

Exercise 7.5

For the following experiments, find the probability in each case:

1. Experiment:

From a box containing orange-flavoured sweets, Bilal takes out one sweet without looking.

Events Happening:

- i) the sweet is orange-flavoured
- ii) the sweet is lemon-flavoured.

2. Experiment:

Pakistan and India play a cricket match. The result is:

Events Happening: (i) Pakistan wins (ii) India does not lose.

3. Experiment:

There are 5 green and 3 red balls in a box, one ball is taken out.

Events Happening: (i) the ball is green (ii) the ball is red.

Exercise 7.4

- Evaluate the following:
 i) nP_3 ii) nC_3 iii) nC_1
- Find the value of n , when
 i) ${}^nC_5 = {}^nC_4$ ii) ${}^nC_8 = \frac{12 \times 11}{2!}$ iii) ${}^nC_{12} = {}^nC_5$
- Find the values of n and r , when
 i) ${}^nC_r = 35$ and ${}^nP_r = 210$
 ii) ${}^nC_{r+1} : {}^nC_r : {}^nC_{r-1} = 3 : 6 : 11$
- How many (a) diagonals and (b) triangles can be formed by joining the vertices of the polygon having:
 i) 5 sides ii) 8 sides iii) 12 sides?
- The members of a club are 12 boys and 8 girls. In how many ways can a committee of 3 boys and 2 girls be formed?
- How many committees of 5 members can be chosen from a group of 8 persons when each committee must include 2 particular persons?
- In how many ways can a hockey team of 11 players be selected out of 15 players? How many of them will include a particular player?
- Show that: ${}^nC_1 + {}^nC_2 + {}^nC_3 + \dots + {}^nC_n = 2^n - 1$
- There are 8 men and 10 women members of a club. How many committees of 6 can be formed, having:
 i) 4 women ii) at the most 4 women iii) atleast 4 women?
- Prove that: ${}^nC_1 + {}^nC_2 + {}^nC_3 + \dots + {}^nC_n = 2^n - 1$

4. Insert four harmonic means between the following given numbers.

i) $\frac{1}{5}$ and $\frac{5}{21}$

ii) $\frac{7}{3}$ and $\frac{7}{11}$

iii) 4 and 20

5. If the 7th and 10th terms of an H.P. are $\frac{1}{3}$ and $\frac{4}{21}$ respectively, find its 14th term.

6. The first term of an H.P. is $-\frac{1}{3}$ and the fifth term is $\frac{1}{5}$. Find its 9th term.

7. If 5 is the harmonic mean between 2 and b , find b .

8. If the numbers $\frac{1}{k}, \frac{1}{2k+1}$ and $\frac{1}{4k-1}$ are in harmonic sequence, find k .

9. Find n so that $\frac{a^{n+1} + b^{n+1}}{a^n + b^n}$ may be H.M. between a and b .

10. If a^2, b^2 and c^2 are in A.P., show that $a+b, c+a$ and $b+c$ are in H.P.

11. The sum of the first and fifth terms of the harmonic sequence is $\frac{6}{7}$. If the first term is $\frac{1}{2}$, find the sequence.

12. If A, G and H are the arithmetic, geometric and harmonic means between a and b respectively, show that $G^2 = AH$.

13. Find A, G, H and show that $G^2 = AH$ if

i) $a = -2, b = 6$

ii) $a = 7, b = 4$

iii) $a = 9, b = 3$

14. Find A, G, H and verify that $A > G > H$ ($G > 0$), if

i) $a = 2, b = 8$

ii) $a = \frac{2}{5}, b = \frac{8}{5}$

15. Find A, G, H and verify that $A < G < H$ ($G < 0$), if

i) $a = -2, b = 8$

ii) $a = -\frac{2}{5}, b = -\frac{8}{5}$

16. If the H.M. and A.M. between two numbers are 4 and $\frac{9}{2}$ respectively, find the numbers.