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Probability Questions for Bank Exams – Probability Quiz at Smartkeeda.

Probability Quiz 1

Directions (Set of 2 Questions): Kindly study the following information carefully and answer the question that follows:

A shop sells 10 tube lights out of which 3 are defective. Salman buys four tube lights.

1. Find the probability that at least two of the tube lights that he buys work.

- A. $\frac{29}{30}$ B. $\frac{34}{35}$ C. $\frac{14}{15}$
D. $\frac{24}{25}$ E. None of these

2. Find the probability that all of Salman's tube lights work.

- A. $\frac{1}{15}$ B. $\frac{1}{25}$ C. $\frac{1}{30}$
D. $\frac{1}{35}$ E. None of these

Directions (Set of 2 Questions): Kindly study the following information carefully and answer the question that follows:

From a box containing 8 yellow and 5 white pens, three are drawn one after the other.

3. Find the probability of all three pens being yellow if the pens drawn are not replaced?

- A. $\frac{336}{1716}$ B. $\frac{128}{429}$ C. $\frac{113}{1716}$
D. $\frac{336}{2197}$ E. None of these

4. Find the probability of all three pens being yellow if the pen drawn is replaced by another yellow colored pen before the next pen is picked.

- A. $\frac{336}{2197}$ B. $\frac{512}{2197}$ C. $\frac{40}{2197}$
D. $\frac{57}{91}$ E. None of these

Directions (Set of 2 Questions): Kindly study the following information carefully and answer the question that follows:

A box contains 4 white, 6 green, 2 red and 5 yellow pens.

5. If two pens are picked at random, what is the probability that both of them are green?

A. $\frac{5}{136}$

B. $\frac{1}{136}$

C. $\frac{15}{136}$

D. $\frac{8}{15}$

E. $\frac{121}{136}$

6. If 4 pens are picked at random, what is the probability that one of them is green, 2 are white and 1 is yellow?

A. $\frac{3}{169}$

B. $\frac{1}{13}$

C. $\frac{9}{13}$

D. $\frac{9}{169}$

E. None of these

Directions (Set of 2 Questions): Kindly study the following information carefully and answer the question that follows:

There are three identical boxes, A, B, and C. Box A contains 3 red balls and 2 blue balls. Box B contains 2 red and 5 blue balls and Box C contains 2 blue, 1 red and 1 white ball. One ball is drawn from one of the boxes at random.

7. Find the probability that it is blue.

A. $\frac{53}{140}$

B. $\frac{113}{140}$

C. $\frac{53}{210}$

D. $\frac{13}{140}$

E. None of these

8. Find the probability that it is red.

A. $\frac{53}{70}$

B. $\frac{53}{140}$

C. $\frac{3}{70}$

D. $\frac{7}{19}$

E. None of these

Directions (Set of 2 Questions): Kindly study the following information carefully and answer the question that follows:

A basket contains 3 blue, 2 green and 5 red bottles.

9. If four bottles are picked at random, what is the probability that two are green and two are blue?

A. $\frac{1}{18}$

B. $\frac{1}{70}$

C. $\frac{3}{5}$

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

E. None of these

10. If three bottles are picked at random, what is the probability that at least one is red?

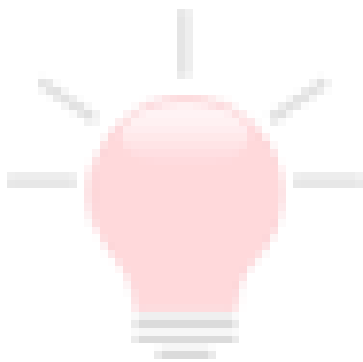
A. $\frac{1}{2}$

B. $\frac{7}{12}$

C. $\frac{11}{12}$

D. $\frac{1}{5}$

E. $\frac{1}{6}$



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Correct Answers:

1	2	3	4	5	6	7	8	9	10
A	E	A	B	C	E	E	B	B	C

Explanations:

1. Following the common explanation, we get

Probability that at least two of Salman's tube lights work

$$= \frac{29}{30}$$

Hence, option A is correct.

Common Explanation:

$$n(S) = {}^{10}C_4 = 210$$

7 of the 10 lamps are not defective.

∴ If T is the event that all of Salman's tube lights work,

$$n(T) = {}^7C_4 = 35$$

∴ Probability that all of Salman's tube lights work

$$= \frac{35}{210} = \frac{1}{6}$$

We need the probability that at least two of his tube lights work.

