Stats Review

1. Terminology

2. median, mean + St. dev ⇒ STATS | CALC | 1-VAR STATS.

3. histogram ⇒ STAT PLOT, turn plot on, select histogram
+4.
WINDOW → < min x, > max x
OR ZOOM 9
x scl ⇒ bin size

y ⇒ frequency
min y < 0 max y > max f.

TRACE → gives the freq for each bin.

BIN ⇒ 29 - 36
includes 29
does not include 36

5. Statistical Symbols:

$\mu_{\bar{x}}$ → mean of the sample means.

$\bar{x}$ → sample mean

n → sample size

S_x → sample st. dev.

μ → population mean

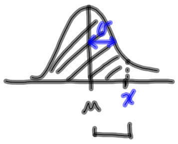
σ → population st. dev.

$\sigma_{\bar{x}}$ → stand. dev of the sample means.

6. Sampling methods... 6 types (see handout)

bias or non-bias sample.

7. Z-scores ⇒ the number of st. dev away from mean.



z=1.25

look up 1.25 on chart to find the area

$z = \frac{x-\mu}{\sigma}$

↑ the number of stand. dev away from mean.

* MUST be a NORMAL DISTRIBUTION!

8. Central Limit Theorem

- all about taking repeated samples (size n) from the same population.

$\mu_{\bar{x}} = \mu$

$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$

* If the population is normal, the sampling distribution (the distribution of the sample means) is normal. ⇒ z-scores

* If the population is not normal the sampling distribution is normal **IF** $n \geq 30$. So we can use z-scores.

but $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$

9. Confidence intervals: write down z-values for 90, 95 and 99% confidence level.

$CI = \underbrace{\bar{x}}_{\text{point estimate}} \pm \underbrace{z\frac{\sigma}{\sqrt{n}}}_{\text{margin of error}}$ ← use s_x if we don't know σ...... not entirely accurate.

* Know how to interpret what a confidence interval... "We are 90% confident that the interval (? , ?) will contain the population mean using this method.

use calculator:

STATS/TESTS/

t-interval if σ is unknown.

z-interval if σ is know

* input data or stats ($\bar{x}$ and s_x or σ)
(L1)

10. $CI = \bar{x} \pm z\frac{\sigma}{\sqrt{n}}$ ← a bigger n decreases the size the CI.

↑ z is bigger for a higher level of confidence ∴ the CI will be longer (i.e. having a better chance of containing the mean)