Probability

CHAPTER

15

TRY YOURSELF | **SOLUTIONS**

1. Total books in library = 3000 + 4000 = 7000
∴ P(selecting a fiction book)

$$= \frac{\text{Number of fiction books}}{\text{Total number of books}} = \frac{3000}{7000} = \frac{3}{7}$$

2. Total number of cards = 48
(i) Numbers divisible by 4 are 4, 8, 12, ..., 48
⇒ Number of favourable outcomes = 12

∴ P(number divisible by 4) = $\frac{12}{48} = \frac{1}{4}$

(ii) Perfect square numbers are 4, 9, 16, 25, 36 and 49.

⇒ Number of favourable outcomes = 6

∴ P(number is perfect square) = $\frac{6}{48} = \frac{1}{8}$

3. Total number of possible outcomes = 12
(i) Number of favourable outcomes = 3
∴ P(selecting an extremely patient person) $= \frac{3}{12} = \frac{1}{4}$

(ii) Number of persons who are extremely honest is 6.
∴ Number of persons who are extremely kind
  = 12 − (6 + 3) = 3
⇒ Number of favourable outcomes = 6 + 3 = 9
∴ P(selecting an extremely kind or honest person)

$$= \frac{9}{12} = \frac{3}{4}$$

4. Here, total number of possible outcomes = 100
Cube numbers from 1 to 100 are 1, 8, 27, 64.
⇒ Number of favourable outcomes = 4

∴ P(getting a cube number) $= \frac{4}{100} = \frac{1}{25}$

5. Total number of possible outcomes = 52
There is only 1 card of '6 of spade'.
⇒ Number of favourable outcome = 1
∴ P(getting '6 of spade')

$$= \frac{\text{Number of favourable outcomes}}{\text{Total number of possible outcomes}} = \frac{1}{52}$$

6. There are no black diamond cards in playing cards.
⇒ Number of favourable outcomes = 0

∴ P(getting a black diamond card) $= \frac{0}{50} = 0$

7. Possible outcomes of the experiment are {(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)}

⇒ Total number of outcomes = 36
Outcomes favourable to the event ''no prime on both the dice'' are {(1, 1), (1, 4), (1, 6), (4, 1), (4, 4), (4, 6), (6, 1), (6, 4), (6, 6)}.
⇒ Number of favourable outcomes = 9

∴ P(getting no prime on both dice) $= \frac{9}{36} = \frac{1}{4}$

8. There are 52 well shuffled cards.
⇒ Total number of possible outcomes = 52
Also, there are 13 diamond cards.
⇒ Number of favourable outcomes = 13

∴ P(getting diamond card) $= \frac{13}{52} = \frac{1}{4}$

9. Possible outcomes are {HH, HT, TH, TT}.
⇒ Total number of outcomes = 4
Favourable outcomes are {HT, TH}
⇒ Number of favourable outcomes = 2

∴ Required probability $= \frac{2}{4} = \frac{1}{2}$

10. When King, Queen, Jack of clubs and diamonds are removed, then total number of outcomes = 52 – 6 = 46
(i) Number of favourable outcomes = 13 + 10 = 23

∴ P(getting a red card) $= \frac{23}{46} = \frac{1}{2}$

(ii) Number of favourable outcomes = 6

∴ P(getting a face card) $= \frac{6}{46} = \frac{3}{23}$

(iii) Number of favourable outcomes = 13

∴ P(getting a spade card) $= \frac{13}{46}$

(iv) Number of favourable outcomes = 2

∴ P(getting a black ace) $= \frac{2}{46} = \frac{1}{23}$

11. Total number of cards = 100 + 200 + 50 = 350
(i) Number of favourable outcomes = 50

∴ P(getting a blue card) $= \frac{50}{350} = \frac{1}{7}$

(ii) Number of favourable outcomes = 350 – 200 = 150

∴ P(getting not a yellow card) $= \frac{150}{350} = \frac{3}{7}$

(iii) Number of favourable outcomes = 100

∴ P(getting neither yellow nor a blue card) = P(getting

a red card) $= \frac{100}{350} = \frac{2}{7}$