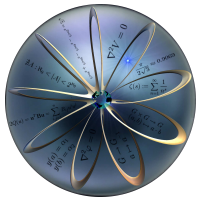

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percentile

Canonical name	Percentile
Date of creation	2013-03-22 16:17:13
Last modified on	2013-03-22 16:17:13
Owner	CWoo (3771)
Last modified by	CWoo (3771)
Numerical id	17
Author	CWoo (3771)
Entry type	Definition
Classification	msc 62-07
Synonym	first quartile
Synonym	third quartile
Synonym	IQR
Defines	quartile
Defines	upper quartile
Defines	lower quartile
Defines	interquartile range

Given a distribution function F_X of a random variable X, on a probability space (Ω, B, P) a *p^{th}-percentile* of F_X for a given real number p, is a real number r such that

1. $P(X \leq r) \geq \frac{p}{100}$,
2. $P(X \geq r) \geq 1 - \frac{p}{100}$.

Remarks.

- The most common percentiles of a distribution function are the `http://planetmath.org/Medi` (the 50^{th}-percentile or the second quartile), the *lower quartile* (the 25^{th}-percentile or the first quartile), and the *upper quartile* (the 75^{th}-percentile or the third quartile).
- In practice, the quartiles are calculated as follows: calculate the median m first, then the median of the data points below m is the first quartile, and the median of the data points above m is the third quartile.
- The interval between the first quartile and the third quartile is called the *interquartile range*, or *IQR* for short. Sometimes, the difference between the first and third quartiles is also called the IQR. Like standard deviation, IQR is a measure of dispersion. However, IQR is a more robust statistic.