ULTIMATE KCET CRASH COURSE 2026

MATHS

PROBABILITY

DPP: 1

Q1 A single letter is selected at random from the word "FAVOURABLE". The probability that it is a vowel, is

(A) 1/5 (B) 2/5

(C) 3/5 (D) None of these

Q2 An urn contains nine balls of which three are red, four are blue and two are green. There balls are drawn at random without replacement from the urn. The probability that the three balls have different colours is

(A) 1/3 (B) 2/7

(C) 1/21 (D) 2/23

Q3 Three unbiased coins are tossed, the probability that 3 heads will result, if it is known that there will be at least one head is

(A) 5/7 (B) 3/7

(C) 1/7 (D) 2/7

Q4 A bag contains 5 brown and 4 white socks. A man pulls out 2 socks. The probability that they are of the same colour is

(A) 5/108 (B) 1/6

(C) 5/18 (D) 4/9

Q5 A bag contains 17 tickets numbered from 1 to 17. A ticket is drawn at random, then another ticket is drawn without replacing the first one. The probability that both the tickets may show even numbers is

(A) $\frac{7}{34}$ (B) $\frac{8}{17}$

(C) $\frac{7}{16}$ (D) $\frac{7}{17}$

Q6 Two cards are drawn at random from a pack of 52 cards. The probability of these two being "Aces" is

(A) $\frac{1}{26}$ (B) $\frac{1}{221}$

(C) $\frac{1}{2}$ (D) $\frac{1}{13}$

Q7 Two dice are thrown and the sum of the numbers which come up on the dice is noted. Let us consider the following events associated with this experiment.

A : "the sum is even"

B : "the sum is a multiple of 3".

C : "the sum is less than 4".

D : "the sum is greater than 11".

Which pair of these events is mutually exclusive?

(A) A and B (B) B and C

(C) C and D (D) A and C

Q8 *A* and *B* are events such that $P(A \cap B)= \frac{1}{4},\ P\left(\overline{A} \cap \overline{B}\right)= \frac{1}{5}$ *and* $P(A)$p. $= P(B)=$

Then q =

(A) $\frac{19}{40}$ (B) $\frac{1}{2}$

(C) $\frac{21}{40}$ (D) $\frac{2}{5}$

Q9 If $\frac{1+3p}{3}, \frac{1-2p}{2}$ are probabilities of two mutually exclusive events, then p lies in the interval

(A) $\left[-\frac{1}{3}, \frac{1}{2}\right]$ (B) $\left[-\frac{1}{2}, \frac{1}{2}\right]$

(C) $\left[-\frac{1}{3}, \frac{2}{3}\right]$ (D) $\left[-\frac{1}{3}, \frac{2}{3}\right]$

Q10 Two letters are chosen from the letters of the word 'EQUATIONS'. The probability that one is vowel and the other is consonant is

(A) $\frac{8}{9}$ (B) $\frac{3}{9}$

(C) $\frac{4}{9}$ (D) $\frac{5}{9}$

Q11 If P(A) = 2/3, P(B) = 1/2 and P(A B) = 7/6 then events A and B are

(A) Mutually exclusive

(B) Independent as well as mutually exhaustive

(C) Independent

(D) Dependent only on A

Q12 A box contains 6 red marbles numbers from 1 through 6 and 4 white marbles 12 through 15. Find the probability that a marble drawn 'at random' is white and odd numbered.

(A) 1/5 (B) 1/6
(C) 5 (D) 6

Q13 If *A, B, C* are three mutually exclusive and exhaustive events of an experiment such that $P(A) = P(B) = 3P(C)$, then $P(B)$ is equal to

(A) 2/7 (B) 3/7
(C) 4/7 (D) 1/7

Q14 The probability of drawing a heart from a well shuffled pack of 52 cards is

(A) 1/4 (B) 1/52
(C) 4/17 (D) 16/17

Q15 If $P(A \cap B) = \frac{7}{10}$ and $P(B) = \frac{17}{20}$, then $P(A|B)$ equals

(A) 14/17 (B) 17/20
(C) 7/8 (D) 1/8

Q16 If letters of the word 'PENCIL' are arranged in random order, then the probability that N is always next to E is

(A) 1/6 (B) 1/2
(C) 4/3 (D) 2/6

Q17 In a book of 100 pages, if a page is opened at random, the probability that the number on it is a prime is

(A) 1/2 (B) 1/3
(C) 1/4 (D) 1/8

Q18 A bag contains 5 red balls and some blue balls. If the probability of drawing blue ball is double that of red ball, the number of blue balls must be

