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(Affiliated to CBSE up to +2 Level)

CLASS:10TH

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SUB.:MATHEMATICS

Ex 15.1

Question 9. A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be

(i) red?

(ii) white?

(iii) not green?

Solution:

Number of red marbles = 5

Number of white marbles = 8

Number of green marbles = 4

Total number of marbles = $5 + 8 + 4 = 17$

$$(i) P(\text{red marble}) = \frac{5}{17}$$

$$(ii) P(\text{white marble}) = \frac{8}{17}$$

$$(iii) P(\text{not green}) = 1 - P(\text{green}) = 1 - \frac{4}{17} = \frac{13}{17}$$

Question 10. A piggy bank contains hundred 50 p coins, fifty ₹ 1 coins, twenty ₹ 2 coins and ten ₹ 5 coins. If it is equally likely that one of the coins will fall out when the bank is turned upside down, what is the probability that the coin

(i) will be a 50 p coin?

(ii) will not be a rs 5 coin?

Solution:

Number of 50 p coins = 100

Number of ₹ 1 coins = 50

Number of ₹ 2 coins = 20

Number of ₹ 5 coins = 10

Total number of coins = 180

$$(i) P(\text{50 p coin}) = \frac{100}{180} = \frac{5}{9}$$

$$(ii) P(\text{not a ₹ 5 coin}) = 1 - \frac{10}{180} = \frac{170}{180} = \frac{17}{18}$$

Question 11. Gopi buys a fish from a shop for his aquarium. The shopkeeper takes out one fish at random from a tank containing 5 male fish and 8 female fish (see figure). What is the probability that the fish taken out is a male fish?



Solution:

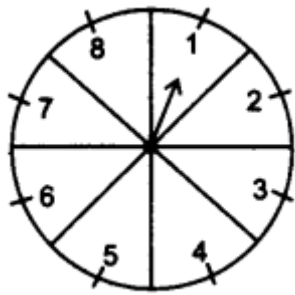
Total number of fish in the tank = $5 + 8 = 13$

Number of male fish = 5

$$\therefore P(\text{a male fish}) = \frac{5}{13}$$

Question 12. A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1, 2, 3, 4, 5, 6, 7, 8 (see figure.), and these are equally likely outcomes. What is the probability that it will point at

- (i) 8? (ii) an odd number? (iii) a number greater than 2?
(iv) a number less than 9?



Solution:

(i) $P(\text{getting } 8) = \frac{1}{8}$

(ii) $P(\text{an odd number}) = \frac{4}{8} = \frac{1}{2}$ (odd numbers are 1, 3, 5, 7)

(iii) $P(\text{a number greater than } 2) = \frac{6}{8} = \frac{3}{4}$

(iv) $P(\text{a number less than } 9) = \frac{8}{8} = 1$

Ex 15.1 Class 10 Maths Question 13.

A die is thrown once. Find the probability of getting

- (i) a prime number (ii) a number lying between 2 and 6 (iii) an odd number

Solution:

Total number of outcomes

= 6, i.e., 1, 2, 3, 4, 5 and 6

(i) Number of favourable outcomes = 3(2, 3, 5)

$$\therefore P(\text{getting a prime}) = \frac{3}{6} = \frac{1}{2}$$

(ii) Number of favourable outcomes = 3(3, 4, 5)

$$\therefore P(\text{getting a number between 2 and 6}) \\ = \frac{3}{6} = \frac{1}{2}$$

(iii) Number of favourable outcomes

= 3(1, 3, 5)

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

Ex 15.1 Class 10 Maths Question 14.

One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting

- (i) a king of red colour (ii) a face card (iii) a red face card
(iv) the jack of hearts (v) a spade (vi) the queen of diamonds

Solution:

Number of cards in a well-shuffled deck = 52.

$$(i) P(\text{a king of red colour}) = \frac{2}{52} = \frac{1}{26}$$

$$(ii) P(\text{a face card}) = \frac{12}{52} = \frac{3}{13}$$

$$(iii) P(\text{a red face card}) = \frac{6}{52} = \frac{3}{26}$$

$$(iv) P(\text{the jack of hearts}) = \frac{1}{52}$$

$$(v) P(\text{a spade}) = \frac{13}{52} = \frac{1}{4}$$

$$(vi) P(\text{the queen of diamonds}) = \frac{1}{52}$$

Question 15. Five cards – the ten, jack, queen, king and ace of diamonds, are well shuffled with their face downwards. One card is then picked up at random.

- (i) What is the probability that the card is the queen?
(ii) If the queen is drawn and put aside, what is the probability that the second card picked up is
(a) an ace? (b) a queen?

Solution:

Total number of outcomes = 5

(There are five cards only)

(i) Number of favourable outcomes

= 1 (only one queen is there)

$$\therefore P(\text{getting the queen}) = \frac{1}{5}.$$

(ii) Keeping queen aside, four cards are left.

Then total number of outcomes = 4

$$(a) P(\text{getting an ace}) = \frac{1}{4}.$$

$$(b) P(\text{getting a queen}) = \frac{0}{4} = 0.$$