

Problem 116

		Q			
		0	1	2	3
P	0	.12	.06	.05	.02
	1	.13	.15	.12	.03
	2	.15	.15	.1	.02

$$p(P=0) = .12 + .06 + .05 + .02 \\ = .25$$

$$V(Q|P=0) = E(Q^2|P=0) - [E(Q|P=0)]^2$$

$$E(Q|P=0) = 0 \cdot \left(\frac{.12}{.25}\right) + 1 \cdot \left(\frac{.06}{.25}\right) + 2 \cdot \left(\frac{.05}{.25}\right) + 3 \cdot \left(\frac{.02}{.25}\right) \\ = .88$$

$$E(Q^2|P=0) = 0^2 \cdot \left(\frac{.12}{.25}\right) + 1^2 \cdot \left(\frac{.06}{.25}\right) + 2^2 \cdot \left(\frac{.05}{.25}\right) + 3^2 \cdot \left(\frac{.02}{.25}\right) \\ = 1.76$$

$$V(Q|P=0) = 1.76 - (.88)^2 = \underline{\underline{.99}}$$

1D