

Solutions

Each answer shows the steps, then the **result**.

2.1

- ${}^7P_3 = 7 \times 6 \times 5 = 210$

2.2

- ${}^8C_2 = \frac{8 \times 7}{2} = 28$

3.1 C

- BANANA has 6 letters with A $\times$ 3, N $\times$ 2: $\frac{6!}{3!2!} = \frac{720}{12} = 60$

3.2

(a)

- ${}^{12}C_4 = \frac{12 \cdot 11 \cdot 10 \cdot 9}{24} = 495$

(b)

- ${}^7C_2 \times {}^5C_2 = 21 \times 10 = 210$

3.3

- treat (IUE) as one block
- 5 items arrange in $5! = 120$ ways; the vowels arrange among themselves in $3! = 6$ ways; total = $120 \times 6 = 720$