MATHS

BOOKS - CBSE COMPLEMENTARY MATERIAL MATHS (HINGLISH)

PROBABILITY

Very Short Answer Type Questions True False

1. State True or False: When a die is rolled, sample space S = {1, 2, 3, 4, 5, 6}. Let some of

the events are A = {2, 3}, B = {1, 3,5}, C = {4, 6}, D = {6} and E = {1,5}. (i) Events A and B are Mutually Exclusive Events.

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2. When a die is rolled, sample space S = {1, 2, 3, 4, 5, 6}. Let some of the events are A = {2, 3}, B = {1, 3,5}, C = {4, 6}, D = {6} and E = {1,5}.

(ii) Events A and Care Mutually Exclusive Events.

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3. When a die is rolled, sample space S = {1, 2, 3, 4, 5, 6}. Let some of the events are A = {2, 3}, B = {1, 3,5}, C = {4, 6}, D = {6} and E = {1,5}.

(iii) Events A, B and Care Exhaustive Events.

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4. When a die is rolled, sample space S = {1, 2, 3, 4, 5, 6}. Let some of the events are A = {2, 3}, B = {1, 3,5}, C = {4, 6}, D = {6} and E = {1,5}.

(iv) Event A is Simple Event.

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5. When a die is rolled, sample space S = {1, 2, 3, 4, 5, 6}. Let some of the events are A = {2, 3}, B = {1, 3,5}, C = {4, 6}, D = {6} and E = {1,5}.

(v) Event D is Compound Event.

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Very Short Answer Type Questions Fill In The Blanks

1. Let S = {1, 2, 3, 4, 5, 6} and E = {1, 3, 5), then $\overline{E}$ is

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2. 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 either A or B is

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3. 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.....

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4. The probability that the Indian team will win the world Cup 2019 is 0.92, the probability that it will shared by two countries is 0.01, and the

probability that India will not won the World Cup 2019 is

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5. Suppose a fair die is rolled. Then the probability of getting a multiple of 2 or 3 or 5 is

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6. Two fair dice are rolled. What is the probability of getting a sum of 7 ?

7. When a pair of fair dice is rolled, then the probability of getting the sum as multiple of 3 is

8. When a pair of fair dice is rolled, then neither the probability of getting the sum neither even nor a multiple of 5 is

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

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

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Very Short Answer Type Questions

1. Without repetition of the numbers, four digit numbers are formed with the numbers $0, 2, 3, 5$. The probability of such a number divisible by 5 is

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

B. $\frac{4}{5}$

C. $\frac{5}{9}$

D. $\frac{1}{30}$

Answer: C

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2. Three digit numbers are formed using the digits 0,2,4,6,8. A number is chosen at random out of these numbers what is the probability that this number has the same digits? a. $\frac{1}{16}$ b. $\frac{16}{25}$ c. $\frac{1}{645}$ d. $\frac{1}{25}$

A. $\frac{1}{16}$

B. $\frac{16}{25}$

C. $\frac{1}{65}$

D. $\frac{1}{25}$

Answer: D

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3. Find the probability that a non - leap year contains a) 53 Sundays b) 52 sundays

A. 0

B. 1

C. $\frac{1}{7}$

D. $\frac{2}{7}$

Answer: B

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4. The probability that a non-leap your selected at random will contain 53 Sunday is

A. 0

B. 1

C. $\frac{1}{7}$

D. $\frac{2}{7}$

Answer: C

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5. The probability that a leap year selected at random will have 54 Sundays is

A. 0

B. 1

C. $\frac{1}{7}$

D. $\frac{2}{7}$

Answer: A

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6. Three unbiased coins are tossed. If the probability of getting at least 2 tails is p. Then the value of 8p -

A. 0

B. 1

C. 3

D. 4

Answer: D

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7. Four unbiased coins are tossed. If the probability of getting odd number of tails is p, then the value of 16p -

A. 1

B. 2

C. 4

D. 8

Answer: D

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8. From 4 red balls, 2 white balls and 4 black balls, four balls are selected. The probability of getting 2 red balls is p, then the value of 7p

A. 1

B. 2

C. 3

D. 4

Answer: C

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9. Describe the Sample Space for the experiment:

A coin is tossed twice and number of heads is recorded.

