

Lesson 2: Measure(s) of dispersion of a distribution (how spread out)
 one tool:
 ↳ Range
 ↳ deviation from average (\bar{x})

Since you are considering the dispersion around the mean, note for each distribution the **deviations** between each value and the mean of the distribution. Use the table below to answer this question.

Price of different smartphones on a classified ad site (\$)

In Montréal		
Price (\$)	Mean of the distribution	Deviation between the price and the mean
284	285.75	284 - 285.75 = -1.75
305		305 - 285.75 = 19.25
260		260 - 285.75 = -25.75
300		300 - 285.75 = 14.25
308		
262		
294		
273		

deviation can't be negative

$ x_i - \bar{x} $
1.75
19.25
25.75
14.25

P 18

$$\bar{x} = \frac{\sum x_i}{n}$$

$$\bar{x} = \frac{\text{sum of data values}}{\# \text{ of values}}$$

the absolute value of 2

$$|2| = 2$$

$$|-2| = 2$$

$$|4| = 4$$

$$|-4| = 4$$

Interpreting Deviations *When averages are close, look to deviation for more info.*

Price of different smartphones on a classified ad site (\$)

In Montréal		
Price (\$)	Mean of the distribution	Deviation between the price and the mean
284	\bar{x} 285.75	1.75
305		19.25
260		25.75
300		14.25
308		22.25
262		23.75
294		8.25
273		12.75

In Saint-Georges-de-Beauce		
Price (\$)	Mean of the distribution	Deviation between the price and the mean
308	\bar{x} 283.50	24.50
259		24.50
289		5.50
235		48.50
315		31.50
295		11.50

Montreal has lower deviation, (the better)

$$\text{Mean Deviation} = \frac{\sum |x_i - \bar{x}|}{n}$$

$$M D = \frac{\text{sum of deviation}}{\# \text{ of data values}}$$

Find the Mean Deviation

Results of two groups of students in an examination (%)

$$MD = \frac{\sum (x_i - \bar{x})}{n}$$

Group 1 students						
6	3	4	4	5	6	8
7	3	5	8	9		
8	4	7				
9	3					

x_i { 63, 73, 84, 87, 93, 64, 65 }

Then do p 23 #4 - #6

Step i. Construct chart

x_i	\bar{x}	$x_i - \bar{x}$	$ x_i - \bar{x} $
			Sum

↑ stem leaves

Step ii take sum of last column and divide by n.

$$MD = \frac{\sum |x_i - \bar{x}|}{n} \rightarrow \# \text{ of data points}$$

Interpreting Mean Deviation.

Avg lifespan of a battery

Brand A

Brand B

$\bar{x} = 138 \text{ hr}$

$\bar{x} = 138.2 \text{ hrs}$

MD = 4 hrs

MD = 14 hrs.

↳ data points are going to be 4 hrs away from average.
 In hospital, buy battery that long lasting and reliable.

• the lower the dispersion/deviation, the better because the more reliable.

• the more consistently close to average.

Hmwk

Pg 25 #8 - #9

Pg 32 #1 a) → bowler B has average of 166 points and MD = 9.2 points
 → which bowler do you want on your team

Pg 34 #5

Pg 37 #8

Pg 23 #4 - #6