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Exam 2

Part III

Counting

$$1a \quad \frac{26}{L} \cdot \frac{26}{L} \cdot \frac{26}{L} = 17,576$$

$$b \quad \frac{26}{L1} \cdot \frac{25}{L2} \cdot \frac{24}{L3} = 15,600 \quad (P(26,3))$$

$$c. \quad \underline{26} \cdot \underline{26} \cdot \underline{26} - \underline{26} = 17,550$$

^ not allowed

$$d \quad \frac{25}{V} \cdot \frac{5}{V} \cdot \frac{24}{V} = 3000$$

$$2. \quad \begin{array}{l} \# \text{ of pizzas with 2 different} \\ C(12,2) \\ + \# \text{ of pizzas with 2 same} \\ + 12 \\ = 66 + 12 = 78 \end{array}$$

$$3. \quad \frac{9!}{\begin{array}{ccccccc} \underbrace{1!} & \underbrace{1!} & \underbrace{2!} & \underbrace{1!} & \underbrace{1!} & \underbrace{2!} & \underbrace{1!} \\ H & A & L & O & W & E & N \end{array}} = 90,720$$

$$4. \quad \frac{4}{ace} \cdot \frac{16}{1opt} = 64 \quad \text{note } C(52,2) = 1326$$

$$5. \quad \frac{18}{\text{chair}} \cdot \frac{C(17,4)}{\text{rest}} = 42840$$

$$\text{or } \frac{C(18,5)}{\text{Pick committee}} \cdot \frac{5}{\text{Pick chair}} = 42840$$

$$\textcircled{6} \quad \frac{8}{\text{Y or G}} \cdot 4 \cdot 3 \cdot 3 \cdot 2 \cdot 2 \cdot 1 \cdot 1 = 1152$$

$$\textcircled{7} \quad \text{Exactly one blue: } \frac{C(4,1)}{1B} \cdot \frac{C(7,2)}{2B^c} = 84 = n(E)$$

$$\text{Exactly two green: } \frac{C(5,2)}{2G} \cdot \frac{C(6,1)}{1G^c} = 60 = n(F)$$

$$n(E \cap F) = \frac{C(4,1)}{1B} \cdot \frac{C(5,2)}{2G} = 40$$

$$n(E \cup F) = n(E) + n(F) - n(E \cap F) \\ = 84 + 60 - 40 = 104$$

$$8. \quad \frac{C(4,3)}{3Q} \cdot \frac{C(48,1)}{1Q^c} = 4 \cdot 48 = 192$$

$$9. \quad \begin{array}{cccc} \square & \square & \square & \square \\ \square & \square & \square & \square \\ \square & \square & \square & \square \end{array} \quad \frac{3!}{\text{arr}} \cdot \frac{4!}{\text{ads}} \cdot \frac{4!}{\text{Dept 1}} \cdot \frac{4!}{\text{Dept 2}} \cdot \frac{4!}{\text{Dept 3}}$$

$$= 82944$$