5) Compute the mutual information between X & Y

$$I(X;Y) = \sum_{xy} p(x,y) \log \frac{p(x,y)}{p(x)p(y)}$$

$$I(X;Y) = 0.10 \log \frac{0.10}{(0.18)(0.44)} + 0.08 \log \frac{0.08}{(0.18)(0.56)}$$

$$+ 0.06 \log \frac{0.06}{(0.18)(0.44)} + 0.12 \log \frac{0.12}{(0.18)(0.56)}$$

$$+ 0.09 \log \frac{0.09}{(0.23)(0.44)} + 0.14 \log \frac{0.14}{(0.23)(0.56)}$$

$$+ 0.15 \log \frac{0.15}{(0.24)(0.44)} + 0.09 \log \frac{0.09}{(0.24)(0.56)}$$

$$+ 0.06 \log \frac{0.06}{(0.17)(0.44)} + 0.11 \log \frac{0.11}{(0.17)(0.56)}$$

$$= 0.03 - 0.02 - 0.01 + 0.08 - 0.02$$
$$- 0.03 + 0.03 + 0.02 - 0.05 + 0.02$$

$$\boxed{I(X;Y) = 0.05}$$