

# History of Intelligence Testing & Ways of Calculating IQ

"If something exists, it exists in some amount.  
If it exists in some amount, then it is capable of being measured."  
René Descartes, Principles of Philosophy, 1644

The first intelligence test was the [Binet-Simon test](#), developed by [Alfred Binet](#), a French educator, in 1905. Binet was asked by the education department to develop a way of identifying children who were behind in their academic performance so that they could receive remedial education.

In these pre-IQ days, the interest was in comparing a child's score on the test with peers of the same age, to determine who needed extra help.

The Binet-Simon test was revised in 1908 and 1911 and then received a major revision in 1916 and was renamed the Stanford-Binet Intelligence Test. Part of the revision was the invention of the "Intelligence Quotient", better well-known as IQ.

[Lewis Terman](#) (an American professor from Stanford University) then worked with Binet to produce a major revision in 1916. The Binet-Simon test was renamed as the Stanford-Binet test. The Stanford-Binet can be used with children from the age of about 2 and a half years. [More about the Stanford-Binet Intelligence Test...](#)

Part of Terman's major revision was to re-conceptualize the relationship between Chronological Age and Mental Age.

- Chronological Age (CA) (i.e. Biological age)
- Mental Age (MA) (i.e. Level of intellectual performance)

Terman realised that the ratio between MA and CA was a better indicator of intelligence than MA alone e.g., for example

- MA = 7 years / CA = 5 years (IQ=140 which means gifted)
- MA = 7 years / CA = 9 years (IQ=78 which means retarded)

The formula for calculating IQ developed by Terman was  $100 \times \text{MA} / \text{CA}$ .

There are some problems with calculating I.Q. scores in this way.

For example, do Person 1 and Person 2 have the same level of intellectual superiority?

- Person 1: Mental Age = 5 years / Chronological Age 4 years = IQ 125
- Person 2: Mental Age = 10 years / Chronological Age 8 years = IQ 125

A second problem with the  $\text{IQ} = 100 \times \text{MA}/\text{CA}$  formula is in measuring adults:

Mental Age does not steadily increase throughout the lifespan, but Chronological Age does. So, an 85-year is not likely to have gained any greater capacity than when he/she was an 60-year old. Mental Age levels off around the end of adolescence, but Chronological Age gets higher, resulting in lower IQ scores as adults get older!

A third problem was that IQs do not fall strictly along a bell-shaped curve. There is a higher incidence of very high (there something like 50 times are many people with very high IQs than expected from a normal curve), with a similar though not as large effect for those with very low scores. [Read more...](#)

A fourth problem was that it was difficult to convert to IQ scores from other achievement and ability tests.

Because of these problems, MA is no longer used in calculating IQ scores - instead "deviation IQ" is used.

Deviation IQ uses a scale which is based on the actual rarity with which ratio IQ scores actually occur. Thus, it deflates the bulges in the curve, and makes a smooth bell-curve out of the data. Basically, people are allocated to percentiles rather than actual scores, so "deviation IQs" perfectly fit a normal curve. This is pretty simple to do, by looking up a chart that shows the match between someone's percentile rating and deviation IQ scores (based on a distribution with a mean of 100 and a standard deviation of 15). See [Generic IQ Chart](#); also see Murphy & Davidshofer (p.31).

For example, if one scores in the 96th percentile on an IQ test, then this can be read off a generic IQ chart as an IQ of 128.