oranges. In taking one orange from each, the probability of both being ripe is computed to be $\frac{3}{8}$. What is the probability of at least one being unripe?

Score : 2, Time : 2 minutes

Concept : Probability as number

Q.7.11 In selecting a two digit number upto 50,

(a) what is the probability of the digit in the ten's place to be larger than the digit in the one's place?

(b) what is the probability of the digit in the ten's place to be smaller than the digit in the one's place?

Score : 3, Time : 5 minutes