Harmonic mean

The *harmonic mean* of n positive numbers $a_1, ..., a_n$ is a type of mean. It is the reciprocal of the arithmetic mean of their reciprocals. That is, the harmonic mean is found by adding up the reciprocals of the numbers, dividing the sum by n and then taking the reciprocal of the answer. The harmonic mean of $a_1, ..., a_n$ is therefore equal to

$$\frac{n}{\frac{1}{a_1} + \frac{1}{a_2} + \cdots + \frac{1}{a_n}} = \left(\frac{a_1^{-1} + a_2^{-1} + \cdots + a_n^{-1}}{n} \right)^{-1}$$

The harmonic mean is a type of power mean. In relation to the arithmetic and geometric means, it satisfies the inequality

$$\text{arithmetic mean} \geq \text{geometric mean} \geq \text{harmonic mean.}$$