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(Affiliated to CBSE up to +2 Level)

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Ex 15.1

Question 1.Complete the following statements:

(i) Probability of an event E + Probability of the event 'not E' = ...

(ii) The probability of an event that cannot happen is .... Such an event is called ....

(iii) The probability of an event that is certain to happen is .... Such an event is called ....

(iv) The sum of the probabilities of all the elementary events of an experiment is ....

(v) The probability of an event is greater than or equal to .... and less than or equal to ....

Solution:

(i) Probability of an event E + Probability of the event 'not E' = **1**.

(ii) The probability of an event that cannot happen is **0**. Such an event is called **impossible event**.

(iii) The probability of an event that is certain to happen is **1**. Such an event is called **sure event**.

(iv) The sum of the probabilities of all the elementary events of an experiment is **1**.

(v) The probability of an event is greater than or equal to **0** and less than or equal to **1**.

Question 2.Which of the following experiments have equally likely outcomes? Explain.

(i) A driver attempts to start a car. The car starts or does not start.

(ii) A player attempts to shoot a basketball. She/he shoots or misses the shot.

(iii) A trial is made to answer a true-false question. The answer is right or wrong.

(iv) A baby is born. It is a boy or a girl.

Solution:

(i) It is **not an equally likely** outcome because car will not start only when it is out of order.

(ii) It is **not an equally likely** outcome because this game depends on many factors.

(iii) It is an **equally likely** outcome because both have equal chances to happen.

(iv) It is an **equally likely** outcome because both have equal chances to happen.

Question 3.Why is tossing a coin considered to be a fair way of deciding which team should get the bail at the beginning of a football game?

Solution:

When we toss a coin, the outcomes head and tail are equally likely. So, the result of an individual coin toss is completely unpredictable.

Question 4.Which of the following cannot be the probability of an event?

(A) 2/3   (B) -1.5   (C) 15%   (D) 0.7

Solution:

-1.5, because the probability of an event is greater than or equal to zero.

Question 5.If P (E) = 0.05, what is the probability of 'not E'?
Solution:

We have, P (E) + P (not E) = 1

Given: P(E) = 0.05

P (not E) = 1 – 0.05 = 0.95

Question 6.A bag contains lemon flavoured candies only. Malini takes out one candy without looking into the bag. What is the probability that she takes out
(i) an orange flavoured candy?   (ii) a lemon flavoured candy?
Solution:

(i) There is no orange flavoured candy. So the probability of an orange flavoured candy P(E) = 0 (impossible event).

(ii) All candies are lemon flavoured in the bag. So the probability of a lemon flavoured candy P(E) = 1 (sure event).

Question 7.It is given that in a group of 3 students, the probability of 2 students not having the same birthday is 0.992. What is the probability that the 2 students have the same birthday?
Solution:

We have, P (E) + P (not E) = 1

$\Rightarrow$ P (E) + 0.992 = 1

$\Rightarrow$ P (E) = 1 – 0.992 = 0.008

Question 8.A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is
(i) red?   (ii) not red?
Solution:

Number of red balls = 3

Number of black balls = 5

Total number of balls = 3 + 5 = 8

(i) $P \text{ (red ball)} = \dfrac{\text{Number of red balls}}{\text{Total number of balls}} = \dfrac{3}{8}$

(ii) $P \text{ (not red)} = 1 - \dfrac{3}{8} = \dfrac{5}{8}$