



**What
Every
Housewife
Should
Know**

This pamphlet issued by the
**New Jersey State Department of
Weights and Measures**

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CAPITOL

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Housekeeping is the Leading Business of New Jersey

BUT SOME HOUSEKEEPERS ARE NOT BUSINESS WOMEN

WHY

Because you have no scales in the kitchen and no accurate measures of length or capacity in the house by which to check up your purchases.

That's Bad Business

Because you buy from dealers who weigh in wrapping paper and wooden dish when they sell you meat, lard or butter.

That's Indifferent Business

Because you buy ice by the lump instead of by actual weight and allow the driver to take 25 or 50 pound checks when he does not know how much ice he has placed in the ice box.

That's Dishonest Business

Because you don't buy brands of food you know are pure but take whatever the grocer sends you.

That's Foolish Business

Because you are not careful to buy foods free from preservatives.

That's Dangerous Business

Because you buy bacon by the piece, lard by the pail, potatoes by the quarter's worth, olives by the bottle, breakfast food by the package and don't know how much the bacon, lard, potatoes, olives or cereals are costing you.

That's Extravagant Business

Because you allow dealers to sell you food, coal and all family supplies over scales and from measures that have not been tested and so may be inaccurate.

That's Careless Business

You have an Inspector of Weights and Measures in your city or county who should see that you are protected. If there is no such official ask the Mayor or County Commissioners to appoint one. He will save his yearly salary the first week he works.

Because you use milk from dirty dairies, meat from diseased animals, water from polluted wells and bread from careless bakers.

That's Deplorable Business

For the state provides you with inspectors to visit the places you mistrust, chemists to analyze samples you may send the laboratories, and in every town, city and county are trained health officers who are paid to protect you from all these unsanitary and dangerous conditions.

What Every Housekeeper Should Know.

This pamphlet is issued by the State Department of Weights and Measures for the guidance of the purchasing public.

Read this pamphlet carefully, and if you carry out the instructions contained herein you will do much to protect yourself against the dishonest merchant.

If your neighbor has not a copy of this pamphlet, and desires one, write to the State Department of Weights and Measures and a copy of the same will be mailed, free of charge, immediately upon receipt of your letter.

NO KITCHEN IS COMPLETE WITHOUT A GOOD SCALE AND A SET OF ACCURATE DRY AND LIQUID MEASURES.

To properly protect yourself against being defrauded, it is absolutely necessary that you provide your household with a good scale and a set of accurate dry and liquid measures. When you buy your scale or measures, to be sure that they are accurate, you should send them to the Weights and Measures Department and have them tested. There is no charge made for this test. Every purchase you make, when it reaches your home should immediately be re-weighed or re-measured in order to ascertain whether or not your merchant delivered to you full value for your money.

To be absolutely fair with your merchant, the scale you buy should be of as good a type as you can afford. The reason for this must be obvious to you. Since you are judging the honesty of your merchant by the re-weighing of his commodity on your scale, you should be absolutely sure that your scale is right, lest you should misjudge an innocent and honest person.

A yard-stick should be used in preference to a tape measure in measuring dry goods. The tape measure is generally made of a cheap muslin or cotton cloth and is usually subject to shrinkage by reason of the printing thereon and the ever-present possibility of its becoming moist or damp. The same tape measure, by constant use, is equally liable to expand. At any

rate, it is not a safe or accurate measure. A good yard-stick can be obtained cheaply and, with a reasonable amount of care, is not likely to become inaccurate if it is accurate when purchased. To be sure that the yard-stick you purchase is accurate, send it for a test to the Weights and Measures Department.

When you make purchases, whether it be in the butcher store, the grocery store or the dry goods store, insist upon the bill which you get having plainly marked thereon the weight or the quantity of the article purchased. For example: If you buy a chicken, do not be content with the butcher marking on the bill or the ticket you get, "One chicken, 48c."; insist upon him making the bill read, so many pounds of chicken (whatever the weight of the chicken may be) and then the price paid for it.

