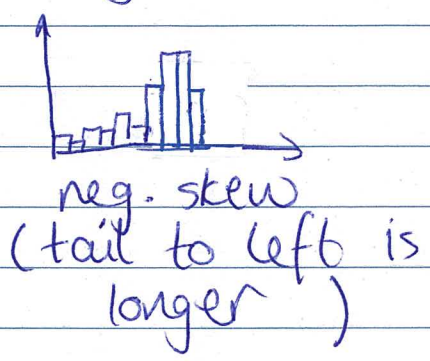
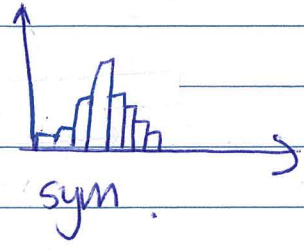


MORE ON HISTOGRAMS

Key points of interest | properties

- ① SHAPE - symmetrical
- positive or negative skew



- ② MODE - highest column (remember: can be more than 1)

- ③ OUTLIERS - unusually large or small values compared to rest of data.
- ignored when describing the shape
- usually obvious - gap between bulk data and it

- ④ CENTRE - middle value of histogram
- median - found by finding the point where area is halved.
- can be estimated by eye.

* position is located by $\frac{\sum f}{2}$

(2)

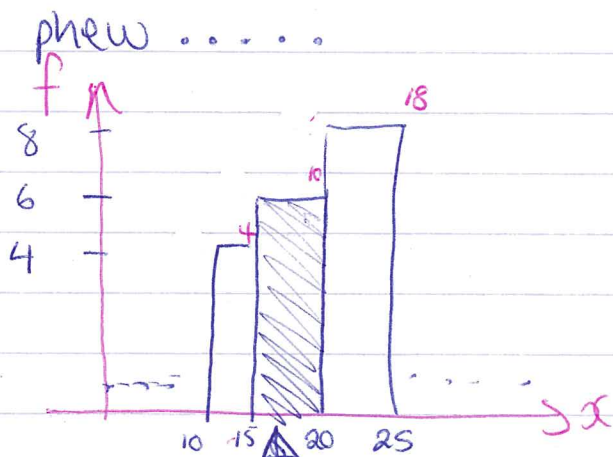
Exact calculation is a bit trickier.....

* First you must locate the 'group' the median falls in AND

* the end points of the group.

Then.....

$$\text{median} = \text{lower group limit} + \left(\frac{\text{class interval}}{\text{freq. of median interval}} \right) \times \left(\text{median position} - \text{freq. at start of interval} \right)$$



$$\begin{aligned} \text{median} &= 15 + \left(\frac{5}{6} \right) \times (9 - 4) \\ &= 15 + \frac{5}{6} \times 5 \\ &= 19.2 \end{aligned}$$

e.g. If you determine median occurs in here then....

class interval = 5
freq of median interval = 6

lower group limit = 15
med. position = 9

$$\frac{\sum f}{2} = 9 \text{ so median is at } 9$$

freq at start = 15

9 occurs between 4 & 10 so in interval 15 - 20
(check as should be closer to 20 than 15)

The mean could also be reported if histogram is symmetrical, otherwise can be hard to calculate.

* Standard deviation needs to be considered with the mean.

- ⑤ SPREAD - normally consider
 - range ^{max - min}
 - IQR - $Q_3 - Q_1$
 - stand. deviation (hard to do with histogram)

When asked to interpret, they are looking for a discussion around these 5 key points

OK ? ! ? !

①

STEM AND LEAF PLOTS

get the use of green!



Key points:

- * Leaf is final digit only
- * Stem can be more than one digit
- * ALWAYS provide a key
- * Useful as ALL results are visible
- * increase in leaf value away from stem
- * If too many values in same interval, split the interval BUT MUST be consistent for entire plot

Points of interest are the same as Histograms (in fact they kind of look like one of these rotated 90°!)

5 figure summary means:

MIN

MAX

MEDIAN (Q₂)

Q₁

Q₃

* $IQR = Q_3 - Q_1$