(A) 10 (B) 15
(C) 20 (D) 25

Q19 The probabilities of winning the race by two athletes A and B are $\frac{1}{5}$ and $\frac{1}{4}$. The probability of winning by neither of them, is

(A) $\frac{3}{5}$ (B) $\frac{3}{4}$
(C) $\frac{2}{5}$ (D) $\frac{4}{5}$

Q20 Two dice are thrown together. The probability that sum of the two numbers will be a multiple of 4 is

(A) $\frac{1}{9}$ (B) $\frac{1}{3}$
(C) $\frac{1}{4}$ (D) $\frac{5}{9}$

Q21 Six cards are drawn simultaneously from a pack of playing cards. What is the probability that 3 will be red and 3 black

(A) ${}^{26}C_6$
(B) $\frac{{}^{26}C_3}{{}^{52}C_6}$
(C) $\frac{{}^{26}C_3 \times {}^{26}C_3}{{}^{52}C_6}$
(D) $\frac{1}{2}$

Q22 From the set of numbers {1, 2, 3, 4, 5, 6, 7, 8} two numbers are selected at random without replacement. The probability that their sum is more than 13 is

(A) 1/14 (B) 2/7
(C) 3/7 (D) 4/7

Q23 If $P(A) = 0.59, P(B) = 0.3$ and $P(A \cap B) = 0.21$, then $P(A' \cap B') =$

(A) 0.11 (B) 0.38
(C) 0.32 (D) 0.35

Q24 A number is randomly drawn from first 120 natural numbers. The probability that the selected number is a multiple of 5 and 15 is

(A) 1/8 (B) 1/5
(C) 1/24 (D) 1/12

Q25 There are 100 pages in a book. If a page of the book is opened at random, the probability that the number on the page is two digit number made up with the same digit is

(A) 8/100 (B) 9/100

(C) 1/10 (D) 8/10

Q26 If A and B an two events such that $P(A \cup B) = \frac{5}{6} P(A \cap B) = \frac{1}{3}$ and $P(B') = \frac{1}{3}$

then P(A) =

(A) $\frac{1}{4}$ (B) $\frac{1}{3}$

(C) $\frac{1}{2}$ (D) $\frac{2}{3}$

Q27 Two persons A and B appear in an interview for two vacancies. If the probability of their selections are 1/5 and 1/6 respectively then probability that none of them is selected is

(A) 5/6 (B) 1/30

(C) 3/5 (D) 2/3

Q28 A box contains 6 nails and 10 nuts. Half of the nails and half of the nuts are rusted. If one item is chosen at random, what is the probability that it is rusted or is a nail

(A) $\frac{3}{16}$ (B) $\frac{5}{16}$

(C) $\frac{11}{16}$ (D) $\frac{14}{16}$

Q29 The probability of happening of an event A is 0.5 and that of B is 0.3. If A and B are mutually exclusive events, then the probability of neither A nor B is

(A) 0.4 (B) 0.5

(C) 0.2 (D) 0.9

Q30 Three letters are written to different persons, and addresses on three envelopes are also written, Without looking at the addresses, the probability that the letters go into right envelopes is

(A) 1/27 (B) 1/6

(C) 1/9 (D) None of these

Answer Key

Q1	B
Q2	B
Q3	C
Q4	D
Q5	A
Q6	B
Q7	C
Q8	C
Q9	A
Q10	D
Q11	A
Q12	A
Q13	B
Q14	A
Q15	A
Q16	A
Q17	C
Q18	A
Q19	A
Q20	C
Q21	C
Q22	A
Q23	C
Q24	B
Q25	B
Q26	C
Q27	D
Q28	C
Q29	C
Q30	B

Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:

Number of vowels are 4 i.e., A, O, U, E

\ One can be chosen by $^4C_1$ ways.

Total letters in the given word = 10

\ Required Probability = 4/10 = 2/5

Video Solution:

Q2 Text Solution:

$n(S) = {}^9C_3 = \frac{9\times8\times7}{6} = 84$

$n(E) = {}^3C_1 \cdot {}^4C_1 \cdot {}^2C_1 = 3\times4\times2 = 24$

Thus, required probability $= \frac{24}{84} = \frac{2}{7}$

Video Solution:

Q3 Text Solution:

Probability of getting 3 heads=1/8

probability of not getting any head =1/8

probability of getting atleast one head =1-1/7=7/8

required probability =1/7

Video Solution:

Q4 Text Solution:

Two socks can be drawn out of nine in $^9C_2$ ways.

