Exercise 9.1

(a) $_{10}p_{60:70} = {}_{10}p_{60} \times {}_{10}p_{70} = 0.94 \times 0.83 = 0.7802$

(b) $_{10}p_{60} \times {}_{10}p_{70} + {}_{10}p_{60} \times {}_{10}q_{70} + {}_{10}q_{60} \times {}_{10}p_{70} = 0.7802 + 0.94(0.17) + 0.06(0.83) = 0.9898$. This should also be equal to the complement that both are dead: $1 - {}_{10}q_{60} \times {}_{10}q_{70} = 1 - 0.06 \times 0.17 = 1 - 0.0102 = 0.9898$.

(c) $_{10}p_{60} \times {}_{10}q_{70} + {}_{10}q_{60} \times {}_{10}p_{70} = 0.94(0.17) + 0.06(0.83) = 0.2096$

(d) $_{10}q_{60:70} = 1 - {}_{10}p_{60:70} = 1 - 0.7802 = 0.2198$

(e) $_{10}q_{\overline{60:70}} = {}_{10}q_{60} \times {}_{10}q_{70} = 0.06 \times 0.83 = 0.0102$