To understand the importance of this, your attention is called to the fact that if you buy a chicken and you discover at home that you have been short-weighted, you will have difficulty in proving this fact unless you can show by competent testimony that you asked for a certain weight or your butcher told you that the chicken was of a certain weight, and the best evidence in a case of this kind is a ticket showing the weight and the price charged.

This is true of every purchase you make. You will be greatly helping yourself if you will further insist upon the merchant putting on the same ticket the price per pound, in addition to the weight thereof.

A great many butchers have a rule prohibiting their clerks from placing upon the ticket furnished the customer the word "lb." or "lbs." While some of these butchers may be honest, there is, however, a possibility that their motive is dishonest. Guard against this yourself by insisting upon the ticket showing the weight, the price per pound and the total cost.

When you purchase vegetables by the dry measure, that is, a quart or a peck or a bushel, be sure to examine the measure the merchant uses before making your purchase, and after you hold your commodity. The reason why you should examine the measure before is to be sure that it has not a false bottom. The object of your looking at it after, is to be sure that he has not held some of your purchase in the measure.

When you order vegetables by the dry measure, be sure and ask for a definite quantity, such as a quart of beans or peas or a peck of potatoes or a barrel of potatoes, otherwise if you have been defrauded the merchant will always contend that he did not intend that the quantity supplied you was to be of a definite known quantity. He will always refer to it as a

basket or a pail or a package of the commodity, and your chances of prosecuting him would be minimized unless you can testify that you asked for a quart or some known quantity, which you did not receive.

The same care should be taken in ordering liquids. Do not be content with asking for a large can of olive oil. Ask for a known quantity, such as a quart, a gallon, two gallons, etc. Nor should you be content with asking for a bottle of vinegar, but should insist on getting a pint or a quart bottle of vinegar, etc.

When you buy a quart of potatoes by the dry measure, or any other vegetable, the law requires that you get heap measure. This means that the measure itself must not only be full to the brim, but it must be heaped in the shape of a cone as high as the commodity itself will permit.

DO NOT LEAVE THE TRIMMINGS OF YOUR MEAT WITH THE BUTCHER.

Many butchers are very accommodating and obliging in their desire to trim the meat which you purchase of them, after the meat has been weighed and you have paid for every particle of it. For example, you order a steak at 28 cents a pound. The butcher cuts the steak and places it upon a scale. He then informs you of the price of the steak. If the steak weighs 3 pounds exactly, it will cost you 84 cents. Thus you are paying for every particle of that steak. He then removes the steak to the block and proceeds to "trim" the steak, cutting away certain portions of fat and meat and bone. He then deposits all he has cut from the steak in a box beneath the counter, all of which you have already been charged for at the rate of 28 cents per pound. On the following morning the butcher again sells these trimmings, for which you have paid at the rate of 28 cents per pound, for 6, 7 and 8 cents per pound. In the meantime, you have taken your steak home, and if you are careful you have weighed it upon the scale in your kitchen. If the butcher has been dishonest, you discover a variance between the weight charged for and the weight of the steak on your own home scale. If you go back to complain to the butcher, he will promptly tell you that the difference between the weight of the steak when he sold it to you and the weight of the same steak on your scale has been deposited in the box beneath his counter as trimmings. He has removed all possible trace of the necessary evidence in a short-weight case.

The Weights and Measures Department advises you and urges you in all cases to insist upon the trimmings being given you or sent you with the meat. There are many uses to which you can put these trimmings at home. If the butcher can sell them for various prices per pound, certainly they must have some value in your home. The fat can be rendered into lard; the bones can be used in soup, and any careful housewife can certainly find many uses for trimmings of meat.

LEARN TO READ A SCALE.

It is very important that you should know how to read the scale in the shop. This you can do by looking carefully at each scale that you see. The Department could not furnish a specific set of instructions in this pamphlet, because of the vast number of different types of scales being manufactured.

