MEASURES OF CENTRAL TENDENCY

Learning goals

- calculate mean, median and mode

Central Tendency

- information on the middle of a set of data

-average

Mean: the average value

Ex. Find the mean.

9, 6, 12, 10, 3

$$\text{Mean} = \frac{9 + 6 + 12 + 10 + 3}{5} = \frac{40}{5} = 8$$

Median: the middle value

Ex. Find the median.

put numbers in order smallest to largest

7, 3, 1, 9, 4
Median = 1, 3, (4), 7, 9

8, 10, 9, 7, 12, 11
Median = 7, 8, [9, 10], 11, 12

$\frac{9+10}{2} = 9.5$

Mode: the value that appears the most

Ex. Find the mode.

6, 5, 9, 1, 3, 5, 12
Mode = 5

9, 2, 2, 7, 9, 7
Mode = 2, 7, 9

8, 1, 3, 2, 3, 3, 8, 12, 8
Mode = 3, 8

No mode: all numbers appear once

Which one is the best representation of average?

Mean - very high or very low values can move it significantly
- (good if all data is close together)

Median - usually the best
ex. test scores - you got 60%

58, 60, 78, 79, 82, 88, 90

ex. test scores - you got 40%

10, 22, 32, 34, 35, 40, 42

Mode - depending on the situation

ex. on your quizzes you get the following marks

1, 2, 1, 3, 2, 2, 4, 5, 7, 9, 10 ← understand here

Do you know the material or not?

- good when the value is the most consistent

* good example
store → what do people buy the most

DISCUSS IN YOUR GROUPS

ACTIVITY mean median mode

Identify whether each statement below describes the mean, median, or mode. Answers are not unique (i.e., a statement could describe more than one measure of central tendency)

Description	Mean, Median or Mode?
Usually the least representative of a set of data	mode
Most popular	mean median
May have more than one answer	mode
Useful when comparing sets of data	mean median
Not as popular as mean	mode median
Extreme values (outliers) do not affect as strongly	median
Used for categorical type data	mode
Only one answer	mean median
Data must be listed in ascending order (if done manually)	median
Difficult to interpret or compare if there is more than one answer	mode
Not as popular as median	mode
Affected by extreme values (outliers)	mean
Not affected at all by extreme values (outliers)	mode median
Useless if no values repeat	mode

On the Boards...

1) The scores on a math quiz are shown below:

63 71 40 99 52 94 83

67 94 89 14 76 68

Calculate the mean, median and mode.

910÷13=70 **71** **94**

2) Tyler records the maximum number of kilograms he can lift each time he goes to the gym:

37, 37, 38, 41, 37, 38, 42, 41, 43, 46, 58, 37

Calculate the mean, median and mode.

495÷12=41.25

37

(38+41)÷2=39.5

Seatwork / Homework

pg.136 # 1, 4, 6, 7

Bonus

$$\frac{28+36+38+41+44+x}{6} = 80$$

Solve for x