

## PROBABILITY

Form 5

Vol 10

### Part 3 - Probability (Multiplication)

1. D	2. C	3. C	4. C	5. C	6. B	7. C
8. D	9. A	10. C	11. B	12. A	13. D	14. D
15. D	16. D	17. B	18. C	19. C	20. A	21. A
22. C	23. B					

1. The required probability

$$= \frac{6}{9} \times \frac{5}{6} + \frac{3}{9} \times \frac{6}{6}$$

$$= \frac{8}{9}$$

2. The required probability

$$= \frac{1}{6} \times \frac{4}{5} \times 2$$

$$= \frac{4}{15}$$

3. Number of total possible outcomes =  $\frac{6 \times 5}{2} = 15$

The outcomes that give a sum of 10 are: {2, 8} and {3, 7}.

The required probability

$$= \frac{2}{15}$$

4. The required probability

$$= \left( \frac{n-8}{n} \right) \left( \frac{n-8-1}{n-1} \right)$$

$$= \frac{(n-8)(n-9)}{n(n-1)}$$

5. Observe that the 5-digit number is divisible by 6 if ★ is 0, 3, 6 or 9.

The required probability

$$= \frac{4}{10}$$

$$= \frac{2}{5}$$

6. The required probability

$$= (0.6)(1 - 0.6) \times 2$$

$$= 0.48$$

7. The required probability

$$= \left(\frac{2}{9}\right)\left(1 - \frac{1}{10}\right)\left(1 - \frac{7}{8}\right) + \left(1 - \frac{2}{9}\right)\left(\frac{1}{10}\right)\left(1 - \frac{7}{8}\right) + \left(1 - \frac{2}{9}\right)\left(1 - \frac{1}{10}\right)\left(\frac{7}{8}\right)$$

$$= \frac{233}{360}$$

8. The required probability

$$= 1 - (1 - 80\%)^3$$

$$= \frac{124}{125}$$

9. The required probability

$$= (0.15)^2$$

$$= 0.0225$$

10. The required probability

$$= [1 - (0.2)^2][1 - (0.15)^2][1 - (0.4)^2]$$

$$= 0.788256$$

11. The required probability

$$= (0.2)^2[1 - (0.15)^2][1 - (0.4)^2] + [1 - (0.2)^2](0.15)^2[1 - (0.4)^2] + [1 - (0.2)^2][1 - (0.15)^2](0.4)^2$$

$$= 0.201132$$

12. The required probability

$$= \frac{3}{12} \times \frac{2}{9} + \frac{4}{12} \times \frac{3}{9}$$

$$= \frac{1}{6}$$

13. The required probability

$$= 1 - \frac{1}{6}$$

$$= \frac{5}{6}$$

14. The required probability

$$= \frac{4}{9} \times \frac{5}{8} \times 2$$

$$= \frac{5}{9}$$

15. The required probability

$$= \frac{4}{9} \times \frac{5}{8} + \frac{5}{9} \times \frac{4}{8}$$

$$= \frac{5}{9}$$

16. The required probability

$$= \frac{5}{9} \times \frac{5}{9} \times \frac{5}{9}$$

$$= \frac{125}{729}$$

17. The required probability

$$= \frac{5}{9} \times \frac{1}{9} \times \frac{9}{9}$$

$$= \frac{5}{81}$$

18. The required probability

$$= \frac{3}{9} \times \frac{5}{9} \times \frac{1}{9} \times 3!$$

$$= \frac{10}{81}$$

19. The required probability

$$= \frac{4}{6} \times \frac{4}{9}$$

$$= \frac{8}{27}$$

20. The required probability

$$\begin{aligned} &= \left(\frac{2}{6}\right)\left(\frac{5}{8}\right)\left(\frac{3}{5}\right) + \left(\frac{4}{6}\right)\left(\frac{4}{7}\right)\left(\frac{3}{6}\right) \\ &= \frac{53}{168} \end{aligned}$$

21. The required probability

$$\begin{aligned} &= \left(\frac{3}{6}\right)\left(\frac{3}{7}\right)\left(\frac{1}{6}\right) \\ &= \frac{1}{28} \end{aligned}$$

22. The required probability

$$\begin{aligned} &= \left(\frac{2}{6}\right)\left(\frac{3}{8}\right)\left(\frac{3}{5}\right) + \left(\frac{3}{6}\right)\left[\left(\frac{4}{7}\right)\left(\frac{1}{6}\right) + \left(\frac{3}{7}\right)\left(\frac{3}{6}\right)\right] + \left(\frac{1}{6}\right)\left(\frac{3}{7}\right)\left(\frac{3}{6}\right) \\ &= \frac{223}{840} \end{aligned}$$

23. The required probability

$$\begin{aligned} &= 1 - \left(\frac{53}{168} + \frac{1}{28}\right) \\ &= \frac{109}{168} \end{aligned}$$

#### Part 4 - Multiplication (More case)

1. B	2. C	3. D	4. A	5. C	6. B	7. B
8. B	9. C	10. D				

1. The required probability

$$\begin{aligned} &= \left(\frac{9}{20}\right)^4 \\ &= \frac{6561}{160000} \end{aligned}$$

2. The required probability

$$\begin{aligned} &= \left(\frac{9}{20}\right)^3 \left(\frac{11}{20}\right) \times \frac{4!}{3!} \\ &= \frac{8019}{40000} \end{aligned}$$

3. The required probability

$$\begin{aligned} &= \frac{6 \times 5 \times 4 \times 3 \times 2}{6^5} \\ &= \frac{5}{54} \end{aligned}$$

4. The required probability

$$\begin{aligned} &= \frac{{}^6C_2(2^4 - 2)}{6^4} \\ &= \frac{35}{216} \end{aligned}$$

5. The required probability

$$\begin{aligned} &= \left(\frac{1}{4}\right)^2 \left(\frac{3}{4}\right)^3 \times \frac{5!}{2! \times 3!} \\ &= \frac{135}{512} \end{aligned}$$

6. The required probability

$$\begin{aligned} &= (0.8)^2(1 - 0.8)^4 \times \frac{6!}{2! \times 4!} \\ &= \frac{48}{3125} \end{aligned}$$

7. The required probability

$$\begin{aligned} &= (0.8)^6 + (0.8)^5(1 - 0.8) \times \frac{6!}{5!} + (0.8)^4(1 - 0.8)^2 \times \frac{6!}{4! \times 2!} \\ &= \frac{2816}{3125} \end{aligned}$$

8. The required probability

$$\begin{aligned} &= (0.8)^3(1 - 0.8)^3 \times \frac{4!}{1! \times 3!} \\ &= \frac{256}{15625} \end{aligned}$$

9. Probability of getting a head in a flip =  $(0.5)(0.4) + (0.5)(0.7) = 0.55$

The required probability

$$\begin{aligned} &= (0.55)^3 \\ &= \frac{1331}{8000} \end{aligned}$$

10. The required probability

$$\begin{aligned} &= (0.55)^2(1 - 0.55) \times \frac{3!}{2!} \\ &= \frac{3267}{8000} \end{aligned}$$