

15)

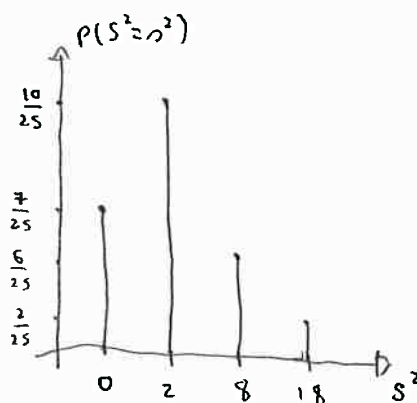
f)

Usando a variância amostral temos

$$S^2 = \frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2, \text{ para } n=2$$

Assim

S^2	A	B	C	D	E
A	0	2	8	8	18
B	2	0	2	2	8
C	8	2	0	0	2
D	8	2	0	0	2
E	18	8	2	2	0



S^2	0	2	8	18
$P(S^2 = s^2)$	$\frac{7}{25}$	$\frac{10}{25}$	$\frac{6}{25}$	$\frac{2}{25}$

g)

$$E[S^2] = 0 \cdot \frac{7}{25} + 2 \cdot \frac{10}{25} + 8 \cdot \frac{6}{25} + 18 \cdot \frac{2}{25} = \frac{104}{25} = 4,16$$

$$\text{var}[S^2] = E[S^4] - (E[S^2])^2$$

S^4	0	4	64	324
$P(S^4 = s^4)$	$\frac{7}{25}$	$\frac{10}{25}$	$\frac{6}{25}$	$\frac{2}{25}$

$$E[S^4] = 0 \cdot \frac{7}{25} + 4 \cdot \frac{10}{25} + 64 \cdot \frac{6}{25} + 324 \cdot \frac{2}{25} = 42,88$$

$$\text{então } \text{var}[S^2] = 42,88 - (4,16)^2 \approx 25,58$$