



# VIDYA BHAWAN, BALIKA VIDYAPITH

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(Affiliated to CBSE up to +2 Level)

CLASS:10<sup>TH</sup>

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SUB.:MATHEMATICS

Ex 15.1

Question 23. A game consists of tossing a one rupee coin 3 times and noting its outcome each time. Hanif wins if all the tosses give the same result, i.e. three heads or three tails, and loses otherwise. Calculate the probability that Hanif will lose the game.

Solution:

Total outcomes are HHH, TTT, HHT, HTH, THH, TTH, THT, HTT

So, there are 8 outcomes

Hanif will lose the game if outcomes are HHT, HTH, THH, TTH, THT, HTT

So, favourable outcomes = 6

$$\therefore P(\text{Hanif will lose the game}) = \frac{6}{8} = \frac{3}{4}$$

Question 24. A die is thrown twice. What is the probability that

(i) 5 will not come up either time?                      (ii) 5 will come up at least once?

[Hint: Throwing a die twice and throwing two dice simultaneously are treated as the same experiment.]

Solution:

Total outcomes = 36

Number of outcomes in favour of 5 is (1, 5) (2, 5) (3, 5) (4, 5) (5, 5) (6, 5) (5, 1) (5, 2) (5, 3) (5, 4) (5, 6) = 11

$$(i) P(5 \text{ will not come up either time}) = \frac{25}{36}$$

$$(ii) P(5 \text{ will come up at least once}) = \frac{11}{36}$$

Question 25. Which of the following arguments are correct and which are not correct? Give reasons for your answer.

(i) If two coins are tossed simultaneously there are three possible outcomes- two heads, two tails or one of each. Therefore, for each of these outcomes, the probability is  $\frac{1}{3}$ .

(ii) If a die is thrown, there are two possible outcomes- an odd number or an even number. Therefore, the probability of getting an odd number is  $\frac{1}{2}$ .

Solution:

(i) Total possible outcomes are HH, HT, TH, TT = 4

$$P(\text{getting two heads}) = \frac{1}{4}$$

$$P(\text{getting two tails}) = \frac{1}{4}$$

$$P(\text{getting one head and one tail}) = \frac{2}{4} = \frac{1}{2}$$

Hence, this argument is **incorrect**.

(ii) Total possible outcomes are 1, 2, 3, 4, 5, 6 = 6

$$P(\text{getting an odd number}) = \frac{3}{6} = \frac{1}{2}$$

$$P(\text{getting an even number}) = \frac{3}{6} = \frac{1}{2}$$

Hence, this argument is **correct**.