Probability Ex 13.1 Q4

Answer :

GIVEN: Three coins are tossed simultaneously.
TO FIND: We have to find the following probability
When three coins are tossed then the outcome will be
TTT, THT, TTH, THH. HTT, HHT, HTH, HHH.
Hence total number of outcome is 8.
(i) For exactly two head we get favorable outcome as THH, HHT ,HTH
Hence total number of favorable outcome i.e. exactly two head 3

We know that PROBABILITY = $\frac{\text{Number of favourable event}}{\text{Total number of event}}$

Hence probability of getting exactly two head is $\boxed{\frac{3}{8}}$

(ii) In case, at least two head we have favorable outcome as HHT, HTH, HHH ,THH
Hence total number of favorable outcome i.e. at least two head is 4

We know that PROBABILITY = $\frac{\text{Number of favourable event}}{\text{Total number of event}}$

Hence probability of getting at least two head when three coins are tossed simultaneously is equal to

$\frac{4}{8} = \boxed{\frac{1}{2}}$

(iiii) At least one head and one tail we get in case THT, TTH, THH. HTT, HHT, HTH,
Hence total number of favorable outcome i.e. at least one tail and one head is 6

We know that PROBABILITY = $\frac{\text{Number of favourable event}}{\text{Total number of event}}$

Hence probability of getting at least one head and one tail is equal to $\frac{6}{8} = \boxed{\frac{3}{4}}$

(iv) No tail i.e. HHH
Hence total number of favorable outcome is 1

We know that PROBABILITY = $\frac{\text{Number of favourable event}}{\text{Total number of event}}$

Hence probability of getting no tail is $\boxed{\frac{1}{8}}$

Probability Ex 13.1 Q5

Answer :

GIVEN: An ordinary year
TO FIND: Probability that a non leap year has 53 Sundays.
Total number of days in an ordinary year is 365days

Hence number of weeks in an ordinary year is $\frac{365}{7} = 52\text{weeks and } 1\text{day}$

In an ordinary year we have 52 complete weeks and 1 day which can be any day of the week i.e.
SUNDAY, MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY and SATURDAY
To make 53 Sundays the additional day should be Sunday
Hence total number of days is 7
Favorable day I.e. Sunday is 1

We know that PROBABILITY = $\frac{\text{Number of favourable event}}{\text{Total number of event}}$

Hence probability that an ordinary year has 53 Sundays is equal to $\boxed{\frac{1}{7}}$

Probability Ex 13.1 Q6

Answer :

GIVEN: A leap year

TO FIND: Probability that a leap year has 53 Sundays and 53 Mondays

Total number of days in a non leap year is 366days

Hence number of weeks in a non leap year is $\frac{366}{7} = 52\text{weeks and } 2\text{day}$

In a non leap year we have 52 complete weeks and 2 day which can be any pair of the day of the week i.e.

(SUNDAY, MONDAY)

(MONDAY, TUESDAY)

(TUESDAY, WEDNESDAY)

(WEDNESDAY, THURSDAY)

(THURSDAY FRIDAY)

(FRIDAY, SATURDAY)

SATURDAY, SUNDAY)

To make 53 Sundays and 53 Mondays the additional days should include Monday and Sunday

Hence total number of pairs of days is 7

Favorable day i.e. in which one Sunday and one Monday is there is only 1

We know that PROBABILITY = $\frac{\text{Number of favourable event}}{\text{Total number of event}}$

Hence probability that a leap year has 53 Sundays and 53 Mondays is equal to = $\boxed{\frac{1}{7}}$

Probability Ex 13.1 Q7

Answer :

GIVEN: A pair of dice is thrown

TO FIND: Probability that the total of numbers on the dice is greater than 9

Let us first write the all possible events that can occur

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

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

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

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

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

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

Hence total number of events is $6^2 = 36$

Favorable events i.e. getting the total of numbers on the dice greater than 9 are

(5,5), (5,6), (6,4), (4,6), (6,5) and (6,6),

Hence total number of favorable events i.e. getting the total of numbers on the dice greater than 9 is 6

We know that PROBABILITY = $\frac{\text{Number of favourable event}}{\text{Total number of event}}$

Hence probability of getting the total of numbers on the dice greater than 9 is $\frac{6}{36} = \boxed{\frac{1}{6}}$

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