These can be of the same colour in $^5C_2$ + $^4C_2$ ways.

(Both the socks may be white or both may be brown)

$\therefore$ Required probability $= \frac{{}^5C_2+{}^4C_2}{{}^9C_2} = \frac{10+6}{36}$

$= \frac{16}{36} = \frac{4}{9}$

Video Solution:

Q5 Text Solution:

Out of 17 tickets in the bag one ticket can be drawn in 17 ways.

Now, out of 8 even numbered tickets, namely, 2, 4, 6, 8, 10, 12, 14, 16 two tickets can be drawn in $^8C_2$ ways.

$\because$ Tickets are drawn without replacing

$\therefore$ Required probability = $\frac{{}^8C_2}{{}^{17}C_2} = \frac{7}{34}$

Video Solution:

Q6 Text Solution:

Required probability = $\frac{{}^4C_2}{{}^{52}C_2} = \frac{4\times3}{52\times51} = \frac{1}{221}$

Video Solution:

Q7 Text Solution:

There are 36 elements in the sample space, given by S = {(*x*, *y*): *x*, *y* Î {1, 2, 3, 4, 5, 6}}

Then, *A* = {(1, 1), (1, 3), (1, 5), (2, 2), (2, 4), (2, 6), (3, 1), (3, 3), (3, 5), (4, 2), (4, 4), (4, 6), (5, 1), (5, 3), (5, 5), (6, 2), (6, 4), (6, 6)}

B = {(1, 2), (2, 1), (1, 5), (5, 1), (3, 3), (2, 4), (4, 2), (3, 6), (6, 3), (4, 5), (5, 4), (6, 6)}

C = {(1, 1), (2, 1), (1, 2)} and *D* = {(6, 6)}

We find that.

A Ç *B* = {(1, 5), (2, 4), (3, 3), (4, 2), (5, 1), (6, 6)} ¹ f

Therefore, *A* and *B* are not mutually exclusive events.

Similarly, *A* Ç *C* ¹ f and *B* Ç *C* ¹ f.

Thus, the pairs, (*A*, *B*), (*A*, *C*), (*B*, *C*) are not mutually exclusive events.

But *C* Ç *D* = f, *C* and *D* are mutually exclusive events

Video Solution:

Q8 Text Solution:

$P\left(\overline{A}\cap\overline{B}\right)=\frac{1}{5}$

$\Rightarrow P(A\cup B)=1-P\left(\overline{A\cup B}\right)$

$\left[\because P\left(\overline{A}\cap B\right)=\left(\overline{A\cup B}\right)\right]$

$\Rightarrow P(A\cup B)=\frac{4}{5}$

Now, $P(A\cup D)=P(A)+P(B)-P(A\cap B)$

$\Rightarrow \frac{4}{5}=P(A)+P(B)-P(A\cap B)=2p-\frac{1}{4}$

$\Rightarrow 2p=\frac{4}{5}+\frac{1}{4}\Rightarrow p=\frac{21}{40}$

Video Solution:

Q9 Text Solution:

Since, events are mutually exclusive

$\therefore\ 0\le\frac{1+3p}{3}\le1, 0\le\frac{1-2p}{2}\le1$

$\Rightarrow\ -\frac{1}{3}\le p\le\frac{2}{3}\ and\ -\frac{1}{2}\le p\le\frac{1}{2}\Rightarrow p\in\left[-\frac{1}{3},\frac{1}{2}\right]$

Video Solution:

Q10 Text Solution:

The word 'EQUATIONS' has 9 letters, among them 5 are vowels and 4 are consonants.

∴ Required probability = $\frac{{}^5C_1\times{}^4C_1}{{}^9C_2} = \frac{5\times4}{9\times4} = \frac{5}{9}$

Video Solution:

Q11 **Text Solution:**

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$\frac{7}{6} = \frac{2}{3} + \frac{1}{2} - P(A \cap B) \Rightarrow P(A \cap B) = 0$$

Video Solution:

Q12 **Text Solution:**

Number of red marbles = 6

Number of white marbles & odd numbered = 2

Total number of balls = 10

$\therefore$ Required probability = $\frac{{}^{2}C_1}{{}^{10}C_1} = \frac{2}{10} = \frac{1}{5}$

Video Solution:

Q13 **Text Solution:**

We have, A, B, C are mutually exclusive and exhaustive events.