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10. Describe the Sample Space for the experiment:

A card is drawn from a deck of playing cards and its colour is noted.

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11. Describe the Sample Space for the experiment:

A coin is tossed repeatedly until a tail comes up.

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12. Describe the Sample Space for the experiment:

A coin is tossed. If it shows head, we draw a ball from a bag consisting of 2 red and 3 black balls. If it shows tail, coin is tossed again.

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13. A box contains 1 red and 3 black balls. Two balls are drawn at random in succession

without replacement. Write the sample space for this experiment.

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14. A coin is tossed. For this random experiment write the sample space and find n(S).

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15. One number is chosen at random from the numbers 1 to 21. What is the probability that it is prime?

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16. What is the probability that a given two-digit number is divisible by 15?

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17. If $P(A \cup B) = P(A) + P(B)$, then what can be said about the events A and B ?

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18. "If " P(AcupB)=P(AcapB)" for any two events A and B, then"`

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Short Answer Type Questions

1. Let A and B be two events such that $P(A) = 0.3$ and $P(A \cup B) = 0.8$. Find $P(B)$, if $P(A \cap B) = P(A)P(B)$.

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2. Three identical dice are rolled once. The probability that the same number will appear on each of them, is (a) $\frac{1}{6}$ (b) $\frac{1}{36}$ (c) $\frac{1}{18}$ (d) $\frac{3}{28}$

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3. In an experiment of rolling of a fair die. Let A, B and C be three events defined as under:

A: a number which is a perfect square

B: a prime number

C: a number which is greater than 5.

Is A, B, and C exhaustive events?

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4. Punching time of an employee is given below:

If the reporting time is 10:30 am, then find the probability of his coming late.

DAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
TIME (AM)	10:35	10:20	10:22	10:27	10:25	10:40

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5. A game has 18 triangular blocks out of which 8 are blue and rest are red and 19 square blocks out of which 7 are blue and rest are yellow. On piece is lost. Find the probability that it was a square of blue colour.

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6. A card is drawn from a pack of 52 cards. Find the probability of getting:

(i) a jack or a queen

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7. A card is drawn from a pack of 52 cards. Find the probability of getting:

(ii) a king or a diamond

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8. A card is drawn from a pack of 52 cards. Find the probability of getting a heart or a club

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9. A card is drawn from a pack of 52 cards. Find the probability of getting:

(iv) either a red or a face card.

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10. A card is drawn is drawn at random from a pack of 52 cards. Find the probability that the card drawn is: neither a heart nor a king (ii) spade or an ace neither an ace nor a king neither a red card nor a queen.

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11. A card is drawn from a pack of 52 cards. Find the probability of getting:

(vi) neither an ace nor a jack

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12. A card is drawn from a pack of 52 cards. Find the probability of getting a face card

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13. In a leap year find the probability of

(i) 53 Mondays and 53 Tuesdays

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14. In a leap year find the probability of

(ii) 53 Mondays and 53 Wednesday

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15. In a leap year find the probability of

(iii) 53 Mondays or 53 Tuesdays

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16. In a leap year find the probability of

(iv) 53 Mondays or 53 Wednesday

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17. In a non-leap year, find the probability of

(i) 53 Mondays and 53 Tuesdays.

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18. In a non-leap year, find the probability of

(ii) 53 Mondays or 53 Tuesdays.

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19. Two card are drawn at random from a deck of 52 playing cards. Find the probability of drawing two kings.

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20. Three candidates A, B, and C are going to play in a chess competition to win FIDE (World Chess Federation) cup this year. A is thrice as likely to win as B and B is twice as likely as to win C. Find the respective probability of A, B and C to win the cup.

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Long Answer Type Questions

1. Find the probability that in a random arrangement of the letters of the word UNIVERSITY the two Is come together.

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2. An urn contains 5 blue and an unknown number x of red balls.Two balls are drawn at random. If the probability of both of them being blue is 5/14 find x.

