A TEACHER'S GUIDE TO

Weights And Measures

This material may be reproduced

A TEACHER'S GUIDE TO WEIGHTS AND MEASURES

Since the first time a woman offered her neighbor two mmmmfs of beans for six whhhts of mammoth meat, people have been measuring the amounts of goods that are bartered, traded or sold.

TRADITIONAL MEASURES

Traditional measures were based on units that were considered fairly standard and easily determined. For the Romans, the breadth of a thumbnail was an uncia, the basis of our present day inch.

To make this measure more exact, the inch was declared in 1324 to be the measure of three barley grains from the center of an ear laid end to end. Twelve such inches made a foot, and three feet made a yard. The traditional yard was standardized by King Henry I as the distance from his own nose to the end of his thumb.

PROJECT

Have your students measure a piece of paper or a textbook in thumb breadths. Then have them measure in standard inches. Discuss the variations between thumbs. Was it an advantage to be a small shopkeeper with little fingers? Did women make more profit in those days?

DEPARTMENT OF LIBRARY AND ARCHIVES
ARIZONA
STATE DOCUMENTS COLLECTION

and gas pump computers clearly visible to the customer. The scale or pump must also register the same amount on both sides.

PROJECT

Ask students to observe whether the scales in their local stores register zero before an item is weighed. Discuss the difference in accuracy between a spring scale at the produce counter and a balance scale at the checkout counter. Ask students to weigh an apple or melon at the produce counter and at the checkout counter. Are both scales on zero? Is one more accurate? Which one is legal?

The scale at the checkout counter will be sealed with a dated seal from the Arizona Department of Weights and Measures. Ask the students to look for these seals and to check their dates. Ask the students to look for the same seals on the gas pumps. Ask them to check whether the gas pump is on zero before their father or mother fills the gas tank. Check to see whether the gas pump registers the same on both sides of the pump before and after the gas is pumped.

NOTE

Complaints of inaccuracy in scales or gas pumps may be directed to Weights and Measures Division, Department of Administration, 3039 West Indian School Road, Phoenix, AZ 85017.

TARE

Many items are now bought already packaged. But the customer is only supposed to pay for the contents of the package at the stated price, and

not for the package itself. "Tare" is the special weights and measures word for what we usually think of as packaging. "Tare" means specifically a deduction from the gross weight of a substance and its container made to allow for the weight of the container.

State regulation requires meat packers and other packagers to take a "tare weight" when they are weighing pounds of pre-wrapped hamburger or pork chops or mushrooms, so that you pay the cost per pound for the commodity only and not for the cellophane, label and container.

PROJECT

Have a local supermarket make up some tare packets for you. Ask the store manager or meat manager for different samples of tare. Weigh the tare packets at the store, or if you have a finely calibrated scale available, weigh them in the classroom. Have your students calculate the price per tare at the present cost of mushrooms, lobster, steak, etc.

OPEN DATING

Some products are perishable or semi-perishable. They can spoil or lose their flavor after a period of time. To be sure that they don't sell spoiled food, food producers and distributors use "pull dates" on perishable products to tell the store manager when the product should be taken off the shelves. This "pull date" limits the time that a perishable product such as milk or bologna is offered for sale. Bakeries also date their products, usually with a color code on the wrapper fastener.

PROJECT

Ask your class to find the pull date on a carton of milk at home. Have them check the pull dates on dairy products and lunch meats at their local store. Compliance with pull dates is voluntary. Why would the retailer be willing to comply? Why do producers and distributors use voluntary pull dates? What benefit does a pull date have for the store?

LABELING

Careful, strictly regulated labeling is one way to guarantee that the consumer gets what s/he pays for. Labeling regulations require that the package have the name of the commodity, the name of the manufacturer and the quantity sold in that package all clearly stated on the package. Early English law required that no horse could be sold at night. Similarly, present day labeling regulations insure that the buyer knows exactly what is being bought. Labeling of competitive products also allows the buyer to compare cost per measure.

PROJECT

Ask your students to check the label of their favorite breakfast cereal for the name of the product, the name of the manufacturer and the net weight of the product in the package.

PROJECT FOR OLDER STUDENTS

Have your students visit a local supermarket and record the net weight and cost of five different breakfast cereals. Have them calculate the cost per ounce of each brand. Be sure they choose a variety of products including sugar-coated, natural, generic products, nationally advertised, old-fashioned and recently marketed.

SPECIAL OFFERS

When a manufacturer offers a product as NEW or with so many CENTS OFF, such statements are within Weights and Measures regulation. If the words "CENTS OFF" are used on a commodity, the consumer can usually find a non-promotional package with the standard price nearby. ECONOMY SIZE must be cheaper per unit by at least 5% than the same brand of the commodity in a smaller package.

PROJECT

Ask your students to check their supermarkets for special discount and introductory offers. Can they find a basis for comparison? Is a product genuinely new or has it been significantly changed?

PROJECT FOR OLDER STUDENTS

Have them calculate the cost per unit of standard size and economy size packages. Is there a difference in price? Is the difference per unit 5% or more?

THE THIRD PERSON

Weights and Measures regulations exist to safeguard both buyer and seller. Weights and Measures officials check all weighing and volume measuring devices used in sales made to the public. Their work brings the impartiality of a third person to every transaction. Weights and Measures exist so that equity in the marketplace may prevail.

AN INVITATION

If you and your students have been able to undertake any of the above projects, the Arizona Weights and Measures Division would be delighted

to hear from you. Over fifty years ago, Ralph W. Smith, National Inspector of Weights and Measures, said, "the efforts which the official expends in conveying weights and measures information to the children, the youths, and the young men and women in schools and colleges may be expected to be of the greatest permanent value, not only with respect to present conditions but also with respect to the conditions in years to come." We hope this pamphlet has been of some help in conveying such information to so important an audience.

State of Arizona
Department of Administration
Weights and Measures Division

Phoenix: 3039 W. Indian School Road
Phoenix, AZ 85017
(602) 255-5211

Tucson: Tucsonian Apartments
1200 North 7th Avenue
Tucson, AZ 85703
(602) 882-5810

Flagstaff: P.O. Box 2844
Flagstaff, AZ 86003
(602) 774-7577

DEPARTMENT OF ADMINISTRATION
WEIGHTS AND MEASURES DIVISION