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$$\bar{y}_i = \frac{\sum_{j=1}^n y_{ij}}{n}$$

$$\bar{y}_6 = \frac{149}{4} \approx 37$$

dir.

c) Örneklem birimlerinin ölçümlerine göre (a) şıkında verilen örneklem uzayı aşağıdadır:

Tabakalar	Sistematik Örneklem							Tabaka Ortalaması
	1	2	3	4	5	6	7	
1	21	42	36	35	30	28	26	218/7
2	29	41	55	25	52	47	24	273/7
3	20	18	46	19	31	44	45	223/7
4	41	36	23	19	35	30		184/6
\bar{y}_i	111/4	137/4	160/4	98/4	148/4	149/4	95/3	898/27
$\sum_{i=1}^n y_{ij}^2$	3363	5065	6966	2572	5790	5829	3277	32862

$$E(\bar{y}_i) = \frac{1}{27} (111+137+160+98+148+149) + \frac{3}{27} \cdot \frac{95}{3}$$

$$= \frac{898}{27}$$

$$d) V(\bar{y}_i) = \frac{1}{k} \sum_{i=1}^k (\bar{y}_i - \bar{y})^2$$

$$= \frac{1}{7} \left(\left(\frac{111}{4} - \frac{898}{27} \right)^2 + \dots + \left(\frac{95}{3} - \frac{898}{27} \right)^2 \right)$$

$$\approx 26,57$$

$$= 115,20$$

$$S^2 = \frac{\sum_{i=1}^k \sum_{j=1}^n y_{ij}^2 - \frac{\left(\sum_{i=1}^k \sum_{j=1}^n y_{ij} \right)^2}{N}}{N-1}$$

$$S^2 = \frac{1}{k(n-1)} \left(\sum_{i=1}^k \sum_{j=1}^n y_{ij}^2 - \sum_{i=1}^k \frac{\left(\sum_{j=1}^n y_{ij} \right)^2}{n} \right)$$

$$= \frac{1}{7 \cdot 3} \left(32862 - \left(\frac{111^2}{4} + \frac{137^2}{4} + \dots + \frac{95^2}{3} \right) \right)$$

$$= 107,33$$

$$V(\bar{y}_i) = \frac{N-1}{N} S^2 - \frac{k(n-1)}{N} S_{ig}^2$$

$$= \frac{26}{27} \cdot 115,20 - \frac{21}{27} \cdot 107,33$$

$$= 27,45$$

Not: İki varyansın farklı bulunması $N \neq kn$ olmasından kaynaklanmaktadır.