Algebra 1 0.12

Find measures of central tendency, variation, and position

variable – changeable / not all the same

data – info collected

measurement

qualitative (categorical)

quantitative (numerical)

univariate one thing

central tendency

- mean – average equal distribution $\frac{\text{total}}{n}$
- median – in the middle
- mode – most frequent

variation

- range
- quartile
- IQR $Q_3 - Q_1$
- outlier $1.5(IQR)$
- 5-number summary

Activity: grab cubes

7 8 9 10 10 10 11 12 12 13 15 15 15 15 16 16 16 18

8 7 10 10 11 16

15 12 18 16 15

13 16 10 12 9 15 15

$\frac{213}{17} \approx 12.5$

10 10 10

16 16 16

15 15 15 15

mode

KeyConcept Measures of Center

- The **mean** is the sum of the values in a data set divided by the total number of values in the set.
- The **median** is the middle value or the mean of the two middle values in a set of data when the data are arranged in numerical order.
- The **mode** is the value or values that appear most often in a set of data. A set of data can have no mode, one mode, or more than one mode.

2 3 3 5 6 7

Example 1 Measures of Center

BASEBALL The table shows the number of hits Marcus made for his team. Find the mean, median, and mode.

Team Played	Hits
Badgers	3
Hornets	6
Bulldogs	5
Vikings	2
Rangers	3
Panthers	7

mean ≈ 4.3

median = 4

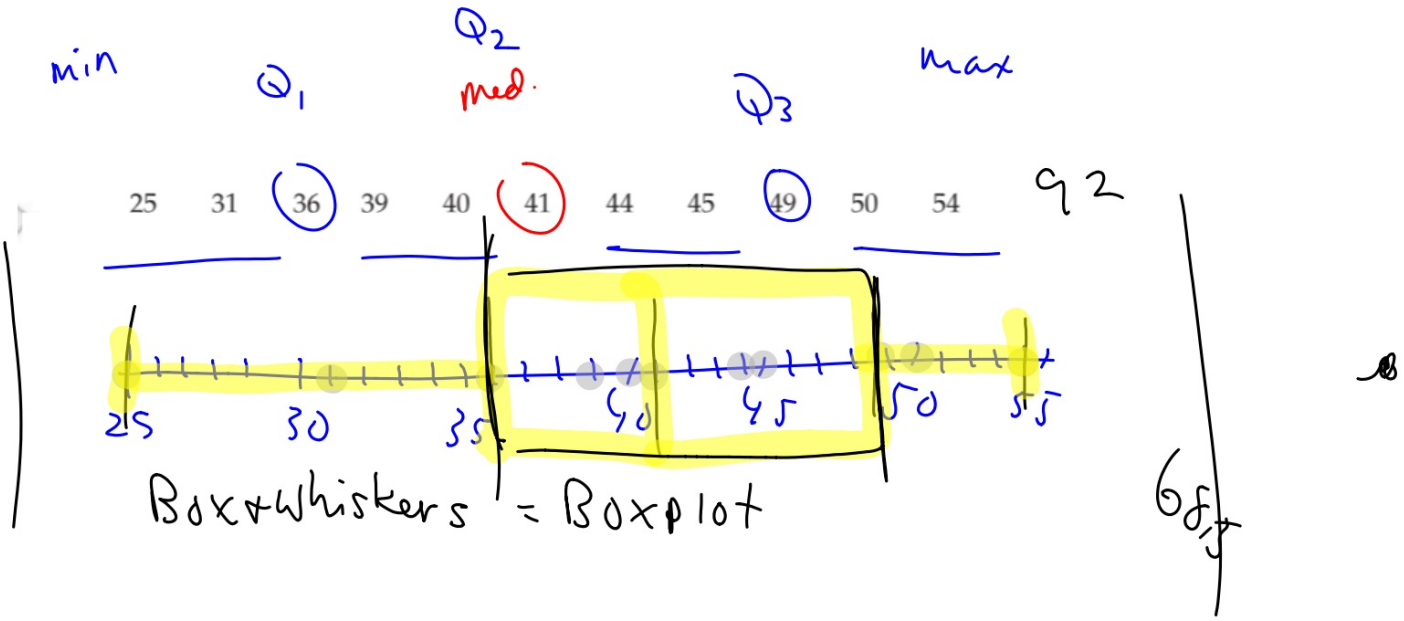
mode = 3

$\frac{26}{6}$

Quartiles:

↓

4 equal parts 5-number summary



Example 3 Five-Number Summary

FUNDRAISER The number of boxes of donuts Aang sold for a fundraiser each day for the last 11 days were 22, 16, 35, 26, 14, 17, 28, 29, 21, 17, and 20. Find the minimum, lower quartile, median, upper quartile, and maximum of the data set. Then interpret this five-number summary.

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IQR
Outlier

Example 4 Effect of Outliers

TEST SCORES Students taking a make-up test received the following scores: 88, 79, 94, 90, 45, 71, 82, and 88.

a. Identify any outliers in the data.

b. Find the mean and median of the data set with and without the outlier. Describe what happens.

Data Set	Mean	Median
with outlier		
without outlier		