REV-PROB-2324-ASM-SET 1-MATH
Suggested solutions

Multiple Choice Questions

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

1. C

Required probability $= 1 - 0.8^5$

$= 0.672\,32$

2. C

It is possible that the sum of two numbers is 6 and the 2 numbers are both odd.

We have $\mathrm{P}(A \cap B) > 0$.

$\mathrm{P}(A \cup B) = \mathrm{P}(A) + \mathrm{P}(B) - \mathrm{P}(A \cap B)$

$< \mathrm{P}(A) + \mathrm{P}(B)$

3. A

Number of students taking both subjects $= 16 + 21 - 30 = 7$

Required probability $= \dfrac{7}{30}$

4. B

Required probability $= 1 - \dfrac{C_2^5 + C_2^8}{C_2^{14}} = \dfrac{53}{91}$

5. C

Required probability $= \dfrac{\left(\frac{1}{36}\right)}{1 - \left(\frac{5}{6}\right)^2}$

$= \dfrac{1}{11}$

6. C

Required probability $= 1 - 0.7^4 = 0.7599$

7. D

Required probability = 1 − P(same colour)

$$= 1 - \left(\frac{(2)(3) + (5)(4)}{(11)(10)}\right) = \frac{42}{55}$$

8. C

$$\text{Required probability} = 1 - \frac{20}{30} \times \frac{15}{30}$$
$$= \frac{2}{3}$$

9. A

$$\text{Required probability} = 1 - \left(\frac{3}{4}\right)^3$$
$$= \frac{37}{64}$$

10. D

$$\text{Required probability} = \frac{5}{7} \times \frac{5}{7}$$
$$= \frac{25}{49}$$

11. C

$$\text{Required probability} = 1 - 0.7^3 - (1 - 0.7)^3$$
$$= 0.63$$

12. D

$$\text{Required probability} = \frac{3}{7} \times \frac{2}{7} + \frac{4}{7} \times \frac{5}{7}$$
$$= \frac{26}{49}$$

13. D

$$\text{Required probability} = C_2^3 \left(\frac{2}{5}\right)^2 \left(\frac{3}{5}\right) = \frac{36}{125}$$

14. B

$$\text{Required probability} = 1 - \frac{1}{4} - \frac{1}{12} - \frac{1}{24} - \frac{1}{48}$$
$$= \frac{29}{48}$$

15. C

$$\text{Required probability} = \frac{2}{5} \times \frac{5}{6} + \frac{3}{5} \times \frac{4}{6}$$
$$= \frac{11}{15}$$

16. D

$$\text{Required probability} = \frac{\left(\frac{C_2^3}{C_2^8}\right)}{1 - \frac{C_2^5}{C_2^8}} = \frac{1}{6}$$

17. B

$$\text{Required probability} = \frac{1}{8} + \frac{1}{8} - \frac{6!}{8!} = \frac{13}{56}$$

18. B

$$\text{Required probability} = \frac{3+6}{36} = \frac{1}{4}$$

19. D

$$\text{Required probability} = \frac{1}{2} \times \frac{4}{2+4} + \frac{1}{2} \times \frac{3}{1+3} = \frac{17}{24}$$

20. D

Needs at least 3 draws $\Leftrightarrow$ no gold coins obtained in first 2 draws

$$\text{Required probability} = \frac{C_2^3}{C_2^7} = \frac{1}{7}$$

21. B

$$\text{Required probability} = \frac{10}{20} + \frac{4}{20} - \frac{2}{20} = \frac{3}{5}$$

22. C

$$\text{Required probability} = \frac{3}{10} + \frac{2}{10} - \frac{1}{10} = \frac{2}{5}$$

23. A

$$\text{Required probability} = 1 - \frac{1}{4} - \frac{1}{5} - \frac{1}{6} = \frac{23}{60}$$

24. B

$$\text{Required probability} = \frac{2}{5} \times \frac{1}{6} = \frac{1}{15}$$

25. B

Required probability $= \frac{5}{8} \times \frac{5}{8} + \frac{3}{8} \times \frac{1}{4} = \frac{31}{64}$

26. D

Required probability $= 1 - \frac{C_4^4}{C_4^6} = \frac{14}{15}$

27. C

Probability of getting a green ball $= \frac{1}{3} \times \frac{1}{7} + \frac{1}{3} \times \frac{2}{7} + \frac{1}{3} \times \frac{3}{7} = \frac{2}{7}$

Required probability $= \frac{\frac{1}{3} \times \frac{1}{7}}{\frac{2}{7}} = \frac{1}{6}$

28. C

Probability of Ivan and Jason sit next to each other in the 2nd row $= \frac{2 \times 2! \times 7!}{9!} = \frac{1}{18}$

Required probability $= \frac{\left(\frac{1}{18}\right)}{\left(\frac{3}{9}\right)} = \frac{1}{6}$

29. D

Required probability $= 1 - \frac{1}{3} \times \frac{1}{5} \times \frac{1}{7} = \frac{104}{105}$

30. B

Required probability $= 1 - 0.2 - 0.25$

$= 0.55$