

Probability Questions for SSC, UPSC, IBPS, Railway Exams Pdf

1. A bag contains 4 red balls, 6 blue balls and 8 pink balls. One ball is drawn at random and replace with 3 pink balls. A probability that the first ball drawn was either red or blue in colour and the second ball drawn was pink in colour?

a. 12/21

b. 13/17

c. 11/36

d. 13/18

Ans: C

Number of Red balls = 4

Number of Blue balls = 6

Number of Pink balls = 8

Total number of balls = 4 + 6 + 8 = 18

Required probability

$$\begin{aligned} &= \frac{4}{18} \times \frac{11}{20} + \frac{6}{18} \times \frac{11}{20} \\ &= \frac{11}{20} \left[\left(\frac{4}{18} + \frac{6}{18} \right) \right] \\ &= \frac{11}{20} \times \frac{10}{18} = \frac{11}{36} \end{aligned}$$

2. In a class, there are 15 boys and 10 girls. Three students are selected at random. The probability that the selected students are 2 boys and 1 girl, is

a. 21/46

b. 25/117

c. 1/50

d. 3/25

Ans: A

Let S be the sample space and let E be the event of selecting 2 boys and 1 girl.

Then, $n(S)$ = number of ways of selecting 3 students out of 25 = ${}^{25}C_3 = \frac{25 \times 24 \times 23}{3 \times 2 \times 1} = 2300$.

And, $n(E) = ({}^{15}C_2 \times {}^{10}C_1) = \left(\frac{15 \times 14}{2 \times 1} \times 10 \right) = 1050$.

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{1050}{2300} = \frac{21}{46}.$$

3. A basket contains 6 blue, 2 red, 4 green and 3 yellow balls. If four balls are picked up at random, what is the probability that 2 are red and 2 are green?

a. 4/15

b. 5/27

c. 1/3

d. 2/455

Ans: D

Total number of balls = $(6 + 2 + 4 + 3) = 15$.

Let E be the event of drawing 4 balls such that 2 are red and 2 are green.

Then, $n(E) = ({}^2C_2 \times {}^4C_2) = \left(1 \times \frac{4 \times 3}{2 \times 1} \right) = 6$.

And, $n(S) = {}^{15}C_4 = \frac{15 \times 14 \times 13 \times 12}{4 \times 3 \times 2 \times 1} = 1365$.

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{6}{1365} = \frac{2}{455}.$$

4. A basket contains 6 blue, 2 red, 4 green and 3 yellow balls. If three balls are picked up at random, what is the probability that none is yellow?

a. $3/455$

b. $1/5$

c. $4/5$

d. $44/91$

Ans: D

Total number of balls = $(6 + 2 + 4 + 3) = 15$.

Let E be the event of drawing 3 non-yellow balls.

$$\text{Then, } n(E) = {}^{12}C_3 = \frac{12 \times 11 \times 10}{3 \times 2 \times 1} = 220.$$

$$\text{Also, } n(S) = {}^{15}C_3 = \frac{15 \times 14 \times 13}{3 \times 2 \times 1} = 455.$$

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{220}{455} = \frac{44}{91}.$$

5. The probability that a card drawn from a pack of 52 cards will be a diamond or a king, is

a. $2/13$

b. $4/13$

c. $1/13$

d. $1/52$

Ans: B

Here, $n(S) = 52$.

There are 13 cards of diamond (including one king) and there are 3 more kings.

Let E = event of getting a diamond or a king.

$$\text{Then, } n(E) = (13 + 3) = 16.$$

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{16}{52} = \frac{4}{13}.$$

6. One card is drawn from a pack of 52 cards. What is the probability that the card drawn is either a red card or a king?

- a. $\frac{1}{2}$
- b. $\frac{6}{13}$
- c. $\frac{7}{13}$
- d. $\frac{27}{52}$

Ans: C

Here, $n(S) = 52$.

There are 26 red cards (including 2 kings) and there are 2 more kings.

Let E = event of getting a red card or a king.

Then, $n(E) = 28$.

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{28}{52} = \frac{7}{13}.$$

7. Three unbiased coins are tossed. What is the probability of getting at most two heads?

- a. $\frac{3}{4}$
- b. $\frac{1}{4}$
- c. $\frac{3}{8}$
- d. $\frac{7}{8}$

Ans: D

Here $S = \{TTT, TTH, THT, HTT, THH, HTH, HHT, HHH\}$.

Let E = event of getting at most two heads.

Then, $E = \{TTT, TTH, THT, HTT, THH, HTH, HHT\}$.

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{7}{8}.$$

8. Two cards are drawn from a pack of 52 cards. The probability that one is a spade and one is a heart, is

- a. $3/20$
- b. $29/34$
- c. $47/100$
- d. $13/102$

Ans: D

Let S be the sample space.

$$\text{Then, } n(S) = {}^{52}C_2 = \frac{(52 \times 51)}{(2 \times 1)} = 1326.$$

Let E = event of getting 1 spade and 1 heart.

$\therefore n(E)$ = number of ways of choosing 1 spade out of 13 and 1 heart out of 13

$$= ({}^{13}C_1 \times {}^{13}C_1) = (13 \times 13) = 169.$$

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{169}{1326} = \frac{13}{102}.$$

9. An urn contains 6 red, 4 blue, 2 green and 3 yellow marbles. If two marbles are picked up at random, what is the probability that either both are green or both are yellow?

- a. $5/91$
- b. $1/35$
- c. $1/3$
- d. $4/105$

Ans: D

. Total number of marbles = $(6 + 4 + 2 + 3) = 15$.

Let E be the event of drawing 2 marbles such that either both are green or both are yellow.

Then, $n(E) = {}^2C_1 + {}^3C_2 = (1 + {}^3C_1) = (1 + 3) = 4$. And,

$$n(S) = {}^{15}C_2 = \frac{15 \times 14}{2 \times 1} = 105.$$

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{4}{105}.$$

10. In a simultaneous throw of two dice, what is the probability of getting a total of 7?

a. $1/6$

b. $1/4$

c. $2/3$

d. $3/4$

Ans: A

We know that in a simultaneous throw of two dice, $n(S) = 6 \times 6 = 36$.

Let E = event of getting a total of 7

$= \{(1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1)\}$.

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{6}{36} = \frac{1}{6}.$$