1 Question 4

1.1

$$
\begin{aligned}
P(B_2 = G) &= \sum_{B_1 \in \{G,M,A\}} P(B_2 = G, B_1) && (1)\\
&= \sum_{B_1 \in \{G,M,A\}} P(B_2 = G|B_1)P(B_1) && (2)\\
&= 0.8 \times 0.5 + 0.1 \times 0.4 + 0.2 \times 0.1 && (3)\\
&= 0.46 && (4)
\end{aligned}
$$

1.2

$$
\begin{aligned}
P(B1 = G|B2 = G) &= \frac{P(B_2 = G|B_1 = G)P(B_1 = G)}{P(B_2 = G)} && (5)\\
&= \frac{0.8 \times 0.5}{0.46} && (6)\\
&= 0.87 && (7)
\end{aligned}
$$