



## Seventh Grade - Statistics and Probability

1) All the letters of the word PROBABILITY are put inside a bag. A letter is drawn at random from the bag. What is the probability that the letter selected is (a) the letter B, (b) a vowel, (c) not a letter K, (d) the letter M?

- a)  $\frac{3}{11}$ , b) 6, c) 9, d) 5
- a)  $\frac{3}{21}$ , b) 7, c) 3, d) 6
- a)  $\frac{1}{13}$ , b) 5, c) 3, d) 2
- a)  $\frac{2}{11}$ , b) 4, c) 1, d) 0

2) Alice placed 15 red sweets, 17 green sweets and a few blue sweets in a bag. If the probability of picking a blue sweet is  $\frac{9}{25}$ , find, (a) the number of blue sweets in the bag, (b) the probability of picking a green sweet, (c) the probability of picking a red sweet?

- a) 14, b)  $\frac{17}{53}$ , c)  $\frac{2}{12}$
- a) 18, b)  $\frac{17}{50}$ , c)  $\frac{3}{10}$
- a) 12, b)  $\frac{12}{52}$ , c)  $\frac{2}{12}$
- a) 13, b)  $\frac{13}{12}$ , c)  $\frac{2}{12}$

3) A 3-digit integer is randomly chosen between 100 and 1000. Find the probability that the chosen integer (a) has three same digits, (b) is a perfect cube?

- a)  $\frac{1}{211}$ , b)  $\frac{3}{323}$
- a)  $\frac{1}{111}$ , b)  $\frac{5}{999}$
- a)  $\frac{3}{111}$ , b)  $\frac{5}{453}$
- a)  $\frac{2}{111}$ , b)  $\frac{5}{323}$

4) A box contains 2 red balls, 3 green balls and 4 blue balls. One ball is randomly drawn from the box. Find the probability that (a) a red ball was drawn, (b) a green ball was drawn, (c) a blue ball was not drawn?

- a)  $\frac{2}{3}$ , b)  $\frac{1}{5}$ , c)  $\frac{2}{5}$
- a)  $\frac{1}{2}$ , b)  $\frac{1}{4}$ , c)  $\frac{5}{7}$



- a)  $\frac{2}{9}$ , b)  $\frac{1}{3}$ , c)  $\frac{5}{9}$
- a)  $\frac{3}{4}$ , b)  $\frac{2}{4}$ , c)  $\frac{3}{5}$

5) There are 33 red balls, x white balls and y black balls in a box. When one ball is drawn from the box, the probability that the ball is white is  $\frac{1}{5}$  and the probability that the ball is black is  $\frac{1}{4}$ . Find the probability that the ball is red?

- $\frac{11}{20}$
- $\frac{21}{34}$
- $\frac{45}{43}$
- $\frac{52}{12}$

6) A bag contains 100 balls, of which x balls are green, 20 balls are orange and the rest are red.(a) A ball is drawn at random from the bag. If the probability that a red ball is drawn is given to be  $\frac{1}{4}$ , find the value of x. (b) 10 green balls are selected and removed from the bag. Calculate the probability that a ball now drawn at random is not green?

- a)75, b)  $\frac{1}{6}$
- a)25, b)  $\frac{1}{9}$
- a)55, b)  $\frac{1}{2}$
- a)65, b)  $\frac{1}{3}$

7) A bag contains 20 balls which are numbered from 1 to 20. Find the probability of(a) drawing a ball that is an even number, (b) drawing a ball that is greater than 5 but smaller than 12, (c) drawing a ball that is a prime number, (d) drawing a ball that is not a multiple of 3. (Leave your answers in the lowest term.)?

- a)  $\frac{3}{2}$ , b)  $\frac{4}{12}$ , c)  $\frac{3}{5}$ , d)  $\frac{5}{12}$
- a)  $\frac{1}{3}$ , b)  $\frac{2}{13}$ , c)  $\frac{4}{3}$ , d)  $\frac{2}{13}$
- a)  $\frac{3}{1}$ , b)  $\frac{4}{12}$ , c)  $\frac{3}{5}$ , d)  $\frac{6}{12}$
- a)  $\frac{1}{2}$ , b)  $\frac{3}{10}$ , c)  $\frac{2}{5}$ , d)  $\frac{7}{10}$

8) Each of the letters of the word 'INTEGRITY' is written on a card. All nine cards are well shuffled and



placed on a table. If the card is turned over, what is the probability that the card bears (a) the letter 'E', (b) the letter 'I', (c) the letter 'G' (d) P (a vowel)?

