

$$X = (X_1, X_2)$$

		X ₁		
		2	4	6
X ₂	10	0.1	0.2	0.3
	20	0.2	0.1	p=0.1



①

$$p = 1 - 0.1 - 0.2 - 0.3 - 0.2 - 0.1 = 0.1$$

$$P(X_1 = 2) = 0.1 + 0.2 = 0.3$$

$$P(X_1 = 4) = 0.2 + 0.1 = 0.3$$

$$P(X_1 = 6) = 0.3 + 0.1 = 0.4$$

$$P(X_2 = 10) = 0.1 + 0.2 + 0.3 = 0.6$$

$$P(X_2 = 20) = 0.2 + 0.1 + 0.1 = 0.4$$

Media

$$E(X_1) = 2 \cdot 0.3 + 4 \cdot 0.3 + 6 \cdot 0.4$$

$$= 0.6 + 1.2 + 2.4$$

$$= 4.2$$

$$E(X_2) = 10 \cdot 0.6 + 20 \cdot 0.4$$

$$= 6 + 8$$

$$= 14$$

$$E(x_1^2) = 2^2 \cdot 0.3 + 4^2 \cdot 0.5 + 6^2 \cdot 0.4$$

$$= 1.2 + 48 + 14.4$$

$$= 20.4$$

$$E(x_2^2) = 10^2 \cdot 0.6 + 20^2 \cdot 0.4$$

$$= 60 + 160$$

$$= 220$$

VARIANZA

$$VAR(x) = E(x)^2 - (Ex)^2$$

$$\text{VAR}(x_1) = 20,4 - (9,2)^2$$

$$= 2,76$$

$$\text{VAR}(x_2) = 220 - (14)^2$$

$\begin{pmatrix} 1 \\ 1 \end{pmatrix}$ 2 4

Sono indipendenti?

$$P(X_1 = 2) P(X_2 = 10) = 0.3 \cdot 0.6 = 0.18 \quad \text{False}$$

$$P(X_1 = 4) P(X_2 = 10) = 0.3 \cdot 0.6 = 0.18 \quad \text{False}$$

$$P(X_1 = 6) P(X_2 = 10) = 0.4 \cdot 0.6 = 0.24 \quad \text{False}$$

$$P(X_1 = 2) P(X_2 = 20) = 0.3 \cdot 0.4 = 0.12 \quad \text{False}$$

$$P(X_1 = 4) P(X_2 = 20) = 0.3 \cdot 0.4 = 0.12 \quad \text{False}$$

$$P(X_1 = 6) P(X_2 = 20) = 0.4 \cdot 0.4 = 0.16$$

Now Show:

6 False

VA = VAR

independent;

$$\rho(x_1, x_2) = \frac{\text{Cov}(x_1, x_2)}{\sqrt{\text{Var}(x_1) \text{Var}(x_2)}}$$

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$$P(8) = 0.1$$

$$= P(6) = 0.2$$

$$= P(5) = 0.3$$

$$P(10) = 0.2$$

$$P(16) = 0.4$$

$$P(14) = 0.1$$

$$P(y) = y = X_1 - X_2 =$$

$$P(-12) = 0.2$$

$$P(-16) = 0.1$$

$$P(-19) = 0.5$$

$$P(-8) = 0.1$$

$$P(-6) = 0.2$$

$$P(-4) = 0.3$$