

Homework #4 solutions: MA 204

- 4.18**
- Part A is a 4 x 4 table with $\frac{1}{16}$ as the outcome in every combination of X, Y
 - Part B: $\frac{5}{8}$
 - Part C: This is a 4 x 4 table with $\frac{1}{12}$ as all of the off-diagonal elements and 0 as the diagonals
 - Part D: $\frac{1}{2}$
- 4.26** Since X and Y are independent, $V[2X - 3Y + 4] = 4V[X] + 9V[Y] = 4c + 9d$
- 4.40**
- $V[3X^2 + Y] = 9V[X^2] + V[Y] = 9E[(X^2)^2] - E[X^2]^2 + E[Y^2] - E[Y]^2 = 103.$
 - $E[X^4 Y^4] = E[X^4]E[Y^4] = (15)(94) = 1410.$
 - $Cov(X, X^2) = E[XX^2] - E[X]E[X^2] = E[X^3] - E[X]E[X^2] = 5 - (1)(2) = 3.$
 - $V[X^2 Y^2] = E[(X^2 Y^2)^2] - E[(X^2 Y^2)]^2 = E[X^4]E[Y^4] - E[X^2]^2 E[Y^2]^2 = 1266.$