Welcome To The

Teacher Institute Of Standards and Technology **(TIST)**

Our Mission:
Since the metric system is a failure in the US and the English system is too awkward, the National Institute Of Standards and Technology (NIST) has decided to abandon the mks (meter-kilogram-second) system.

Because of severe federal budget cuts and great frustration with their failure to convert the US to the metric system, the director of NIST has decided to give the job of defining the new basic unit of length to us at TIST!

Each "research group" here at TIST has an experimental object that they will use to standardize a new unit of length. Those objects are:

- the paperclip
- the thumb
- the forearm
- the CD ROM disk
- the $1 bill

CREATING A NEW STANDARD FOR MEASURING LENGTH

1. Write down a clear definition for your new unit of length (be very precise -- remember, the whole world will be using this new definition)

2. Using your new standard and the register tape on your tables, invent a new "ruler" whose length is the new standard. Your "ruler" should consist of ten equal divisions. Give these divisions names.

3. Write down detailed instructions for making the new ruler (be very precise -- the whole world will be making rulers using your instructions).

4. On your table you will find a cylindrical can. Using your ruler, measure the volume occupied by the can (Volume = $\pi R^2 H$). Write down your answer in your new system of units.

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TRYING OUT NEW STANDARDS OF MEASURING LENGTH

1. Trade instructions for defining new units of length and for making new rulers with the "research group" next to you. Using only the standard and instructions you receive, build the ruler they describe.

2. Using this ruler, measure the volume occupied by the can. Write down your answer in the appropriate system of units.

3. Compare your ruler with that made by the research group that invented the standard. How closely are you in agreement.

4. Compare your measurement of volume with that made by the research group that invented the standard. How closely are you in agreement.

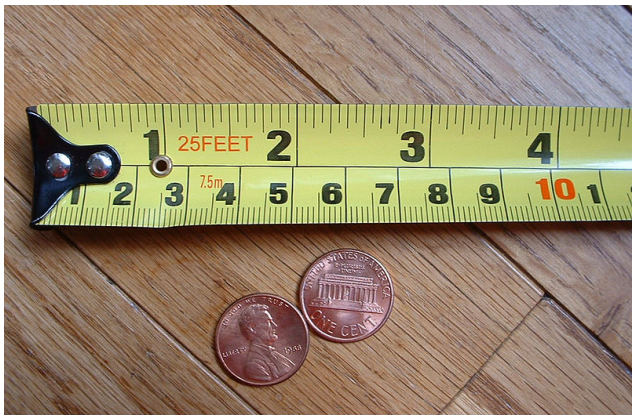
ASSESSING OUR WORK AND MAKING RECOMMENDATIONS

1. Compare standards based on "body parts" with those based upon physical objects. Which standards yielded more consistent measurements of volume?

2. What problems did you encounter when reproducing the rulers based on the standard? How could these problems be prevented?

3. What problems did you encounter when making measurements with your ruler? How could these problems be prevented?

4. Of all the standards we used today, which would you select as our unit of length and why?



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