### Statistical parameters

**STATISTICS**

07

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07

**Mean deviation**

«Statistics is a science that shows that if my neighbor has two cars and I have none, we both have one»

George Bernard Shaw

Consider the following data distribution:



**1**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***xi*** | 1 | 2 | 3 | 4 | 6 | 7 | 12 |
| ***Fi*** | 9 | 7 | 3 | 3 | 1 | 1 | 6 |

Find the mean, , and the average deviation, DM, by filling in the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ***A*** | ***B*** | ***C*** | ***D*** | ***E*** |
| *xi* | *Fi* | *xi · Fi* | ***|*** *xi* ***–*** *x* ***|*** | ***|*** *xi* ***–*** *x* ***|*** *· Fi* |
| 1 | 1 | 9 |  |  |  |
| 2 | 2 | 7 |  |  |  |
| 3 | 3 | 3 |  |  |  |
| 4 | 4 | 3 |  |  |  |
| 5 | 6 | 1 |  |  |  |
| 6 | 7 | 1 |  |  |  |
| 7 | 12 | 6 |  |  |  |

Find the mean and the average deviation of this distribution:



**2**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***xi*** | 2 | 3 | 4 | 5 | 6 | 7 |
| ***Fi*** | 2 | 4 | 12 | 8 | 3 | 1 |

To do so, fill in a table similar to the previous activity.

Analyze the results obtained in the previous activities and answer the following questions:



**3**

1. Can the mean deviation be less than zero? Why?
2. In which cases can the average deviation can be zero? Justify your answer
3. The range is the difference between the maximum value and the minimum value of a distribution. Check that the two distributions satisfy that DM ≤ ½ Range. Why do you think this happens?
4. Check in both cases, that the sum of the deviations is equal to 0. Do you think this will always happen? Why?

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