The event that less than two of his tube lights work,

and the event that at least two of his tube lights work, are exhaustive.

So, we calculate the probability that less than two of his tube lights work and subtract it from 1.

The probability that none of Salman's tube lights work = 0 as there are only 3 defective tube-lights and he buys

4. If K is the probability that only one of Salman's tube lights works,

$$n(K) = {}^7C_1 \times {}^3C_3 = 7$$

∴ Probability that less than two of Salman's tube lights work

$$= \frac{7}{210} = \frac{1}{30}$$

∴ Probability that at least two of Salman's tube lights work

$$= 1 - \frac{1}{30} = \frac{29}{30}$$

2. Following the common explanation, we get

Probability that all of Salman's tube lights work

$$= \frac{1}{6}$$

Hence, option E is correct.

Common Explanation:

$$n(S) = {}^{10}C_4 = 210$$

7 of the 10 lamps are not defective.

∴ If T is the event that all of Salman's tube lights work,

$$n(T) = {}^7C_4 = 35$$

∴ Probability that all of Salman's tube lights work

$$= \frac{35}{210} = \frac{1}{6}$$

We need the probability that at least two of his tube lights work.

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4. If K is the probability that only one of Salman's tube lights works,

$$n(K) = {}^7C_1 \times {}^3C_3 = 7$$

∴ Probability that less than two of Salman's tube lights work

$$= \frac{7}{210} = \frac{1}{30}$$

∴ Probability that at least two of Salman's tube lights work

$$= 1 - \frac{1}{30} = \frac{29}{30}$$

3. If the pens are being drawn one after another, the probability of drawing any color of pens for every fresh draw changes.

$$\therefore \text{Reqd probability} = \frac{8}{13} \times \frac{7}{12} \times \frac{6}{11} = \frac{336}{1716}$$

Hence, option A is correct.

4. When the pens drawn are replaced, we can see that the number of pens available for drawing out will be the same for every draw. This means that the probability of a yellow pen appearing in every draw are will be the same.

$$\therefore \text{Reqd probability} = \frac{8}{13} \times \frac{8}{13} \times \frac{8}{13} = \frac{512}{2197}$$

Hence, option B is correct.

5. Total number of pens = 4 + 6 + 2 + 5 = 17

$$\therefore n(S) = {}^{17}C_2 = \frac{17 \times 16}{2} = 136$$

$$\therefore n(E) = {}^6C_2 = \frac{5 \times 6}{1 \times 2} = 15$$

$$\therefore \text{Reqd probability} = \frac{15}{136}$$

Hence, option C is correct.

6.

$$\text{Reqd probability } p(E) = \frac{n(E)}{n(S)}$$

$$\therefore \text{ Number of sample space } n(S) = {}^{17}C_4$$

$$= \frac{17 \times 16 \times 15 \times 14}{1 \times 2 \times 3 \times 4} = \frac{57120}{24} = 2380$$

$$\text{Number of events } n(E) = {}^6C_1 \times {}^4C_2 \times {}^5C_1 = 6 \times 3 \times 2 \times 5 = 180$$

$$p(E) = \frac{180}{2380} = \frac{18}{238} = \frac{9}{119}$$

Hence, option E is correct.

8. The ball is drawn from box A or Box B or Box C.

The probability that a ball drawn from Box A is red is $\frac{3}{5}$.

The probability that a ball drawn from box B is red is $\frac{2}{7}$

The probability that a ball drawn from box C is red is $\frac{1}{4}$

Probability of selecting any one of the three boxes = $\frac{1}{3}$

\therefore Probability that the ball is red is

$$\frac{1}{3} \left(\frac{3}{5} + \frac{2}{7} + \frac{1}{4} \right) = \frac{53}{140}$$

Hence, option B is correct.

9. Total number of outcomes = ${}^{10}C_4 = 210$

Favourable number of outcomes = ${}^3C_2 \times {}^2C_2 = 3 \times 1 = 3$

$$\therefore \text{ Required probability} = \frac{3}{210} = \frac{1}{70}$$

Hence, option B is correct.

10. Total number of outcomes = ${}^{10}C_3 = 120$

Number outcomes not containing red bottles = ${}^5C_3 = 10$

\therefore Probability that at least one is red

$$= 1 - \frac{10}{120} = \frac{11}{12}$$

Hence, option C is correct.



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