

$$2. (a) \text{ Mean} = \frac{(39 + 39.5 + 39 + 38 + 38 + 37 + 35.5 + 35 + 35.5 + 36 + 37)}{11}$$

$$= 37.2273$$

Standard deviation, $s =$

$$\sqrt{\frac{(39 - 37.227)^2 + (39.5 - 37.227)^2 + (39 - 37.227)^2 + (38 - 37.227)^2 + (38 - 37.227)^2 + (37 - 37.227)^2 + (35.5 - 37.227)^2 + (35 - 37.227)^2 + (35.5 - 37.227)^2 + (36 - 37.227)^2 + (37 - 37.227)^2}{11 - 1}}$$

$$s = 1.5869$$

Mean C.I. $Z_{\alpha/2} = 1.96$ $t_{\alpha/2} = 2.228$

$$C.I = \bar{x} \pm t_{\alpha/2} \left(\frac{s}{\sqrt{n}} \right) = 37.2273 \pm 1.96 (1.586)$$

$$= 37.2273 \pm 2.228 \left(\frac{1.5869}{\sqrt{11}} \right)$$

$$= (36.161, 38.293)$$

Variance C.I. $\chi^2_{\alpha/2} = 20.483$ $\chi^2_{1-\alpha/2} = 3.247$

$$\frac{(n-1)s^2}{20.483} < \sigma^2 < \frac{(n-1)s^2}{3.247}$$

$$\frac{10 \times 1.5869^2}{20.483} < \sigma^2 < \frac{10 \times 1.5869^2}{3.247}$$

$$1.229 < \sigma^2 < 7.755$$