(S.W.E) صباح شوق صباح سلام

1) first group → $^{12}C_4$, second group → $^{8}C_4$, third → $^{4}C_4$

Answer → $^{12}C_4 * {}^{8}C_4 * {}^{4}C_4 = 34,650$

2)

A < B < C	A B C
A < C < B	A C B
B < C < A	B C A
B < A < C	B A C
C < A < B	C A B
C < B < A	C B A

3) $P(A) = \left(\frac{4}{12}\right) \times \left(\frac{3}{11}\right) = \frac{1}{11}$, $P(B) = \left(\frac{8}{12}\right) \times \left(\frac{7}{11}\right) = \frac{14}{33}$

$P(\text{at least one item}) = 1 - \frac{14}{33} = \frac{19}{33}$

4) $P(\text{none of three is defective}) = \frac{^{10}C_3}{^{455}} = \frac{120}{455} = \frac{24}{91}$

$P(\text{exactly one item of three is defective}) = \frac{^{10}C_2 \times {}^{5}C_1}{^{455}} = \frac{250}{455} = \frac{50}{91}$

$P(\text{at least one item of three is defective}) = 1 - P(\text{exactly defective}) = 1 - \frac{24}{91} = \frac{67}{91}$

5)

	boys	girls	
From mans	5	10	15
not From mans	5	10	15
	10	20	30

boy or From man → $(\text{boy} \cup \text{mans}) = \frac{1}{2} + \frac{1}{2} - \frac{5}{30} = \frac{5}{6}$

6) $P(A) = \frac{3}{8}$, $P(B) = \frac{1}{2}$, $P(A \cap B) = \frac{1}{2}$

- $P(A^c) = 1 - \frac{3}{8} = \frac{5}{8}$
- $P(B^c) = 1 - \frac{1}{2} = \frac{1}{2}$
- $P(A^c \cap B^c) = 1 - A \cup B = 1 - \left(\frac{3}{8} + \frac{1}{2} - \frac{1}{2}\right) = 1 - \frac{3}{8} = \frac{5}{8}$
- $P(A \cap B^c) = P(A) - P(A \cap B) = \frac{3}{8} - \frac{1}{2} = \frac{1}{8}$
- $P(B \cap A^c) = P(B) - P(A \cap B) = \frac{1}{2} - \frac{1}{2} = 0$

⑦ $P(A) > 0$

⑧ $k^2 - 8 = 1$

$k^2 = 9$

$k = \pm 3$

⑨ $P(A) = ,35 \quad , P(B) = ,45$

$P(\bar{A} \cap \bar{B}) = 1 - (A \cup B) = 1 - (,35 + ,45) = ,2$