

Assignment 2

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9.4

X:	5	8	7	10	7	6	9	11	4	2	7	7	12	9	11	3	7	8	5	6	7	6	9	11	4
Serial:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

$$N = 25$$

$$n = 4$$

$$k = \frac{N}{n} = \frac{25}{4} = 6.25 \approx 6$$

$$1 - k \approx 1 - 6$$

5, 11, 17, 23,

Serial Number	5	11	17	23
Signals Random Variable (x)	7	8	7	9

④ Total number of signals/day, $\bar{X} = N\bar{x}$

$$= 25 \times \left(\frac{31}{4}\right) = 193.75$$

$$S.E.(\bar{x}) = \sqrt{V(\bar{x})} = \sqrt{0.1925} = 0.439 \quad \bar{x} = 7.75$$

$$V(\bar{x}) = \frac{N-n}{Nn} s^2 = \frac{25-4}{25 \times 4} \cdot \left(\frac{11}{12}\right) = \frac{77}{400} = 0.1925$$

$$s^2 = \frac{1}{3} \left[243 - \frac{961}{4} \right] = \frac{11}{12}$$

⑤ $p = a/n = \frac{2}{4} = 0.5$

Serial: 4

②
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9.5

Number	11	16	09	12	19
Signal	1	8	2	0	4

$$N=30$$

$$n=5$$

$$\bar{x} = \frac{\sum x}{n} = \frac{15}{5} = 3$$

$$\bar{X} = N\bar{x} = 30 \times 3 = 90$$

$$S^2 = 10$$

$$V(\bar{x}) = \frac{30-5}{30 \times 5} \times 10 = \frac{5}{3}$$

Total number of faded signals is 90 | S.e. $(\bar{X}) = \sqrt{\frac{5}{3}} = 1.291$

9.6

$$n = \frac{Z^2 \frac{pq}{V(\bar{x})}}{d^2} = \frac{(1.96)^2 \times 0.45 \times 0.55}{(0.1)^2} = 95.1$$

$$\approx 95$$

9.7

Number	11	16	09	12
mail	11	7	7	45

$$\bar{x} = \frac{70}{4} = 17.5$$

$$\approx 18$$

$$S^2 = \frac{1}{3} \left((2245) - \frac{4900}{4} \right) = 340$$

$$V(\bar{x}) = \frac{23-4}{23 \times 4} \times 340 = 70.2$$

$$S.e. = \sqrt{70.2} = 8.379$$

9.8

$$n = \frac{Z^2 pq}{d^2} = \frac{(1.96)^2 \times 0.3 \times 0.7}{(0.05)^2} = 322.69$$

$$\approx 323$$