BHARAT SCHOOL OF BANKING
PROBABILITY

Q.1. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?

A. $\dfrac{1}{2}$

B. $\dfrac{2}{5}$

C. $\dfrac{8}{15}$

D. $\dfrac{9}{20}$

Answer: Option **D**
Explanation:

Here, S = {1, 2, 3, 4, ..., 19, 20}.

Let E = event of getting a multiple of 3 or 5 = {3, 6 , 9, 12, 15, 18, 5, 10, 20}.

∴ P(E) = $\dfrac{n(E)}{n(S)}$ = $\dfrac{9}{20}$.

Q.2. A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?

A. $\dfrac{10}{21}$

B. $\dfrac{11}{21}$

C. $\dfrac{2}{7}$

D. $\dfrac{5}{7}$

Answer: Option **A**
Explanation:

Total number of balls = (2 + 3 + 2) = 7.

Let S be the sample space.

Then, n(S) = Number of ways of drawing 2 balls out of 7

$$= {}^7C_2 \text{ `}$$

$$= \frac{(7 \times 6)}{(2 \times 1)}$$

$$= 21.$$

Let E = Event of drawing 2 balls, none of which is blue.

∴ $n(E)$ = Number of ways of drawing 2 balls out of (2 + 3) balls.

$$= {}^5C_2$$

$$= \frac{(5 \times 4)}{(2 \times 1)}$$

$$= 10.$$

∴ $P(E) = \dfrac{n(E)}{n(S)} = \dfrac{10}{21}.$

Q.3. In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green?

A. $\dfrac{1}{3}$

B. $\dfrac{3}{4}$

C. $\dfrac{7}{19}$

D. $\dfrac{8}{21}$

E. $\dfrac{9}{21}$

Answer: Option **A**

Explanation:

Total number of balls = (8 + 7 + 6) = 21.

Let E = event that the ball drawn is neither red nor green

= event that the ball drawn is blue.

$\therefore$ $n(E) = 7$.

$\therefore$ $P(E) = \dfrac{n(E)}{n(S)} = \dfrac{7}{21} = \dfrac{1}{3}$.

Q.4. What is the probability of getting a sum 9 from two throws of a dice?

A. $\dfrac{1}{6}$

B. $\dfrac{1}{8}$

C. $\dfrac{1}{9}$

D. $\dfrac{1}{12}$

Answer: Option **C**

Explanation:

In two throws of a dice, $n(S) = (6 \times 6) = 36$.

Let E = event of getting a sum = {(3, 6), (4, 5), (5, 4), (6, 3)}.

$\therefore$ $P(E) = \dfrac{n(E)}{n(S)} = \dfrac{4}{36} = \dfrac{1}{9}$.

Q.5. Three unbiased coins are tossed. What is the probability of getting at most two heads?

A. $\dfrac{3}{4}$

B. $\dfrac{1}{4}$

C. $\dfrac{3}{8}$

D. $\dfrac{7}{8}$

Answer: Option **D**

Explanation:

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}.

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

Q.6.Two dice are thrown simultaneously. What is the probability of getting two numbers whose product is even?

A. $\frac{1}{2}$

B. $\frac{3}{4}$

C. $\frac{3}{8}$

D. $\frac{5}{16}$

Answer: Option **B**
Explanation:
In a simultaneous throw of two dice, we have $n(S)$ = (6 x 6) = 36.
Then, E = {(1, 2), (1, 4), (1, 6), (2, 1), (2, 2), (2, 3), (2, 4), (2, 5), (2, 6), (3, 2), (3, 4),

(3, 6), (4, 1), (4, 2), (4, 3), (4, 4), (4, 5), (4, 6), (5, 2), (5, 4), (5, 6), (6, 1),

(6, 2), (6, 3), (6, 4), (6, 5), (6, 6)}

∴ $n(E)$ = 27.

∴ P(E) = $\frac{n(E)}{n(S)}$ = $\frac{27}{36}$ = $\frac{3}{4}$.

Q.7. In a class, there are 15 boys and 10 girls. Three students are selected at random. The probability that 1 girl and 2 boys are selected, is:

A. $\frac{21}{46}$

B. $\underline{25}$

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C. $\dfrac{1}{50}$

D. $\dfrac{3}{25}$

Answer: Option **A**
Explanation:

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

Then, n(S) = Number ways of selecting 3 students out of 25

$$= {}^{25}C_3 \;{}^{\backprime}$$

$$= \frac{(25 \times 24 \times 23)}{(3 \times 2 \times 1)}$$

$$= 2300.$$

n(E) = $({}^{10}C_1 \times {}^{15}C_2)$

$$= \left[10 \times \frac{(15 \times 14)}{(2 \times 1)} \right]$$

$$= 1050.$$

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

Q.8. In a lottery, there are 10 prizes and 25 blanks. A lottery is drawn at random. What is the probability of getting a prize?

A. $\dfrac{1}{10}$

B. $\dfrac{2}{5}$

C. $\dfrac{2}{7}$

D. $\dfrac{5}{7}$

Answer: Option **C**
Explanation:

P (getting a prize) = $\dfrac{10}{(10 + 25)} = \dfrac{10}{35} = \dfrac{2}{7}$.

Q.9. From a pack of 52 cards, two cards are drawn together at random. What is the probability of both the cards being kings?

A. $\dfrac{1}{15}$

B. $\dfrac{25}{57}$

C. $\dfrac{35}{256}$

D. $\dfrac{1}{221}$

Answer: Option **D**
Explanation:

Let S be the sample space.

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

Let E = event of getting 2 kings out of 4.

∴ $n(E) = {}^{4}C_2 = \dfrac{(4 \times 3)}{(2 \times 1)} = 6$.

∴ $P(E) = \dfrac{n(E)}{n(S)} = \dfrac{6}{1326} = \dfrac{1}{221}$.

Q.10. Two dice are tossed. The probability that the total score is a prime number is:

A. $\dfrac{1}{6}$

B. $\dfrac{5}{12}$

C. $\dfrac{1}{2}$

D. $\dfrac{7}{9}$

Answer: Option **B**

Explanation:

Clearly, $n(S) = (6 \times 6) = 36$.

Let E = Event that the sum is a prime number.

Then E = { (1, 1), (1, 2), (1, 4), (1, 6), (2, 1), (2, 3), (2, 5), (3, 2), (3, 4), (4, 1), (4, 3),

(5, 2), (5, 6), (6, 1), (6, 5) }

∴ $n(E) = 15$.

∴ $P(E) = \dfrac{n(E)}{n(S)} = \dfrac{15}{36} = \dfrac{5}{12}$.