	y=1 (A) p	y= 0 (a) q
x=1 (A) p	$p^2 + pqF$	pqF
x=0 (a) q	pqF	$q^2 + pqF$

$$\bar{x} = 1 \cdot p + 0 \cdot q = p$$
$$\bar{y} = 1 \cdot p + 0 \cdot q = p$$

$$\sigma_x^2 = \sum_i x_i^2 f_i - \bar{x}^2 = x_1^2 f_1 + x_2^2 f_2 - \bar{x}^2 = 1^2 \cdot p + 0^2 \cdot q - p^2 = p - p^2 = p(1-p) = pq$$

$$\sigma_y^2 = \sum_i y_i^2 f_i - \bar{y}^2 = y_1^2 f_1 + y_2^2 f_2 - \bar{y}^2 = 1^2 \cdot p + 0^2 \cdot q - p^2 = p - p^2 = p(1-p) = pq$$

$$\operatorname{cov}(x,y) = \sum_{i,j} x_i y_j f_{ij} - \bar{x} \cdot \bar{y} = x_1 y_1 f_{11} + x_1 y_2 f_{12} + x_2 y_1 f_{21} + x_2 y_2 f_{22} - \bar{x} \cdot \bar{y} =$$
$$= 1 \cdot 1 \cdot (p^2 + pqF) + 1 \cdot 0 \cdot pq(1-F) + 0 \cdot 1 \cdot pq(1-F) + 0 \cdot 0 \cdot (q^2 + pqF) - p \cdot p = p^2 + pqF - p^2 = pqF$$

$$r_{xy} = \frac{\operatorname{cov}(x,y)}{\sigma_x \sigma_y} = \frac{pqF}{\sqrt{pq} \cdot \sqrt{pq}} = \frac{pqF}{pq} = F$$