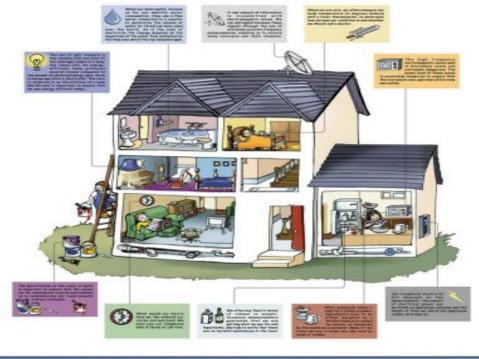


Metrology - Schools poster

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Founder of "Metrology for All "

“Mankind has thousands of years of experience confirming that life really does become easier when people cooperate on metrology” [1].



Measurements in and around the home



Accurate measurement for safety construction and buildings

INTRODUCTION

Those who missed their obligation to calibrate the standard unit of length at each full moon incurred the death sentence. The royal site architects who were in charge of constructing the temples and pyramids of the Pharaohs in ancient Egypt, 3000 BC, were aware of this danger. The length of the reigning Pharaoh's forearm, from elbow to tip of extended middle finger, and the width of his hand, were measured to determine the first royal cubit. Black granite was used to transfer the original measurement and cut it.

The workers at the building sites were given copies in granite or wood and it was the responsibility of the architects to maintain them. Even though we feel ourselves to be a long way from this starting point, both in distance and in time, people have placed great emphasis on correct measurements ever since.

In 1799 in Paris, the Metric System was created by the deposition of two platinum standards representing the metre and the kilogram – the forerunner of the present International System of Units – the SI system. In the Europe of today they measure and weigh at a cost equivalent to 6% of their combined GNP, so metrology has become a natural and vital part of our everyday life: Coffee and planks of wood are both bought by weight or size; water, electricity and heat are metered, and that affects our private economies. The quantity of active substances in medicine, blood sample measurements, and the effect of the surgeon's laser must also be precise if patients' health is not to be jeopardized. We find it almost impossible to describe anything without referring to weights and measures: Hours of sunshine, chest measurements, alcohol percentages, weights of letters, room temperatures, tyre pressures ... and so on. Just for fun, try holding a conversation without using words that refer to weights or measures [1].

The use of weights and measures is also necessary for business, trade, and regulation.

The food inspectorate checks bacteria content, maritime authorities measure buoyancy, and businesses acquire raw materials by weights and measures and define their goods using the same units.

The pilot carefully monitors his altitude, course, fuel consumption, and speed. Because of measurements, procedures are controlled and alerts are triggered. One of the pillars of industrial quality control is a systematic measurement with established levels of uncertainty, and generally speaking, in most contemporary businesses, the expenses associated with taking measurements account for 10% to 15% of production costs. However, accurate measurements may greatly improve a product's worth, efficiency, and quality. Finally, measuring is absolutely essential to science. Geologists measure shock waves when the enormous forces that cause earthquakes manifest themselves, astronomers patiently measure the faint light from far-off stars in order to determine their age, and atomic physicists raise their arms in celebration when they finally confirm the existence of a nearly infinitesimally small particle by making measurements in millionths of a second.

The availability of measuring equipment and the ability to use it effectively are essential if scientists are to be able to objectively document the results they achieve. The science of measurement – metrology – is probably the oldest science in the world and knowledge of how it is applied is a fundamental necessity in practically all science based professions! [1].



로얄 이집트 큐빗 마스터 (~2600 BC)

The Royal Cubit



We measure for your Safety

We measure anywhere

Measurement is fundamental in most fields of science and technology. Everything that has to do with measurement is existing in the metrology realm. The metrology effect can be seen everywhere enabling manufacturers to guarantee the quality of their products through commercial exchanges. It has thrived at the interface between science and manufacturing because it translates theoretical science into mass-produced reality .

Metrology The Science of Measurement and its application [2]

Metrology covers three main activities:

- The definition of internationally accepted units of measurements, e.g. the metre.
- The realization of units of measurement by scientific methods e.g. the realization of a metre through the use of lasers.
- The establishment of traceability chains by determining and documenting the value and accuracy of measurement and disseminating that knowledge.

Categories of Metrology

Metrology is separated into three categories with different levels of complexity and accuracy:

- **Scientific metrology** deals with the organization and development of measurement standards and with their maintenance (highest level).
- **Industrial Metrology** has ensure the adequate functioning of measurement instruments used in industry as well as in production and testing processes.
- **Legal Metrology** is concerned with measurements where these influence the transparency of economic transactions, health and safety.

❖ The NPL page: <https://www.npl.co.uk/school-posters> , it includes posters aimed particularly at primary and Secondary Schools.



[1] Metrology_in_short_3rd_ed.pdf http://www.dfm.dk/wp-content/uploads/2020/12/Metrology_in_short_3rd_

[2] Fluke Corporation, Legal Department, Everett, WA 98206-9090, "Calibration: Philosophy in Practice", Second Edition, May 1994. 1994.

” https://www.npl.co.uk/getmedia/b097a52d-8043-46e0-aa0c-14e64b56d95b/NPL-Schools-poster-_7-SI-BASE-UNITS-v12-HR-NC.pdf