It is unfortunate, but nevertheless true, that the housewife in reading a scale has an absolute disregard for the ounce graduations. The average woman simply observes the pound, quarter pound and half pound markings on the scale, and the short lines between these indications always pass her unnoticed, but they do not, however, pass the merchant unnoticed. A housewife will go into a butcher shop and ask for "about 2 pounds of steak." The butcher, of course, cannot gauge accurately in cutting meat to the extent of an even pound or two pounds, but cuts as near to the amount asked for by the woman as he can. He then places it upon the scale, and instead of saying to the purchaser, "2 pounds and 3 ounces," he will call out the amount he is going to charge for the meat, and the average purchaser rests content with this. The advice of the Department to the housewife is to insist upon the butcher saying just how much it weighs, and not how much it costs.

KEEP YOUR EYES ON THE SCALES WHILE THE MERCHANT IS WEIGHING YOUR PURCHASE.

Always watch closely the tradesman and the scale when your purchase is being weighed. Do not allow him to put his hands either upon the scale or any portion of it or upon the meat or commodity when it is upon the scale and being weighed. The moment the merchant puts his hand or knife on the scale, or in any manner touches it while your commodity is upon it, you are being defrauded.

There is no occasion and no reason for the mer-

chant to in any manner touch the scale. Do not allow him to bring the scale to a stop unless after he has brought it to a full stop he removes his hand and permits you to read the scale.

If you are buying a leg of mutton or a leg of lamb, or any kind of meat which projects out from the scale itself, do not permit the butcher to hold on with his hand to the meat, because this is one of the many ways in which dishonest butchers manipulate a scale.

If the scale has only one face, and that is not turned toward you, be careful to watch the hand of the butcher when he turns the scale around, so that you can read it. Be sure that he has not taken hold of any part of the scale which can affect the weighing. Be sure also that he is not holding the scale in an awkward position so that pressure can be placed upon the "runner." if it is a hanging spring scale.

WATCH CLOSELY HOW THE BUTCHER HANDLES A COMPUTING SCALE.

A computing scale is a scale which has a mechanical adding device, and which tells the operator automatically how much the commodity should cost at every price per pound. In a great many instances, this type of scale is set at a point where the weighing platform is on a level or close to the counter and so far from you as to be almost concealed and out of view, and unless you watch very carefully while your meat or any other commodity is being weighed on this type of scale, if the merchant is dishonest he will have a knife point bearing upon the platform of the scale or in some other manner putting pressure on it, thus adding to the weight of your commodity in a fraudulent manner.

These scales are highly sensitive, but all of them have attached to them what is known as a "dash-pot," and if the butcher or merchant is dishonest, there is no reason why the scale should be over-sensitive. You can judge the sensitiveness of the scale by the rapidity with which the hand or dial or weighing indicator moves. For your information, you are informed that one of the practices of dishonest butchers or grocers is to keep the scale as highly sensitive as possible, so that the hand or the computing dial or weighing indicator will move so quickly as to afford him an opportunity and a reason for bringing the scale to a stop with his hand, and in this way deceiving you and consequently defrauding you. No scale should be so sensitive as to create an unreasonable delay in waiting for the hand to come to a stop, and where the scale is so sensitive,

it is usually because of the desire of the merchant to have it that way.

WHY TELEPHONE YOUR ORDERS TO YOUR TRADESMAN AND TAKE A CHANCE WHEN BY GOING YOURSELF YOU CAN BE SURE YOU ARE GETTING WHAT YOU PAY FOR?

If you must use the telephone in ordering your foodstuffs, you must also take extra precautions to see that you are not being defrauded.

Avoid, whenever possible, however, using the telephone in ordering, because the telephone order has proven a great temptation to defraud to the dishonest merchant.

A FEW DON'TS.

Don't allow your grocer or dairyman to weigh in the wooden butter dish when he is weighing your butter. These butter dishes frequently weigh, in accordance with their size, from an ounce to three ounces. You will observe some of them very prettily decorated with tin on the edge. Remember, if they weigh these in, they are selling you the tin and the wood at the price of butter.

Don't let the fancy package goods fascinate you, because you are frequently paying very heavily for the fancy package and in most cases getting considerably less of the product than you would if buying it loose. Butter put in prints is sanitary, but be sure you are getting 16 ounces of butter without the paper or the carton.

