

REG-PAC-2425-ASM-SET 2-MATH**Suggested solutions****Multiple Choice Questions**

1. B	2. B	3. A	4. B	5. D
6. B	7. D	8. C	9. B	10. B
11. A	12. B	13. B	14. C	15. A
16. A	17. B	18. C	19. D	20. C
21. A	22. B	23. B	24. A	25. C
26. B	27. C	28. A	29. D	30. D

1. ☐ B

$$\text{Required number} = C_5^{13} C_4^6 = 19\,305$$

2. ☐ B

$$\text{Required number} = C_5^{20} - C_5^{12} = 14\,712$$

3. ☐ A

$$\begin{aligned}\text{Required number} &= C_3^{18} C_3^{12} + C_4^{18} C_2^{12} + C_5^{18} C_1^{12} + C_6^{18} \\ &= 502\,860\end{aligned}$$

4. ☐ B

$$\begin{aligned}\text{Required number} &= C_6^{17} - C_6^9 - C_6^8 \\ &= 12\,264\end{aligned}$$

5. ☐ D

$$\text{Required number} = C_6^{20} + C_5^{20} C_1^{15} + C_4^{20} C_2^{15} = 780\,045$$

6. ☐ B

$$\begin{aligned}\text{Number of ways} &= C_2^6 C_2^8 + C_3^6 C_1^8 + C_4^6 \\ &= 595\end{aligned}$$

7. ☐ D

$$\begin{aligned}\text{Required number} &= C_6^{13} - C_3^7 C_3^6 \\ &= 1016\end{aligned}$$

8. C

$$\begin{aligned}\text{Number of ways} &= C_1^5 + C_2^5 + C_3^5 + C_4^5 + C_5^5 \\ &= 31\end{aligned}$$

Alternative solution

Each pack of biscuits has a possibility of being selected or not.

The total number of ways is therefore 2^5 .

$$\begin{aligned}\text{Required number of ways} &= 2^5 - 1 \\ &= 31\end{aligned}$$

9. B

$$\begin{aligned}\text{Required number} &= C_3^{18} \times C_4^{22} \\ &= 5\,969\,040\end{aligned}$$

10. B

$$\begin{aligned}\text{Number of ways} &= C_3^6 C_3^7 \\ &= 700\end{aligned}$$

11. A

$$\begin{aligned}\text{Required number} &= C_5^{25} - C_5^{15} - C_5^{10} \\ &= 49\,875\end{aligned}$$

12. B

$$\begin{aligned}\text{Required number} &= C_5^{15} - C_5^8 - C_5^7 \\ &= 2926\end{aligned}$$

13. B

$$\begin{aligned}\text{Required number} &= C_2^3 C_1^5 C_1^2 + C_1^3 C_2^5 C_1^2 + C_1^3 C_1^5 C_2^2 \\ &= 105\end{aligned}$$

14. C

$$\begin{aligned}\text{Required number} &= C_3^5 C_3^6 - C_2^4 C_2^5 \\ &= 140\end{aligned}$$

15. A

$$\begin{aligned}\text{Required number} &= C_2^{17} C_3^{13} \\ &= 38\,896\end{aligned}$$

16. A

$$\begin{aligned}\text{Required number} &= C_3^6 \\ &= 20\end{aligned}$$

17. B

$$\begin{aligned}\text{Number of ways} &= C_1^5 C_3^9 \\ &= 420\end{aligned}$$

18. C

$$\begin{aligned}\text{Required number} &= C_2^{20} \\ &= 190\end{aligned}$$

19. D

$$\begin{aligned}\text{Number of ways} &= C_4^{18} - C_4^8 - C_1^{10} C_3^8 \\ &= 2430\end{aligned}$$

20. C

$$\begin{aligned}\text{Required number} &= C_2^4 + C_2^2 \\ &= 15\end{aligned}$$

21. A

$$\text{Required number} = C_3^{14} + C_3^{15} = 819$$

22. B

$$\begin{aligned}\text{Number of ways} &= C_2^4 \\ &= 6\end{aligned}$$

23. B

$$\text{Required number} = C_2^{13} \times C_3^{17} = 53\,040$$

24. A

$$\begin{aligned}\text{Required number} &= C_4^{38} - C_4^{16} - C_4^{22} \\ &= 64\,680\end{aligned}$$

25. C

$$\begin{aligned}\text{Number of ways} &= C_3^9 - C_3^5 \\ &= 74\end{aligned}$$

26. B

Two straight lines have at most one intersection.

$$\begin{aligned}\text{Required number} &= C_2^{15} \\ &= 105\end{aligned}$$

27. C

Sum of each pair of interior angle and exterior is 180° .

$$\text{Each exterior angle} = 180^\circ \times \frac{1}{1+4} = 36^\circ$$

I. ✓. $n = \frac{360^\circ}{36^\circ} = 10$

II. ✗. Number of diagonals $= C_2^{10} - 10 = 35$

III. ✓.

28. A

I. ✓. Each interior angle $= \frac{(10-2)180^\circ}{10} = 144^\circ$

II. ✗. Number of diagonals $= C_2^{10} - 10 = 35$.

III. ✗. 10 axes of symmetry

29. D

$$\frac{(n-2)180^\circ}{n} = 9 \times \frac{360^\circ}{n}$$
$$n = 20$$

I. ✗.

II. ✓.

III. ✓. Number of diagonals $= C_2^{20} - 20 = 170$

30. D

Let the exterior angle be θ .

$$\theta + 7\theta = 180^\circ$$

$$\theta = 22.5^\circ$$

I. ✓. $n = \frac{360^\circ}{22.5^\circ} = 16$

II. ✗. Number of diagonals $= C_2^{16} - 16 = 104$

III. ✓.