1. A random sample of 400 hospital admissions from a week's total of 5400 finds 88 were emergency contacts. Give a 98% confidence interval for p = rate of emergency contacts among admissions.

$$\hat{p} = \frac{88}{400} = \frac{22}{100} = 0.22$$

DF		
∞	1.96	2.326
Conf	95%	98%

$$\hat{p} \pm z \frac{\sqrt{\hat{p}(1-\hat{p})}}{\sqrt{n}} \sqrt{\frac{N-n}{N-1}}$$

2. A random sample of 36 elk selected from the Jackon, Wy. Elk Refuge in winter are scored for x = lead exposure finding

sample mean $\overline{x} = 27.6$

sample standard deviation s = 11.4

It is believed that x scores in this winter herd are **normal distributed**. Give the 80% confidence interval for population mean lead exposure μ.

DF	
35	1.306
∞	
Conf	80%

$$\overline{x} \pm t \frac{s}{\sqrt{n}} \quad (1)$$

3. What does **estimated margin of error of $\overline{x}$** actually estimate?

population sd σ
sd of the list of all possible $\overline{x}$
1.96 σ
1.96 sd of the list of all possible $\overline{x}$

4. We have obtained **estimated standard errors** for rates of cracking of concrete

0.037 for $\hat{p}_{\text{mixes with latex}}$

0.042 for $\hat{p}_{\text{mixes without latex}}$

Give the **estimated margin of error** for $\hat{p}_{\text{latex}}$-$\hat{p}_{\text{no latex}}$.

$$1.96\sqrt{0.037^2 - 0.042^2}$$

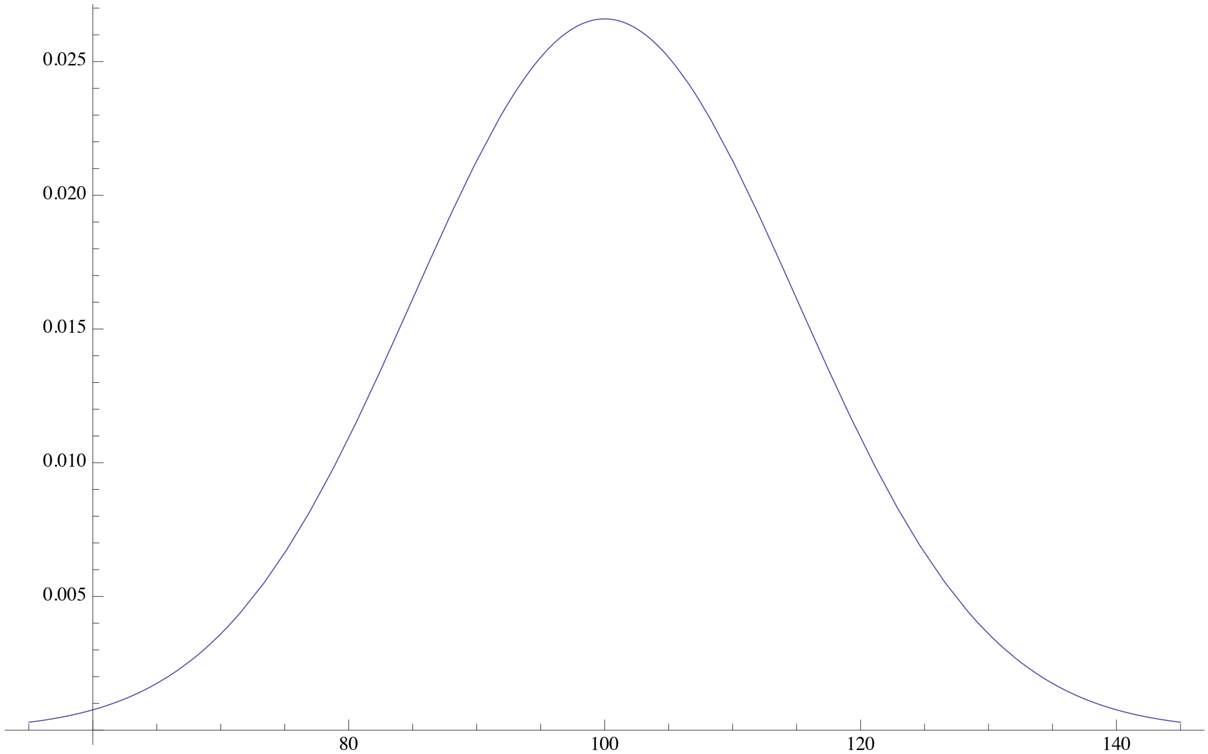
5. We have obtained **estimated standard errors** for sample means of concrete hardness

$$0.037 \text{ for } \overline{x}_{\text{mixes with latex}}$$
$$0.042 \text{ for } \overline{x}_{\text{mixes without latex}}$$

Give the **estimated margin of error** for $\overline{x}_{\text{latex}}$-$\overline{x}_{\text{no latex}}$.

$$1.96 \sqrt{0.037^2 - 0.042^2}$$

6. Estimate the mean and sd by eye.



7. Amount of genetic material in a given plot is normal distributed with

$$\mu = 9 \qquad\qquad \sigma = 3$$

Determine the standard score z of a plot with score x = 10.5.

Determine the amount x of genetic material of a plot with standard score z = 2.5.

8. What is the **exact chance** that a 95% confidence interval for μ will in fact cover μ if the population is normal distributed and the t-CI is used?

9. Use the z-table to determine $P(Z < 2.43)$.

z	0.03
2.4	0.9925

10. Determine the **86th percentile of Z**.

z	0.08
1.0	0.8599

IQ is normal distributed and has mean 100 and sd 15. Determine the **86th percentile of IQ.**

$$IQ = 100 + z\ 15$$

11. Determine the 86th percentile of Z. Calculate the sample standard deviation s for the list x = {0, 0, 4, 8}.

avg = 12/4 = 3

$$s_x = \sqrt{\frac{(0-3)^2+(0-3)^2+(4-3)^2+(8-3)^2}{4-1}} = 3.82971$$

$$s_{4x+9} = |4|\, s_x = 4\,(3.82971)$$

12. We've selected random samples of people with or without medication, the score being x = blood pressure decrease over a 5 minute period. Assume large populations.

$\overline{x}_{\text{with med}} = 12.3 \quad s_{\text{with med}} = 3.2 \quad n = 60$

$\overline{x}_{\text{without med}} = 3.7 \quad s_{\text{with med}} = 1.2 \quad n = 90$

Give the 95% CI for $\mu_{\text{with med}} - \mu_{\text{without med}}$.

$$(12.3 - 3.7) \pm 1.96 \sqrt{\frac{3.2^2}{60} + \frac{1.2^2}{90}}$$