Don't buy in a careless manner. That is, always ask for whatever the commodity is by a known weight or measure. Avoid asking for a cupful, five-cents' worth or ten-cents' worth, a package, a handful, a glass, a jar, a bag, a basket, a bucket or tub. All of these terms mean nothing in the law; unless you say a pound, or a quart, or a gallon, or whatever amount you want.

Don't buy in small quantities if you can avoid it. To illustrate the danger of this, I call your attention to the following: The poor people, who are forced to buy in small quantities, purchase butter a quarter of a pound at a time. If a wooden dish weighing one ounce is weighed in with the butter the purchaser has been defrauded out of one ounce in every quarter of a pound thereof, losing one-quarter of a pound by the time a full pound is paid for, whereas, even if a merchant had weighed in a one-ounce butter dish with a full pound purchase of butter, there would only have been a fraud of one ounce. This holds true of all commodities.

Don't misunderstand cheapness for economy. Cheapness is not a synonym, nor in no way is it related, to the word economy. Let us warn you against the merchant who always is able to sell cheaper than his neighbor. Unless you are very sure and positive about the character of your merchant, avoid patronizing him. Where there are three butchers in one neighborhood, and one man advertises at his door to sell meat very much cheaper than the other two, in most cases you may be sure that either he is substituting goat meat for lamb or selling an inferior grade of meat or is short-weighing you. Cheapness never has meant economy. If you do patronize a merchant who is underselling all of his neighbors, be on your guard and watchful.

Don't be afraid to carry a bundle, unless you are prepared and willing to stand the expense of having it delivered to your home. A great many bakers who will willingly deliver your bread to your house are delivering you a lighter loaf than the same character of a loaf purchased from the counter and carried home by you. The same is true of a great many other merchants. Somebody has to pay the expense of a horse and wagon. If you are willing to share this expense, well and good, but realize that you are doing it if you have your products sent home.

Don't gossip with your merchant while he is weighing your purchases, unless you are absolutely sure of the honesty of the tradesman. This is one of the many practices resorted to in a dishonest shop. The dishonest butcher or grocer will very often engage his customer in a conversation and, being always well supplied with gossip, can make it interesting enough to attract your attention away from the scale. When he does this you are losing money. If you must gossip with the butcher and the grocer, at least wait until your commodity has been weighed, and then your little talk will not cost you anything.

Don't be ashamed or too proud to do your own purchasing. By going into the store to make your purchases yourself, and not sending a messenger or telephoning, you can protect yourself against both fraud and quality of the goods as well as in weight and measure.

Don't be afraid of your tradesman. If you believe he is giving you short weight, or not the proper quality of goods, do not hesitate to insist upon your rights. The competition in trade today is sufficiently keen to warrant your insisting upon proper measurement and proper weight and proper quality being given you for your money. Always remember that your butcher is not the only butcher, or your baker

the only baker, or your grocer the only grocer—there are others. He knows this. He wants to hold your trade. He may try to “bluff” you, but if you feel or believe that the steak which you buy does not weigh what you asked for, insist upon his re-weighing it in front of you. Use as much intelligence and care in making your purchase in his store as he uses in making his from the wholesaler, and you will probably be protecting yourself to a great extent.

Don't leave your shopping till the last minute and then be in a hurry. It is frequently when a customer is in a great hurry that the dishonest merchant takes advantage of her. You will be greatly aiding yourself and this Department if you insist upon the grocer placing the 3½-pound package of sugar or any other commodity on the scale and weighing it in your presence. Don't be content with allowing the grocer to hand you a 3-½-pound package of sugar or flour from the bin already done up, unless he re-weighs it in your presence and when he places the 3½-pound package on the scoop, insist upon him putting an empty bag of the same kind that is around the sugar on the other side of the scale. Notice carefully the kind of paper bag he uses in putting up his product. If it is a colored paper, it is frequently a very heavy bag, sometimes as heavy as one ounce. In some instances, for example, in putting up flour, this heavy bag is necessary, because moisture must be kept out, but if the merchant desires to facilitate his own business by having his packages all done up ready for the trade, he is not entitled to weigh in his sugar and flour with this heavy bag; it is unlawful for him to do it.

