Quiz 04

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Q1) Calculate population mean time for the sample of n=25

$$= \frac{55+42+45+37+60+53+45+65+45+61+46+55+50+42+30+37+50+51+55+32+52+70+30+46+46}{25}$$

$$= \frac{1200}{25}$$

$$= 48 \text{ hours}$$

Calculate standard deviation for the sample n=25

x / hours	$x_i - \bar{x}$	$(x_i - \bar{x})^2$
55	7	49
42	-6	36
45	-3	9
37	-11	121
60	12	144
53	5	25
45	-3	9
65	17	289
45	-3	9
61	13	169
46	-2	4
55	7	49
50	2	4
42	-6	36
30	-18	324
37	-11	121

50	2	4
51	3	9
55	7	49
32	-16	256
52	4	16
70	22	484
30	-18	324
46	-2	4
46	-2	4
		2548

$\bar{x} = 48$ hours

Sample Standard deviation

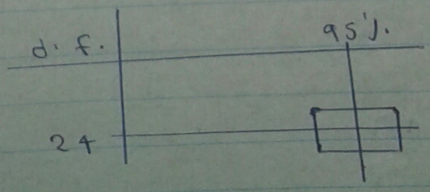
$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

$i = 1, 2, \ldots, 25$

$$s = \sqrt{\frac{2548}{24}}$$

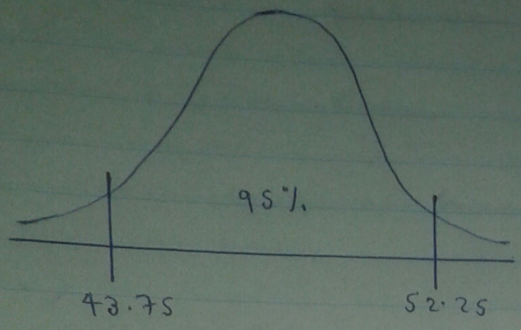
$s = 10.30$

Calculate t-score



d.f. = 25 - 1
= 24

$t = 2.064$



$x_l = \bar{x} - t \cdot \frac{s}{\sqrt{n}}$ $\quad$ $x_u = \bar{x} + t \cdot \frac{s}{\sqrt{n}}$

$\bar{x} = 48$ hours
$t = 2.064$
$s = 10.30$
$n = 25$

$$t \cdot \frac{s}{\sqrt{n}} = \frac{2.064 \times 10.30}{\sqrt{25}}$$
$$= 4.25$$

$$x_l = 48 - 4.25$$
$$= 43.75$$

$$x_u = 48 + 4.25$$
$$= 52.25$$