

Two car salesmen are competing for a mid-year bonus. The owner of the dealership wants to assess the better competitor. Who is the better candidate?

	Monthly Sales					
Rahim	16	28	32	28	26	31
Johann	34	30	24	26	29	26

This depends on how the owner judges the centre of their data.

Using averages

Rahim's is $\frac{161}{6} = 26.8$ cars a month.

Johann's is $\frac{169}{6} = 28.2$.

Johann sells more cars a month by this calculation

Look more closely at their data,

Rahim is more likely to sell 28 cars in a month

Johann is more likely to sell only 26 cars in a month, because these are their middle number of sales.

It is important to do as many calculations as possible before summarizing a set of data.

Measures of Central Tendency Lesson:

*There are 3 ways to find the common trend (or central tendency) for a set of data.

1) Mean (most commonly referred to as the average)

*To find the mean, add up all of the numbers in your list and divide by the number of pieces of data.

Ex 1: Jesara is buying a home that will require a mortgage. The bank wants to know her monthly salary. She works on commission, so she must calculate her average salary. Given her income for the first 6 months of the year, what is her average salary?

Jan--\$3675, Feb--\$4250, Mar--\$3225, Apr--\$2985, May--\$3650, Jun--\$4600.

Solution: Mean

$$\begin{aligned} &= \frac{3675 + 4250 + 3225 + 2985 + 3650 + 4600}{6} \\ &= \frac{22385}{6} \\ &= \$3730.83 \end{aligned}$$

She would tell the bank that she makes an average of \$3730.83/month.

2) Median

*The median is the middle entry in an ordered list. There are as many data points above it as below it.

*To find the median,

a) If there is an odd number of data points, take the middle one (i.e. if there are 13 numbers, the median is the value of the 7th number when they are listed in ascending order).

b) If there is an even number of data points, the median is the average of the middle two numbers.

Ex 2: Find the median mark for each list of student grades.

a) 62, 64, 76, 89, 72, 54, 93

b) 56, 84, 63, 67, 62, 98

First, list the numbers in ascending order.

54, 62, 64, 72, 76, 89, 93

^-- one middle number

= 72

med = 4th entry

56, 62, 63, 67, 84, 98

^--^ two middle values

med = average of 3rd and 4th

=(63+67) ÷ 2

= 65

3) *Mode*

*The mode is the most frequent number in a data set.

*There can be no mode as well as more than one mode.

Ex 3: Find the mode(s) for each list of numbers.

a) 5, 7, 9, 8, 6, 5, 4, 10

mode= 5

b) 25, 30, 32, 30, 25, 29

modes= 25 and 30

c) 63, 57, 66, 83, 79, 72, 79, 69, 60, 63, 79, 85, 80

mode= 79

Ex 4: The modes of the following set of data are 7 and 9. What must be the value of y ?

6, 9, 3, 4, 8, 0, 7, 2, 9, y

Sol'n: Since both 7 and 9 must be there the same number of times, y must be 7.

Tips:

Mean—Really good when the data is fairly close together. Most commonly used.

Median—Good when there is an outlier (i.e. a number that is far away from the others which would skew the mean).

Mode—Good when the value of the number is the most important information (e.g. shoe size).

--Only choice with categorical data.