Don't neglect to test the weight of package goods at home and compare them with the weight of the same commodity purchased loose. To illustrate this, try to follow it. Buy a 10-cent package of oatmeal or rolled oats; then buy 10-cen's' worth of loose rolled oats of the best grade. Take them both home. Empty out the package of rolled oats on your scale and weigh it; then compute how much a pound you have paid for it as a package. Remove the rolled oats which you have placed upon the scale from the scoop, and then put thereon the loose rolled oats and compute the price per pound you have paid for these. Note the difference. Determine for yourself which is more economical, allowing, of course, for the amount of sanitary protection you are getting in the package. Try this experiment with soda crackers. Buy a package of one of the standard brands of crackers at 5 cents; then purchase 5 cents' worth of loose soda crackers, and do as you did in the case of the rolled oats. Try this experiment with most all of the other

package goods, and especially is it important that you try this experiment with bottled goods, for example—vinegar. Purchase a large bottle of vinegar and then a quart of loose vinegar. Empty your bottle of vinegar into your quart measure and you will see how much less than a quart you have actually received.

Don't depend entirely upon your servants to protect you. Such a thing as a steward or a servant girl acting in collusion with a dishonest merchant to defraud the housekeeper has been heard of in New Jersey. Find out if in your kitchen any collusion is being practiced. Don't think you are losing time by putting your kitchen upon a proper system. This Department assures you that if you will put your kitchen upon a proper system, and if you have any way of computing, you will find you will save a great deal of money in one year.

Don't hesitate to notify this Department if you have any suspicions whatever of the merchant with whom you are doing business. Your relations with this Department can be as confidential as you choose to make them. Always remember that while perhaps you individually may be able to stand these petty losses in your trading, that there are poorer people who are dealing with the same merchant who cannot so readily stand the loss as you can, and by informing this Department of dishonesty on the part of your tradesman, you will be protecting these poorer people against the thefts of the dishonest tradesman. Do not, however, be too ready to condemn the tradesman. There are honest merchants, and thousands of them, in the State. Tradesmen make mistakes and clerks make mistakes. A mistake need not always be a dishonest one. Let this Department know of your trouble, and we can judge very promptly whether the shortage has been the result of a mistake or dishonesty.

Don't buy ice from your dealer unless he weighs it for you immediately before delivery, in accordance with the law.

Don't receive coal from your dealer, unless the driver presents a ticket with the total weight. Demand that the ticket be shown you before the coal is dumped from the wagon. The law gives you the right that all coal be re-weighed upon a public scale. If you have any doubt as to the honesty of the driver of the coal wagon, or the company itself, send the driver to a public scale and insist upon him bringing back with him the weighmaster's certificate showing the weight. Or, better still, notify this Department that you are to receive coal at a certain time, and

we will send an inspector who will attend to the re-weighing.

Read Carefully the tables in the back part of this book and the laws on weights and measures.

Learn your rights and take advantage of them.

COMMON SENSE ECONOMY—HINTS TO HOUSEKEEPERS.

Intelligent purchasing is done upon definite specification of quality and quantity, and the fundamental thing to know is the quantity—**how much is received for a certain money's worth.** The manufacturer rigorously insists upon receiving what he pays for; unfortunately he is not always willing to let his customers know how much he is giving. A business-like retailer checks everything that goes into his place and knows how much goes out. If he sells intelligently he sells most of his commodities by weight. The reason why many consumers are imposed upon is because the housekeeper does not conduct business intelligently or economically.

What the Retailer Should Do.

The retailer is the one nearest the consumer. Purchase your scales, weights and measures only on condition that they are correct and will be sealed. It costs you nothing to have them tested by your city or county sealer.

Purchase only from a hardware dealer or manufacturer who will guarantee that the apparatus will comply with the specifications issued by the State Department of Weights and Measures.

