S12 - 3.4 - Confidence Interval Notes

$n = 1000$
$x = 400$
$CL = 95\%$

$p = \frac{400}{1000}$

$p = 0.4$

$E = z_{\frac{\alpha}{2}}\sqrt{\frac{pq}{n}}$

$E = 1.96\sqrt{\frac{(0.4)(0.6)}{1000}}$

$E = 0.03036$

$\bar{p} - E < p < \bar{p} + p$

$0.4 - 0.03036 < p < 0.4 + 0.0306$

$0.36964 < p < 0.43036$ CI

$(0.36964, 0.43036)$

$0.4 + 0.0306$

Stat Tests 1PropZInt @A

$p = \frac{0.36964 + 0.43036}{2}$

$p = 0.4$

$E = \frac{0.43036 - 0.36964}{2}$

$E = 0.03036$

$E = 0.4 - 0.36964$

$E = 0.03036$

$E = 0.43036 - 0.4$

$E = 0.03036$

$n = 1230$
$p = 0.4$
$CL = 98\%$

$E = z_{\frac{\alpha}{2}}\sqrt{\frac{pq}{n}}$

$E = 2.33\sqrt{\frac{(0.4)(0.6)}{1230}}$

$E = 0.0325$

$E = 0.045$
$CL = 95\%$
$p = unknown$

$n = \frac{\left(z_{\frac{\alpha}{2}}\right)^2}{E^2}(0.25)$

$n = \frac{(1.96)^2}{(0.045)^2}(0.25)$

$n = 474.27$

$n = 475$

$E = 2\%$
$CL = 99\%$
$p = 0.14$

$n = \frac{\left(z_{\frac{\alpha}{2}}\right)^2}{E^2}(pq)$

$n = \frac{(2.575)^2}{(0.02)^2}(0.14)(0.86)$

$n = 1995.8$

$n = 1996$ ($Tech$: 1998)

$\frac{525\ girls}{574\ babies}$

$Point\ Estimate = \frac{525}{574} = 0.915$

$0.892 < p < 0.937$

$Not\ effective\ ; E(x) = 0.5$

Stat Tests Zinterval #7 Stats

$n = 40$
$\bar{x} = 172.55$
$\sigma = 26$
$\alpha = 0.05$

$E = z_{\frac{\alpha}{2}}\frac{\sigma}{\sqrt{n}}$

$E = 1.96\frac{26}{\sqrt{40}}$

$E = 8.0574835$

$z_{\frac{\alpha}{2}} = 1.96$

$\bar{x} - ME < \mu < \bar{x} + ME$

$172.55 - 8.0574835 < \mu < 172.55 + 8.0574835$

$164.49 < \mu < 180.61$

$(164.49, 180.61)$ $CI = 172.55 \pm 8.06$

Stat Tests Tinterval #8 Stats

$\alpha = 0.05$
$\sigma = 15$
$ME = 3$

$n = \left(\frac{z_{\frac{\alpha}{2}}\sigma}{E}\right)^2$

$n = \left(\frac{(1.96)(15)}{3}\right)^2$

$n = 96.04$

$n = 97$

$n = 49$
$\bar{x} = 0.4$
$s = 21$
$CL = 95\%$

$E = t_{\frac{\alpha}{2}}\frac{s}{\sqrt{n}}$

$E = 2.01\frac{21}{\sqrt{49}}$

$E = 6.03$

$\bar{x} - ME < \mu < \bar{x} + ME$

$0.4 - 6.03 < \mu < 0.4 + 6.03$

$-5.6 < \mu < 6.4$

$(-5.6, 6.4)$