When $n \geq 30$ or population is normal, use normal chart to find Z_c

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

$$E = \frac{z_c s}{\sqrt{n}}$$

When $n < 30$ and don't know about population use t-chart where degrees of freedom $= n - 1$.

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

$$E = \frac{t_c s}{\sqrt{n}}$$

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1. $c = .90$
$n = 10$
$df = 10 - 1 = 9$

5. $c = .95$
$s = 5$
$n = 16$
$df = 16 - 1 = 15$

$t_c = 2.13$

$$E = \frac{t_c s}{\sqrt{n}} = \frac{2.13(5)}{\sqrt{16}} = 2.66$$

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9. $c = .90$
$\bar{x} = 12.5$
$s = 2.0$
$n = 6$
$df = 5$

$t_c = 2.02$

$$E = \frac{2.02(2.0)}{\sqrt{6}} = 1.65$$

CI: $12.5 - 1.65 < \mu < 12.5 + 1.65$

$(10.85, 14.15)$

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13. $(59.48, 90.52)$

$\bar{x} = 75$

$E = 15.52$

$75.00 - 59.48 = 15.52$

$90.52 - 75.00 = 15.52$

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