Check the goods received by weighing or measuring.

In the case of barrel goods, gauge the barrel.

If you are suspicious, call upon the sealer.

When you purchase goods don't pay for the wrapping at the price of the commodity.

Be square with your customers and sell only by weight, measure or numerical count; handle only package goods that are marked to indicate **clearly** the quantity content of the package.

Pay for what you receive and no more, and no law in the land can require you to pay more.

What the Purchaser Should Do.

The purchaser should purchase only from dealers who have sealed scales, weights and measures and then occasionally check the goods bought and see that they agree with what was ordered. Note whether dry commodities are sold by dry measure or weight, and liquid commodities by liquid measure or weight.

Buy in a careful manner and not in indefinite terms.

When ordering commodities order them by weight, measure or numerical count. Don't order a "pail of lard," "thirty cents' worth of potatoes," "a piece of bacon," "a package of cereal," "a jar of jelly," "a bottle of olives," "a box of pills," "a can of wagon grease or oil," "a package of seeds," "a roll of picture wire," "a box of nails," etc., unless you know what that pail, box, piece, package, paper, print, cake, etc., is.

Purchase package goods which are clearly marked on the outside with the quantity they contain and thus encourage the manufacturer who is willing to take the purchaser into his confidence and let him know what he is delivering.

Bargains are not always bargains because the apparent price is low.

When you purchase coal see that the coal ticket is delivered. If the coal is delivered in and with bags, note whether they are marked or not. If not marked, notify the local sealer.

If at any time the purchaser is suspicious of the quantity delivered or believes that any one, retailer, wholesaler, manufacturer, whether of dry goods, groceries or hardware is giving short or insufficient weight or measure, notify the city or county sealer, whose duty it is under the law to investigate the matter. It costs you nothing.

Every county and city is required to have a county and city sealer. No fees of whatever nature are allowed to be charged. The official is required to enforce the law in relation to weights and measures. The business interests of the consumers will not be fully protected until we have a more stringent statute against the giving of short weight or measure, and until we have a net content of container law.

A set of household standards that should be in the possession of every well-regulated household are the following:

A good scale of about 10 lbs. capacity which will weigh to ounces sealed by the weights and measures officials.

A peck measure.

- A dry quart measure.
- A liquid quart measure.
- A 60-inch steel tape; and
- An 8-ounce glass graduate.

STANDARDS OF WEIGHTS AND MEASURES.

The standards of weights and measures in this State shall be those recognized or furnished by the United States.

On all sales by weight of the agricultural products hereinafter enumerated the number of pounds per bushel, as stated in the following schedule, shall be true and legal standard:

	Pounds to Bushel.
Apples,	50 pounds;
Apples (dried),	25 pounds;
Barley,	48 pounds;
Beans,	60 pounds;
Beets,	60 pounds;
Buckwheat,	48 pounds;
Carrots,	50 pounds;
Clover seed,	60 pounds;
Flaxseed (linseed),	55 pounds;
Indian corn or maize,	56 pounds;
Oats,	32 pounds;
Onions,	57 pounds;
Peaches, matured,	50 pounds;
Peaches, dried, peeled or unpeeled,	33 pounds;
Peas,	60 pounds;
Potatoes (Irish),	60 pounds;
Potatoes (sweet),	54 pounds;
Rye,	56 pounds;
Sugar cane (amber),	57 pounds;
Timothy seed,	45 pounds;
Wheat,	60 pounds;

When a fractional part of the bushel is sold, the fractional part of the above weights shall be required.

The standard gross ton shall consist of two thousand two hundred and forty (2,240) pounds. The standard net ton shall consist of two thousand (2,000) pounds.

The standard barrel to be used for buying or selling cranberries in this State, or for transporting the same outside of this State shall be of the following size when measured without distention of its parts, to wit: head, sixteen and one-quarter (16¼) inches diameter; staves twenty-eight and one-half (28½) inches long, and not more than four-tenths (4-10) of an inch thick; bilge, fifty-eight and one-half (58½)

inches outside circumference, distance between heads, twenty-five and one-quarter (25¼) inches. Such barrels shall be branded or stenciled in a durable manner "standard."