$$\therefore A \cap B = B \cap C = C \cap A = A \cap B \cap C = \phi$$

$$\Rightarrow P(A \cap B) = P(B \cap C) = P(C \cap A) = P(A \cap B \cap C) = 0$$

$$\text{Now, } P(A) = P(B) = 3P(C)$$

$$\Rightarrow P(A) = P(B) \text{ and } P(C) = \frac{1}{3}P(B)$$

$$\therefore P(A \cup B \cup C) = P(A) + P(B) + P(C)$$

$$\Rightarrow 1 = P(B) + P(B) + \frac{1}{3}P(B)$$

$$\Rightarrow 1 = \frac{7}{3}P(B) \Rightarrow P(B) = \frac{3}{7}$$

Video Solution:

Q14 **Text Solution:**

Since there are 13 cards of heart and we have to draw one cards of heart out of 52 cards

$\therefore$ Required probability $= \frac{13}{52} = \frac{1}{4}$

Video Solution:

Q15 **Text Solution:**

$$P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)} = \frac{7/10}{17/20} = \frac{7}{10} \times \frac{20}{7} = \frac{14}{17}$$

Video Solution:

Q16 **Text Solution:**

6 letters of the word 'PENCIL' can be arranged in 6! ways.

Treating E N as one word, letters can be arranged in 5! ways.

\ Required probability $= \frac{5!}{6!} = \frac{1}{6}$

Video Solution:

Q17 **Text Solution:**

Total number of primes from 1to 100 = 25

\ Required Probability $= \frac{25}{100} = \frac{1}{4}$

Video Solution:

Q18 **Text Solution:**

Let the bag contains x blue balls. According to question, P(blue balls) = 2 P(red balls)

$\Rightarrow \frac{x}{5+x} = 2\left(\frac{5}{5+x}\right) \Rightarrow x = 10$

Video Solution:

Q19 **Text Solution:**

$P(A' \cap B') = \frac{4}{5} \cdot \frac{3}{4} = \frac{3}{5}$

Video Solution:

Q20 **Text Solution:**

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

Hence required probability $= \frac{9}{36} = \frac{1}{4}$

Video Solution:

Q21 **Text Solution:**

The required probability is

$\frac{^{26}C_3 \times ^{26}C_3}{^{52}C_6}$

Video Solution:

Q22 **Text Solution:**

The sample space for given condition is

(1, 8), (2, 8), (3, 8), (4, 8), (5, 8), (6, 8), (7, 8), (1, 7), (2, 7), (3, 7), (4, 7), (5, 7),.....(1, 2)

\ Number of elements in sample space = 28

Number of elements whose sum is more than 13 is '2' i.e., (6, 8), (7, 8)

\ Required probability $= \frac{2}{28} = \frac{1}{14}$

Video Solution:

Q23 **Text Solution:**

$P(A' \cap B') = P[(A \cup B)'] = 1 - P(A \cup B)$

$= 1 - [0.59 + 0.3 - 0.21] = 0.32$

Video Solution:

Q24 **Text Solution:**

From first 120 natural numbers, the numbers of multiple of 5 are n(A) = 24 and that of multiple of 15 aren (B) = 8 and n (A ∩ B)=8

\ n(A ∪ B) = n(A)+n(B)-n(A ∪ B)= 24 + 8 - 8 = 24 and n(S) = 120

Hence, required probability $= \frac{n(A \cup B)}{n(S)} = \frac{24}{120} = \frac{1}{5}$

Video Solution:

Q25 **Text Solution:**

Total numbers according to given condition = 9

\ Required probability = 9/100

Video Solution:

Q26 **Text Solution:**

$P(A) = P(A \cap B) + P(A \cup B) - P(B)$

$= \frac{1}{3} + \frac{5}{6} - \frac{2}{3} = \frac{3}{6} = \frac{1}{2}$

Video Solution:

Q27 **Text Solution:**

$P(\overline{A} \cap \overline{B}) = P(\overline{A \cup B}) = I - P(A \cup B)$

Video Solution:

Q28 **Text Solution:**

Required probability $= \frac{3+8}{6+10} = \frac{11}{16}$

Video Solution:

Q29 **Text Solution:**

A and B are mutually exclusive events.

$\therefore P(A \cap B) = 0$

$\therefore P(A \cup B) = P(A) + P(B) - P(A \cap B) = 0$

$.5 + 0.3 = 0.8$

Thus,

$P(\overline{A} \cap \overline{B}) = P(\overline{A \cup B}) = 1 - P(A \cup B)$

$= 1 - 0.8 = 0.2$

Video Solution:

Q30 Text Solution:

∵Total number of ways = 3! = 6 and favourable number of ways = 1.

$\therefore$ Required probability $= \frac{1}{6}$

Video Solution: