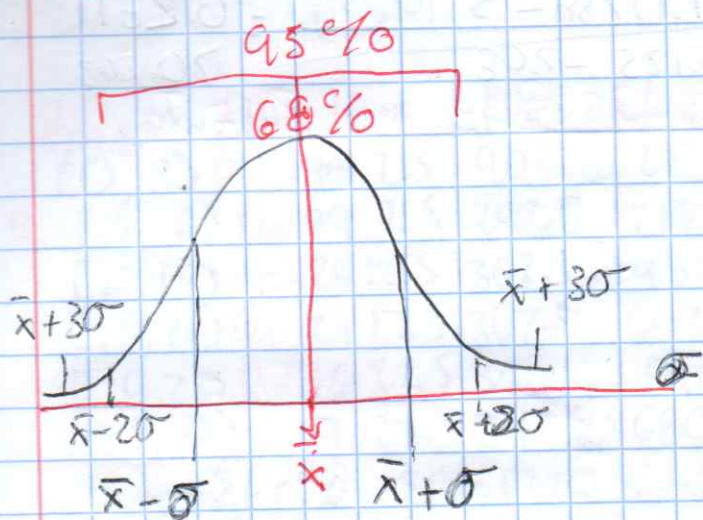
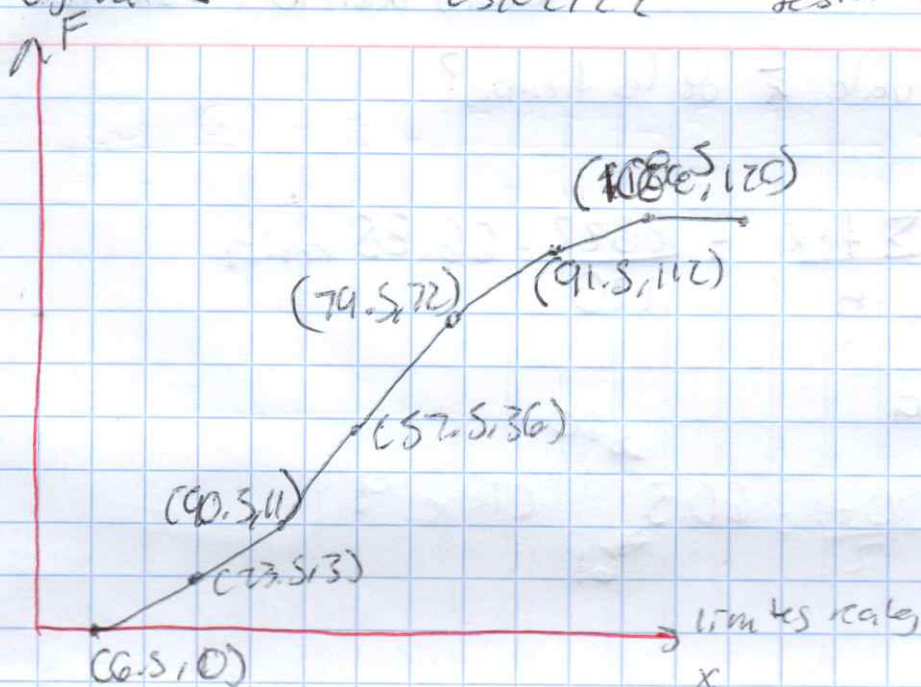


Regla empírica



El área de bajo del intervalo  $[(\bar{x}-\sigma) - (\bar{x}+\sigma)]$  es aprox el 68%

$[(\bar{x}-2\sigma) - (\bar{x}+2\sigma)]$  95%  
 $[(\bar{x}-3\sigma) - (\bar{x}+3\sigma)]$  99.9%



# clase	LRI-LRS	x	f	F	f·x	f·x <sup>2</sup>	C
1	6.5 - 23.5	15	3	3	45	675	17
2	23.5 - 46.5	32	8	11	256	8192	17
3	46.5 - 57.5	49	25	36	1225	60025	17
Mo 4	57.5 - 74.5	66	36	72	2376	156,816	17
Mo 5	74.5 - 91.5	83	40	112	3320	275,360	17
6	91.5 - 106.5	100	8	120	800	80,000	17
			$\Sigma f = 120$		$\Sigma f \cdot x = 8072$	$\Sigma f \cdot x^2 = 220,876$	



a) ¿Cuanto vale  $\bar{x}$  de los tiempos?

$$\bar{x} = \frac{\sum f \cdot x}{n} = \frac{8022}{170} = 66.85 \text{ min}$$

b) Mediana

$$Md_{pos} = \frac{170+1}{2} = 60.5 \quad \begin{matrix} \nearrow 60 \\ \searrow 61 \end{matrix} \quad \text{Clase 4}$$

$$Md = L + \left[ \frac{\frac{n}{2} - f_{a-1}}{f} \right] (c) = 57.5 + \left[ \frac{60 - 36}{36} \right] (17) = 68.8333 \text{ min}$$

c) Moda

$$Mo = L + \left[ \frac{\Delta_1}{\Delta_1 + \Delta_2} \right] (c) = L + \left[ \frac{40 - 36}{40 + (40 - 8)} \right] (17) = 76.38 \text{ min}$$

↑  
más

$$d) \sigma = \sqrt{\frac{\sum f \cdot x^2}{n} - (\bar{x})^2}$$

$$\sigma = \sqrt{\frac{581266}{170} - (66.85)^2} = 19.3643 \text{ min}$$

calidad  
regla empírica

e) Intervalo de confianza para el 95%

$$x_1 = 66.85 - 2(19.3643) = 28.1214 \text{ min}$$

$$x_2 = 66.85 + 2(19.3643) = 105.5786 \text{ min}$$

$$[28.1214 \text{ min} - 105.5786]$$