ENGG2760A Quiz 4

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Let X_i be the indicator random variable for the event that there is a boy seating between 2 girls at the i^{th} position.

$\therefore P(X_i) = \frac{8}{16} \cdot \frac{8}{15} \cdot \frac{7}{14} = \frac{2}{15}$

$E[X_i] = P(X_i) \cdot 1 + P(X_i^c) \cdot 0$

$= \frac{2}{15}$

$\therefore E[X] = E[X_1] + E[X_2] + \ldots + E[X_{16}]$

$= P(X_1) + P(X_2) + \ldots + P(X_{16})$

$= 16\left(\frac{2}{15}\right)$

$= \frac{32}{15}$