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Author(s): M. I. Trachtenberg

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A NOTE ON A PROPERTY OF THE MEDIAN.

By M. I. TRACHTENBERG, B.A.

THE well-known minimum deviation property of the median is, I believe, usually proved by calculating the effect on the deviation-sum of a change in the position of the point from which the deviations are measured. The following is an alternative proof which may perhaps be of interest :—

The sum of the positive deviations of two quantities X_1 and X_2 from a third X is *constant and a minimum* when the third is *any point between them*, the value of the constant being the difference between X_1 and X_2 themselves.

If, then, $x_1, x_2, \dots, x_{n-1}$ are a series of quantities, ranged in order of magnitude, divide them up into *enveloping pairs* x_1, x_{n-1} ; x_2, x_{n-2} ; $\dots, x_r, x_{n-r}$; $\dots$

Then it follows from the above that any point M *within all the pairs* makes the sum of the deviations of each pair, and therefore the sum of the deviations of all the quantities, a minimum.

Thus, if the number of quantities be even, any point in the region between the two middle quantities gives a minimum deviation-sum, and if it be odd, the middle quantity gives the minimum, because it is zero distance from itself and gives a minimum for each enveloping pair. The property is thus established.