

REG-PAC-2425-ASM-SET 1-MATH**Suggested solutions****Conventional Questions**

1. (a) Required number = $4 \times 5 \times 2 \times 8$ 1M
= 320 1A
- (b) Required number = $5 \times 2 \times (4 + 8)$ 1M
= 120 1A
2. Let x be the number of boys in the group.
- $x(30 - x) = 224$ 1M
- $-x^2 + 30x - 224 = 0$ 1M
- $x = 16$ or 14 (rejected)
- There are 16 boys and 14 girls in the group. 1A
3. (a) Number of ways = $(5 + 2)(4 + 3)$ 1M
= 49 1A
- (b) Number of ways = $49 \times 14 \times 49$ 1M
= 33 614 1A
4. (a) Required number = $9 \times (8 + 6)$ 1M
= 126 1A
- (b) Required number = $(9 + 6)(9 + 6 - 1)$ 1M
= 210 1A
- (c) Required number = $9 \times 8 \times 6 + 6 \times 9 \times 5$ 1M
= 702 1A
5. (a) (i) Required number = $6 \times 7 \times 7$ 1M
= 294 1A
- (ii) Required number = $6 \times 7 \times 3$ 1M
= 126 1A
- (b) (i) Required number = $6 \times 6 \times 5$ 1M
= 180 1A
- (ii) Required number = $6 \times 5 \times 1 + 5 \times 5 \times 3$ 1M
= 105 1A

6. (a) Required number = $(6 + 12)(10 + 8)(8 + 5)$ 1M
 $= 4212$ 1A
- (b) Required number = $4212 - (6)(10)(8)$ 1M
 $= 3732$ 1A
7. Number of cases when hundred digit is 3, 5 or 7 = $3 \times 4 \times 8$
Number of cases when hundred digit is 4 or 6 = $2 \times 5 \times 8$
Required number = $3 \times 4 \times 8 + 2 \times 5 \times 8$ 1M+1M
 $= 176$ 1A
8. (a) Required number = $5 + 5$ 1M
 $= 10$ 1A
- (b) Required number = 10×9 1M
 $= 90$ 1A
- (c) Required number = 5×5 1M
 $= 25$ 1A
9. Number of ways of answering the questionnaire if the answer of question 7 is A
 $= 4^6 \times 1 \times 4 = 4^7$ 1M
- Number of ways of answering the questionnaire if the answer of question 7 is not A
 $= 4^6 \times 3 \times 4^5 = 4^{11} \times 3$
Required number = $4^7 + 4^{11} \times 3$ 1M
 $= 12\,599\,296$ 1A
10. (a) Number of choices = $4 + 7 + 8 = 19$ 1M+1A
- (b) Number of choices = $7 \times 8 = 56$ 1M+1A
- (c) Number of choices = $4 \times 15 = 60$ 1M+1A
- (d) Number of choices = $4 \times 7 \times 8 = 224$ 1M+1A
11. (a) Number of ways answering the first 5 questions in the first part = $2^5 = 32$ 1M
Required number = $32 \times 3^5 + 32 \times 5^4$ 1M
 $= 27\,776$ 1A
- (b) Number of ways answering the second and third parts = $3^5 \times 5^4$ 1M
 $= 151\,875$ 1A
- The claim is incorrect. 1A