2019 P2 Q1

a) 12B , 8G = 20 people

$$P(B,G) \text{ or } P(G,B) = \left(\frac{12}{20}\right)\left(\frac{8}{19}\right) + \left(\frac{8}{20}\right)\left(\frac{12}{19}\right)$$

$$= \frac{192}{380} \text{ or } \frac{48}{95}$$

b) $P(B,B,B,G) = \left(\frac{12}{20}\right)\left(\frac{11}{19}\right)\left(\frac{10}{18}\right)\left(\frac{8}{17}\right) = \frac{10560}{116280}$

or $\frac{88}{969}$

c) A - 7Q B - 8Q

Q1 + 3 others Any 4

ie choose 3 from 6 & choose 4 from 8

(choose 1 from 1)

$$\binom{1}{1} \times \binom{6}{3} \times \binom{8}{4} = 1400$$