



### Probability Ex 13.1 Q21

**Answer :**

GIVEN: A pair of dice is thrown

TO FIND: Probability of the following:

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  $6^2 = 36$

(i) Favorable events i.e. getting the sum of numbers on the dice equal to 8

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

Hence total number of favorable events i.e. the sum of numbers on the dice equal to 8 is 5

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

Hence probability of getting the sum of numbers on the dice equal to 8 =  $\frac{5}{36}$

(ii) Favorable events i.e. getting the sum of numbers on the dice equal to 6

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

Hence total number of favorable events i.e. the sum of numbers on the dice equal to 6 is 5

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

Hence probability of getting the sum of numbers on the dice equal to 6 is =  $\frac{5}{36}$

(iii) Favorable events i.e. getting the sum of numbers on the dice equal to 10 is (4, 6), (5, 5) and (6, 4)

Hence total number of favorable events i.e. the sum of numbers on the dice equal to 10 is 3

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

Hence probability of getting the sum of numbers on the dice equal to 10 is  $\frac{3}{36} = \frac{1}{12}$

(iv) Favorable events i.e. getting the same number on both the dice

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

Hence total number of favorable events i.e. the same number on both the dice is 6

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

Hence probability of getting the same number on both the dice =  $\frac{6}{36} = \frac{1}{6}$

(v) Favorable events i.e. getting the sum of numbers on the dice is greater than 10

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

Hence total number of favorable events i.e. getting the total of numbers on the dice greater than 10 is 5

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 10 is  $\frac{5}{36} = \frac{5}{36}$

(vi) Favorable events i.e. getting the sum of both numbers appearing on the top of the dice is 13 is 0 since the highest sum of score we can get is 12

Hence probability of getting the sum of both numbers appearing on the top of the dice 13 is equal to =  $\boxed{0}$

(vii) Favorable events i.e. getting the sum of both numbers appearing on the top of the dice less than or equal to 12 is a sure event

Hence probability of getting the sum of both numbers appearing on the top of the dice less than or equal to 12 is equal to =  $\boxed{1}$

(vii) Favourable outcomes for getting the product of numbers less than 9 are

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

Thus, the number of favourable outcomes are 16.

$$\therefore P(\text{getting the product of numbers less than 9}) = \frac{\text{Favourable number of outcomes}}{\text{Total number of outcomes}} = \frac{16}{36} = \frac{4}{9}$$

(vii) Favourable outcomes for getting the difference of the numbers as 2 are

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

Thus, the number of favourable outcomes are 8.

$$\therefore P(\text{getting the difference of the numbers as 2}) = \frac{\text{Favourable number of outcomes}}{\text{Total number of outcomes}} = \frac{8}{36} = \frac{2}{9}$$

### Probability Ex 13.1 Q22

**Answer :**

GIVEN: One card is drawn from a well shuffled deck of 52 playing cards

TO FIND: Probability of following

Total number of cards is 52

(i) Cards which are king of red suit are 2

Total number of Cards which are king of red suit is 2

Number of favorable event i.e. Total number of Cards which are king of red suit is 2

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

$$\text{Hence probability of getting cards which are king of red suit is } \frac{2}{52} = \frac{1}{26}$$

(ii) Total number of face cards are 12

Number of favorable event i.e. total number of face cards is 12

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

$$\text{Hence probability of getting face cards is } \frac{12}{52} = \frac{3}{13}$$

(iii) Total number of red face cards are 6

Number of favorable events i.e. total number of red face cards is 6

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

$$\text{Hence probability of getting red face cards is } \frac{6}{52} = \frac{3}{26}$$

(iv) Total number of queen of black suit cards is 2

Total Number of favorable event i.e. total number of queen of black suit cards is 2

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

Hence probability of getting cards which are queen of black suit cards is  $\frac{2}{52} = \boxed{\frac{1}{26}}$

(v) Total number of jack of hearts is 1

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

Hence probability of getting cards which are jack of heart is equal to =  $\boxed{\frac{1}{52}}$

(vi) Total number of spade cards are 13

Total Number of favorable event i.e. total number of queen of black suit cards are 13

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

Hence probability of getting spade cards is  $\frac{13}{52} = \boxed{\frac{1}{4}}$

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