- a)  $\frac{7}{9}$ , b)  $\frac{4}{9}$ , c)  $\frac{3}{12}$ , d)  $\frac{3}{5}$
- a)  $\frac{1}{3}$ , b)  $\frac{3}{5}$ , c)  $\frac{1}{3}$ , d)  $\frac{2}{3}$
- a)  $\frac{1}{9}$ , b)  $\frac{2}{9}$ , c)  $\frac{1}{9}$ , d)  $\frac{1}{3}$
- a)  $\frac{5}{9}$ , b)  $\frac{6}{9}$ , c)  $\frac{3}{5}$ , d)  $\frac{1}{2}$

9) A two-digit number is formed at random in a single event using the digits 3, 2 and 4 with repetition of digits allowed. Find (a) the set of Sample Space S, (b) the probability of forming an even number, (c) the probability of forming a number x, such that  $32$

- a) 3, b)  $\frac{3}{4}$ , c)  $\frac{1}{9}$ , d)  $\frac{8}{5}$
- a) 4, b)  $\frac{2}{5}$ , c)  $\frac{3}{9}$ , d)  $\frac{5}{3}$
- a) 9, b)  $\frac{2}{3}$ , c)  $\frac{4}{9}$ , d)  $\frac{7}{9}$
- a) 3, b)  $\frac{2}{4}$ , c)  $\frac{4}{2}$ , d)  $\frac{7}{4}$

10) A box contains 30 apples, of which 14 are red and 16 are green. An apple is drawn at random from the box. Find (a) the probability of drawing a green apple, (b) the number of red apples to be removed so that the probability of drawing a green apple from the remaining apples in the box is  $\frac{2}{3}$ ?

- a)  $\frac{8}{15}$ , b) 6
- a)  $\frac{11}{15}$ , b) 12
- a)  $\frac{4}{15}$ , b) 9
- a)  $\frac{7}{15}$ , b) 7

11) There are 6 blue balls, 4 red balls and 5 yellow balls in a bag. A ball is picked at random. Find the probability of getting (a) a red ball, (b) a yellow ball if 2 more yellow balls are added?

- a)  $\frac{3}{16}$ , b)  $\frac{7}{16}$
- a)  $\frac{7}{12}$ , b)  $\frac{3}{19}$
- a)  $\frac{11}{12}$ , b)  $\frac{3}{13}$
- a)  $\frac{4}{15}$ , b)  $\frac{7}{17}$



12) There are 3 blue balls, 6 red balls and 1 yellow ball in a box. A ball is picked at random. Find the probability of getting (a) a blue ball, (b) a ball which is not yellow, (c) an orange ball (d) a yellow ball if 2 more yellow balls are added into the box?

- a)  $\frac{3}{10}$ , b)  $\frac{9}{10}$ , c) 0, d)  $\frac{1}{4}$
- a)  $\frac{4}{15}$ , b)  $\frac{12}{14}$ , c) 9, d)  $\frac{2}{5}$
- a)  $\frac{4}{12}$ , b)  $\frac{5}{15}$ , c) 3, d)  $\frac{1}{3}$
- a)  $\frac{2}{13}$ , b)  $\frac{7}{15}$ , c) 5, d)  $\frac{2}{3}$

13) The 9 balls in the bag are labeled as {1, 2, 3, 4, 5, 6, 7, 8 and 9}. Each time a ball is drawn at random, it is placed back into the bag. Jane draws a ball at random from the bag. Calculate the probability that the number drawn (a) is an even number, (b) is a multiple of 3?

- a)  $\frac{8}{9}$ , b)  $\frac{2}{3}$
- a)  $\frac{4}{9}$ , b)  $\frac{1}{3}$
- a)  $\frac{3}{9}$ , b)  $\frac{1}{4}$
- a)  $\frac{6}{9}$ , b)  $\frac{2}{9}$

14) Muhammad either walks, cycles or takes the bus to school. The probability that he walks is  $\frac{5}{8}$ . The probability that he cycles is  $\frac{1}{3}$ . (a) What is the probability that he takes the bus to school? (b) What is the probability that he does not walk to school?

- a)  $\frac{2}{14}$ , b)  $\frac{7}{22}$
- a)  $\frac{1}{34}$ , b)  $\frac{9}{23}$
- a)  $\frac{1}{24}$ , b)  $\frac{9}{24}$
- a)  $\frac{3}{24}$ , b)  $\frac{4}{23}$

15) A bag contains a number of marbles. A marble is picked at random from the bag. The probability of picking a red marble is  $\frac{1}{2}$  and the probability of picking a blue marble is  $\frac{1}{8}$ . There are only red, blue and green marbles in the bag. (a) What is the probability that a blue marble is not picked? (b) What is the probability that a green marble is picked?

