

31. Measures of Center and Variability

a) Demo · Measures of Center

Mean	Sum $\div$ Count
Median	Middle value when sorted
Mode	Most frequent value
Range	From minimum to maximum

Test scores of 7 students:

72, 85, 85, 90, 92, 95, 100

Sorted: 72, 85, 85, 90, 92, 95, 100

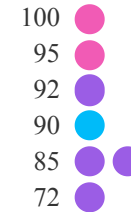
Mean = $(72+85+85+90+92+95+100) \div 7 \approx 88.4$

Median = 4th value = 90 (3 on each side)

Mode = 85 (appears 2 times)

Range: from 72 to 100, span = $100 - 72 = 28$

Score Dot Plot



b) Finding the Mean

Jump rope counts of 6 students (jumps/min):

45, 52, 48, 55, 50, 44

① Sum =

② Count =

③ Mean $\approx$

④ Looking at the dot plot, what range do most students fall into?

Jump Rope Dot Plot



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c) Finding the Median

Median: When sorted, the number with equal counts on both sides. If even count, average the two middle values.

① For 7 values, the 4th is the median

3, 3, 5, 5, 5, 5, 5 (five 5's, two 3's)

Sorted: 3, 3, 5, 5, 5, 5, 5

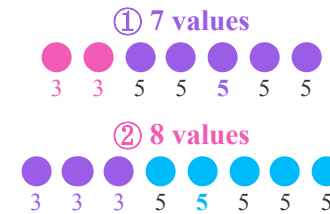
Median = (4th value)

② For 8 values, average of 4th and 5th

3, 3, 3, 5, 5, 5, 5, 5 (five 5's, three 3's)

Sorted: 3, 3, 3, 5, 5, 5, 5, 5

Median = (+) ÷ 2 =



d) Mode and Range

Mode: The value that appears most often. A dataset may have one mode, multiple modes, or no mode.

① 4, 4, 4, 6, 7, 7, 9

Mode = Range =

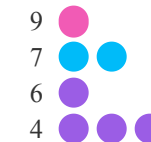
② 12, 12, 15, 15, 15, 18, 20, 20

Mode = Range =

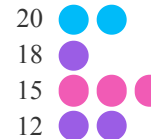
③ 23, 25, 25, 28, 28, 30

Mode = Range =

① Dot Plot



② Dot Plot



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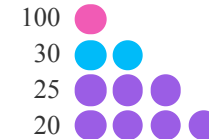
e) Choosing the Right Measure

Weekly allowance of 10 students (yuan):

20, 20, 20, 20, 25, 25, 25, 30, 30, 100

- ① Mean $\approx$
- ② Median =
- ③ Mode =
- ④ Which is most affected by the outlier (100 yuan)?
- ⑤ Which measure best represents most students?

Allowance Dot Plot



100 is an outlier that pulls up the mean

f) Comparing Two Datasets

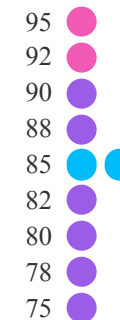
Math test scores of 10 students from Class A and Class B:

Class A: 75, 78, 80, 82, 85, 85, 88, 90, 92, 95

Class B: 60, 65, 70, 75, 85, 85, 90, 95, 98, 100

- ① Mean of A $\approx$
Mean of B $\approx$
- ② Range of A =
Range of B =
- ③ Which class has more consistent scores? Why?

Class A



Class B