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3. Out of 8 points in a plane, 5 are collinear. Find the probability that 3 points selected a random will form a triangle.

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4. Find the probability of at most two tails or at least two heads in a toss of three coins.

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5. A, B and C are events associated with a random experiment such that

P(A) = 0.3,

P(B) = 0.4, P(C) = 0.8, $P(A \cap B)$ = 0.08, $P(A \cap C)$ =0.28 and $P(A \cap B \cap C)$ = 0.09. If $P(A \cup B \cup C) \geq 0.75$ Then prove that $P(B \cap C)$ lies in the interval $[0.23, 0.48]$.

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6. If $\frac{1+3p}{3}, \frac{1-p}{1}, \frac{1-2p}{2}$ are the probabilities of 3 mutually exclusive events

then find the set of all values of p.

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7. Urn A contains 6 red and 4 black balls and urn B contains 4 red and 6 black balls. One ball is drawn at random from urn A and placed in urn B. Then, one ball is drawn at random from urn B and placed in urn A. If one ball is drawn at random from urn A, the probability that it is found to be red, is....

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8. If three distinct numbers are chosen randomly from the first 100 natural numbers, then the probability that all three of then are divisible by 2 or 3, is

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9. S = {1, 2, 3, ..., 30), A = {x: x is multiple of 7}, B = { x: x is multiple of 5}, C = {x:x is a multiple of 3}. If x is a member of S chosen at random find the probability that (i) $x \in A \cup B$

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10. S = {1, 2, 3, ..., 30), A = {x: x is multiple of 7}, B = { x: x is multiple of 5}, C = {x:x is a multiple of 3}. If x is a member of S chosen at random find the probability that (ii) $x \in B \cap C$

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11. S = {1, 2, 3, ..., 30), A = {x: x is multiple of 7}, B = { x: x is multiple of 5}, C = {x:x is a multiple

of 3}. If x is a member of S chosen at random find the probability that (iii) $A \cap \overline{C}$

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12. One number is chosen at random from the number 1 to 100. Find the probability that it is divisible by 4 or 10.

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13. The number lock of a suitcase has 4 wheels with 10 digits, i.e. fro 0 to 9. The lock open with a sequence of 4 digits with repeats allowed. What is the probability of a person getting the right sequence to open the suit case?

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14. If A and B are any two events having $P(A \cap B) = \frac{1}{2}$ and $P(B) = \frac{2}{3}$,then find the $P(\overline{A} \cap B)$

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15. Three of the six vertices of a regular hexagon are chosen the random. What is the probability that the triangle with these vertices is equilateral.

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16. A typical PIN (personal identification number) is a sequence of any four symbols chosen from the 26 letters in the alphabet and

the ten digits. If all PINs are equally likely, what is the probability that as randomly chosen PIN contains a repeated symbol?

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17. An urn contains 9 red, 7 white and 4 black balls. If two balls are drawn at random, find the probability that: both the balls are red, (ii) one ball is white (iii) the balls are of the same colour (iv) one is white and other red.

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18. The probability that a new railway bridge will get an award for its design is 0.48, the probability that it will get an award for the efficient use of materials is 0.36, and that it will get both awards is 0.2. What is the probability, that

(i) it will get at least one of the awards

(ii) it will get only one of the awards.

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19. The probability that a new railway bridge will get an award for its design is 0.48, the probability that it will get an award for the efficient use of materials is 0.36, and that it will get both awards is 0.2. What is the probability, that

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20. A girl calculates that the probability of her winning the ifrst prize in a lottery is 0.08. If 6000 tickets are sold, then how many tickets has she bought?

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21. Two dice are thrown at the same time and the product of numbers appearing on them is noted. Find the probability that the product is less than 9.

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22. All the jacks, queens and kings are removed from a deck of 52 playing cards. The remaining cards as well shuffled and then one card is drawn at random. Giving ace a value 1 similar value for other fards, find the probability that the card has a value.

(i) 7 (ii) Greater than 7

(iii) less than 7

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23. If A, B and C are three mutually exclusive and exhaustive events of an experiment such that

$3P(A) = 2P(B) = P(C)$, then find the value of $P(A)$.

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