

Chapter 3 Notes

①
this symbol
means sum of

$$\text{mean, } \bar{x} = \frac{\text{sum of all data values}}{\text{number of data values}} = \frac{\sum x}{n}$$

* Always check your answers make sense
i.e. answer for mean MUST be within
the range of values!!

The mean is affected by outliers so is
not the most resistant measure especially
if there are:

- outliers
- a skewed distribution

} median is
a better
measure of
CENTRE in
these cases.

If symmetric can use either mean OR
median to describe centre.

Standard deviation — spread around the
mean

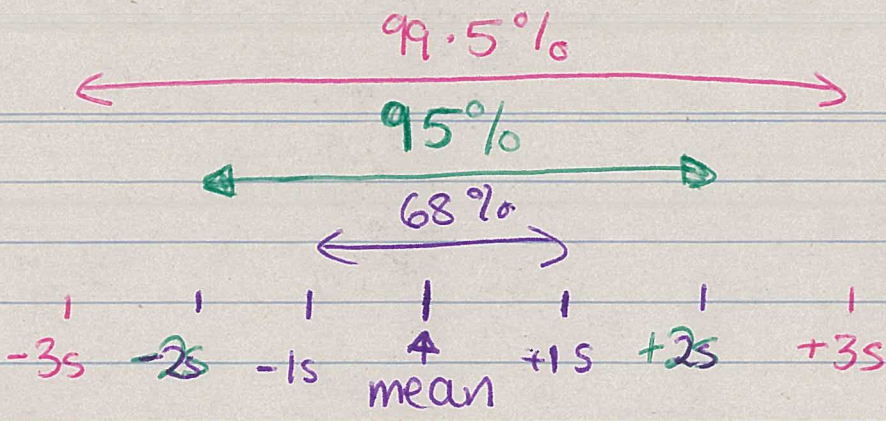
$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}$$

for a rough estimate of standard deviation

can use

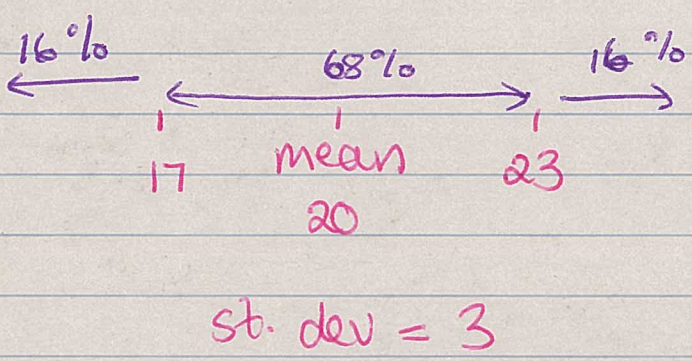
$$s \hat{=} \frac{\text{range}}{6}$$

* the text book *
* says 4 *



- so 68% of data lies within 1 stand. deviation of the mean
- 95% lies within 2 st. dev.
- 99.7% lies within 3 st dev.

* You can also use this to work out data outside this → the "tails"



e.g. If there were 25 students in the class, how many scored above 23 on the test.

$$\begin{aligned}
 & 16\% \text{ of } 25 \\
 & = \frac{16}{100} \times 25 \\
 & = 4
 \end{aligned}$$

* 4 students scored above 23

Standard Scores (z score)

$$z = \frac{x - \bar{x}}{s} = \frac{\text{data value} - \text{mean}}{\text{standard deviation}}$$

- positive z score - data value lies above the mean
- negative z score - data value lies below the mean
- zero z score ~~is~~ - it is on the mean

Hmmm..... how do I use this?
 when comparing different sets of results the z score can be very useful

The higher the z score the further away from the mean you are.....

so if you are looking at test scores for examples, a higher z score means you performed really well
 but a negative z score means you performed poorly

TAKING RANDOM SAMPLES

* Use your CAS to generate the random data values *

Menu > Prb > Random > Seed any 4 numbers

Then ^{Menu} 5 → 4 → 2 (enter the range of the numbers in your data set)

So if there are 50 data values you will enter (1, 50)

Press the enter button heaps of times

then press to generate your sample