REG-PAC-2223-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. C	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

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

2. B

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

3. A

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

4. B

Required number = $C_6^{17} - C_6^9 - C_6^8$
$= 12\,264$

5. D

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

6. B

Number of ways = $C_2^6C_2^8 + C_3^6C_1^8 + C_4^6$
$= 595$

7. D

Required number = $C_6^{13} - C_3^7C_3^6$
$= 1016$

8. C

Number of ways = $C_1^5 + C_2^5 + C_3^5 + C_4^5 + C_5^5$

$= 31$

Alternative solution

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

The total number of ways is therefore 2^5.

Required number of ways = $2^5 - 1$

$= 31$

9. B

Required number = $C_3^{18} \times C_4^{22}$

$= 5\,969\,040$

10. B

Number of ways = $C_3^6 C_3^7$

$= 700$

11. A

Required number = $C_5^{25} - C_5^{15} - C_5^{10}$

$= 49\,875$

12. B

Required number = $C_5^{15} - C_5^8 - C_5^7$

$= 2926$

13. C

Required number = $C_2^3 C_1^5 C_1^2 + C_1^3 C_2^5 C_1^2 + C_1^3 C_1^5 C_2^2$

$= 105$

14. C

Required number = $C_3^5 C_3^6 - C_2^4 C_2^5$

$= 140$

15. A

Required number = $C_2^{17} C_3^{13}$

$= 38\,896$

16. A

Required number = C_3^6

$= 20$

17. B

Number of ways = $C_1^5 C_3^9$

$= 420$

18. C

Required number = C_2^{20}

$= 190$

19. D

Number of ways = $C_4^{18} - C_4^8 - C_1^{10} C_3^8$

$= 2430$

20. C

Required number = $C_2^4 + C_2^2$

$= 15$

21. A

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

22. B

Number of ways = C_2^4

$= 6$

23. B

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

24. A

Required number = $C_4^{38} - C_4^{16} - C_4^{22}$

$= 64\,680$

25. C

Number of ways = $C_3^9 - C_3^5$

$= 74$

26. B

Two straight lines have at most one intersection.

Required number = C_2^{15}

$= 105$

27. C

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

Each exterior angle = $180° \times \frac{1}{1+4} = 36°$

I. ✓. $n = \frac{360°}{36°} = 10$

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

III. ✓.

28. A

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

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

III. ✗. 10 axes of symmetry

29. D

$$\frac{(n-2)180°}{n} = 9 \times \frac{360°}{n}$$

$$n = 20$$

I. ✗.

II. ✓.

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

30. D

Let the exterior angle be θ.

$$\theta + 7\theta = 180°$$

$$\theta = 22.5°$$

I. ✓. $n = \frac{360°}{22.5°} = 16$

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

III. ✓.

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