- a)  $\frac{5}{3}$ , b)  $\frac{3}{5}$



- a)  $\frac{5}{8}$ , b)  $\frac{3}{5}$
- a)  $\frac{7}{8}$ , b)  $\frac{3}{8}$
- a)  $\frac{7}{8}$ , b)  $\frac{3}{4}$

16) A bag contains 60 balls of which 4 are red, 20 are blue and others are green. A ball is drawn at random from the bag. Find the probability that (a) the ball is red; (b) the ball is not blue?

- a)  $\frac{3}{25}$ , b)  $\frac{1}{5}$
- a)  $\frac{7}{15}$ , b)  $\frac{2}{3}$
- a)  $\frac{7}{15}$ , b)  $\frac{2}{6}$
- a)  $\frac{1}{15}$ , b)  $\frac{2}{3}$

17) When a particular die is thrown, the probability of a score of one is  $\frac{1}{3}$ . The probabilities of scoring a two, three, four and five are each  $\frac{1}{6}$ . (a) Find the probability of scoring a six. (b) Explain the significance of the answer to part (a)?

- (a)  $P(\text{scoring six}) = \frac{1}{6}$  (b) this particular die never turns up with the face 'six' always. It is a biased die
- (a)  $P(\text{scoring six}) = \frac{1}{6}$  (b) this particular die never turns up with the face 'six' sometimes. It is a biased die
- (a)  $P(\text{scoring six}) = 0$  (b) this particular die never turns up with the face 'six'. It is a biased die
- (a)  $P(\text{scoring six}) = \frac{1}{6}$  (b) this particular die never turns up with the face 'six'. It is a not biased die

18) A box contains  $k$  black balls and some white balls. The probability of drawing a black ball is 0.2. (a) If there are 21 more white balls than black balls, find the value of  $k$ . (b) Hence, find the total number of balls in the box?

- a) 9, b) 39
- a) 2, b) 43
- a) 7, b) 35
- a) 3, b) 34

19) The pages of a document are numbered 1 to 37. A page is chosen at random. Write down the probability that the page number (a) contains a single digit, (b) is a prime number?



- a)  $31/32$ , b)  $32/23$
- a)  $5/33$ , b)  $21/14$
- a)  $1/37$ , b)  $12/37$
- a)  $3/31$ , b)  $2/35$

20) Roy takes a driving test each month until he passes the test. The probability that he passes the test each time is 0.85. Find the probability that Roy (a) fails the driving test each month, (b) fails the first test and passes the second test?

- a) 1.15, b) 0.7686
- a) 0.15, b) 0.1275
- a) 0.35, b) 0.2453
- a) 0.85, b) 0.1423

21) A fair, six-sided die is rolled. What is the probability that the number will be odd?

- $1/3$
- $1/2$
- $1/9$
- $1/6$

22) A letter is randomly select from the word studios. What is the probability that the letter be a U?

- $1/3$
- $1/8$
- $1/2$
- $1/4$

23) A bag contains 2 red beads, 2 blue beads, and 2 green beads. Sara randomly draws a bead from the bag, and then Victor randomly draws a bead from the bag. What is the probability that Sara will draw a red marble and Victor will draw a blue marble?

- $1/10$
- $2/15$



- $1/5$
- $2/13$

24) If two fair, six-sided dice are rolled, what is the probability that the sum of the numbers will be 5?

- $1/36$
- $1/18$
- $1/9$
- $1/8$

25) If four fair coins are tossed, what is the probability of all four coming up heads?

- $1/4$
- $4/9$
- $1/8$
- $1/6$

26) The probability that a certain event will occur is  $5/9$ . What is the probability that the event will NOT occur?

- $4/9$
- $5/9$
- $2/9$
- $1/4$

27) A certain bag contains red, blue, yellow, and green marbles. If a marble is randomly drawn from the bag, the probability of drawing a blue marble is 0.2, the probability of drawing a red marble is 0.3, and the probability of drawing a yellow marble is 0.1, What is the probability of drawing a green marble?

- 0.5
- 0.2
- 0.4
- 0.6



28) A bag contains 3 red marbles, 3 blue marbles, and 3 green marbles. If a marble is randomly drawn from the bag and a fair, six-sided die is tossed, what is the probability of obtaining a red marble and a 6?

- $1/18$
- $1/16$
- $1/15$
- $1/13$

29) A fair, six-sided die is rolled. What is the probability of obtaining a 3 or an odd number?

- $1/3$
- $4/3$
- $2/5$
- $1/2$

30) At a certain business school, 400 students are members of the sailing club, the wine club, or both. If 200 students are members of the wine club and 50 students are members of both clubs, what is the probability that a student chosen at random is a member of the sailing club?

- $3/5$
- $1/4$
- $5/8$
- $3/8$