

99% CI?

$$\bar{X} = 668.27 \text{ kN}$$

$$S = 192.089 \text{ kN}$$

$$n = 15$$

$$\bar{X} \pm t_{\alpha} \cdot \frac{S}{\sqrt{n}}$$

$$df = 15 - 1 = 14$$

$$1 - \alpha = 0.99$$

$$668.27 \pm (2.624) \cdot \frac{192.089}{\sqrt{15}}$$

$$\alpha = 0.01$$

$$668.27 \pm 130.143$$

$$t_{\alpha} = 2.624$$

$$(538.127, 798.413) \text{ kN}$$

We are 99% confident that the true mean ( $\mu$ ) for the shear strength of the concrete beams is between 538.127 kN and 798.413 kN.

Moreover, we can conclude that our  $\bar{X}$  value (668.27 kN) is a plausible mean for the shear strength of the concrete beams since it falls within the intervals we have calculated.