Warm Up

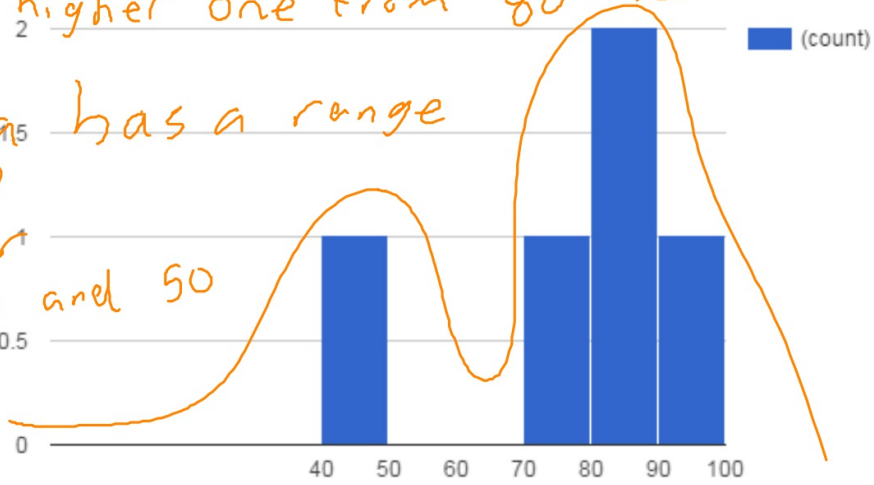
Describe the histogram.

C: the mode is between 80 and 90

S: 2 peaks; shorter one from 40-50 and the higher one from 80-90

S: the data has a range of 60

O: an outlier between 40 and 50



Objective: SWBAT describe how adding or multiplying by a constant changes a distribution of data

SWBAT find the median & mean of a density curve

Agenda:

- Warm Up
- Notes
- Practice
- Reflection

HW: pg. 107
#20, 22, 25, 27, 28, 31

Notes: Adding a Constant

Take the numbers 1 through 10 and find the:

mean : 5.5 → 8.5
median : 5.5 → 8.5
Q3 : 8 → 11
standard dev. : 3.02 → 3.02
Q1 : 3 → 6
IQR : 5 → 5

Now take the list, add 3 to each number, and find the stats again. What happened?

Summarize:

measures of center : increase/decrease by the #
measures of spread : stay the same
shape : stay the same

Notes: Multiplying by a Constant

Now take the original list, multiply each number by 3, and find the stats again. What happened?

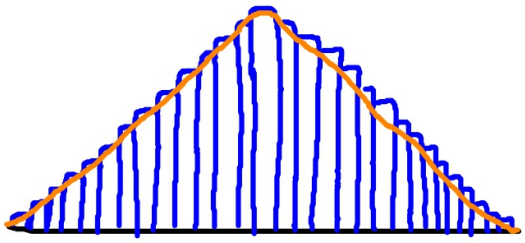
Summarize:

measures of center : multiplied by the #
measures of spread : multiplied by the #
shape : gets wider/narrower

How is this similar to z-scores? For z-scores, we subtract (translation) and then divide (dilation)

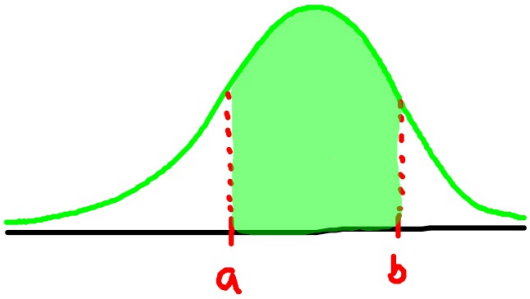
Notes: Density Curves

Sometimes, we have so many observations that a graph starts to look smooth. At that time, we can start to describe the data with a density curve instead.



A density curve:

- describes the overall pattern
- has a total area of 1



- the area above an interval is the proportion of all data in that interval

Notes: Density Curves

In a density curve,

- the median is the point that divides the area of the curve in half (the "equal areas" point)
- the mean is where the curve would balance if the curve were solid

We use μ and σ for the mean and standard deviation here, because the density curve is an abstract idealization.

Practice

TPS Chapter 2.1 quiz A and C

Further practice starts on pg. 107

Reflection

What are the analogous terms in math for adding a constant to a function or multiplying by a constant?