

1.

$$A = \frac{1}{3} \quad B = \frac{1}{3} \quad C = \frac{1}{3}$$

2.

$$Pr(A|Cr) = \frac{\frac{1}{2}}{\frac{1}{2} + \frac{3}{4} + \frac{1}{8}} = \frac{4}{11}$$

$$Pr(B|Cr) = \frac{\frac{3}{4}}{\frac{1}{2} + \frac{3}{4} + \frac{1}{8}} = \frac{6}{11}$$

$$Pr(C|Cr) = \frac{\frac{1}{8}}{\frac{1}{2} + \frac{3}{4} + \frac{1}{8}} = \frac{1}{11}$$

3.

$$Pr(Cr) = Pr(Cr|A)Pr(A) + Pr(Cr|B)Pr(B) + Pr(Cr|C)Pr(C) = \frac{1}{2} \cdot \frac{1}{3} + \frac{1}{2} \cdot \frac{1}{3} + \frac{1}{2} \cdot \frac{1}{3} = \frac{1}{2}$$

4.

$$Pr(Cr2|Cr) = Pr(Cr2|A)Pr(A|Cr) + Pr(Cr2|B)Pr(B|Cr) + Pr(Cr2|C)Pr(C|Cr) = \frac{1}{2} \cdot \frac{4}{11} + \frac{3}{4} \cdot \frac{6}{11} + \frac{1}{8} \cdot \frac{1}{11} = \frac{53}{88}$$