The standard measure for a bushel of cranberries shall be thirty-two (32) quarts, rounded measure; that crates (or boxes) to be used for buying or selling cranberries in this State or for transporting the same outside of this State, shall be of the following size, to wit: twenty-two (22) inches in length, twelve (12) inches in depth and seven and one-half (7½) inches in width inside clear measure.

Milk bottles must be of the capacity of half-gallon, three pints, one quart, one pint, half-pint and one gill, filled to the bottom of the cap ring or stopple.

Berry boxes must be of the capacity of one quart, one pint.

Grain, coal, coke or charcoal in quantities over 100 lbs. must be weighed upon scales that have been tested and sealed and delivery ticket must be delivered. Coal in quantities under 100 pounds may be sold by weight and when sold with a bag, the bag must be marked with the net weight of the coal. Grain, coal, coke and charcoal under 100 pounds may be sold by weight or standard dry measure. When sold with bag the net amount in terms of dry measure or weight must be indicated on the outside of the bag.

Bales of hay must be marked with the names and address of the person who owns the hay at the time of baling and also with the weight of the bale.

FAULTY WEIGHTS, MEASURES AND APPARATUS.

(Being only one cause of short weight and measure.)

As the purchasing public hardly realizes the extent of faulty apparatus used in selling and buying various commodities, its attention is called to the following list, which gives the most important and the most prevalent kinds of falsity which cause a loss to the purchaser, be he dealer or consumer.

Kinds of Faulty Weights Likely to be Encountered.

The most prevalent forms of incorrect weights are the following:

1. Weights old, rusty or worn.
2. Weights that have been drilled or part sawed or chipped off to decrease their weight.

3. Lead-filled, zinc or brass cased weights that have come apart and the bottom or part of the filling lost.

4. Knob weights with the knob broken off or replaced by another.

5. Hollow weights with loose filling, part of the filling having been removed.

6. Weights with lead plugs, the plugs removed or scraped.

7. Cheap cast weights which even when new had never been adjusted.

Kinds of Faulty Linear Measures Likely to be Encountered.

1. Yard-sticks bent, warped and worn.

2. Advertising yard-sticks that may be long or short by as much as one half-inch.

3. Counter tacks very roughly placed.

4. Counter tacks up to three-quarters of an inch in diameter.

5. Cloth tapes inaccurately divided, some stretched, some shrunken, as a whole or only in part. In spite of the fact that it would be economy for all users of tapes to use steel tapes or wire tapes, they still use cheap cloth tapes, often to their own detriment.

Faulty Liquid Capacity Measures Likely to be Encountered.

1. Liquid measures bent and dented.

2. Liquid measures with bottom cupped upwards, the curvature of the bottom having been reversed.

3. Liquid measures with a hole in side or bottom.

4. Liquid measures with false bottoms or sides.

5. Fibre ware or earthenware measures broken at the top.

6. Measuring faucet stops set incorrectly.

7. Measuring faucets with leaky valves.

8. Short bottle being used as a measure.

9. Measures false by virtue of being made short.

10. False use of liquid measures to measure dry commodities.

Faulty Oil Pumps Likely to be Encountered.

1. Oil pumps are particularly liable to be used improperly, as it is not necessary to elevate just the required amount, and they are frequently used to fill a bottle or can without regard to measure.

2. The stops are loose or have been improperly set.

3. The valves are leaky.

4. Gasoline pumps, particularly when not frequently used, give short measure due to dried or worn valves.

5. Pumps for heavy oils are operated too rapidly.

6. Pumps used for a different kind of oil than that for which they were constructed.

Faulty Dry Capacity Measures Likely to be Encountered.

1. Bottomless measures; according to statute dry measures must be cylindrical and with plain and even bottom.

2. Wooden measures cut down so as to reduce the depth.

3. False bottom, tilting bottom, raised bottom or removable bottom to decrease the depth.

4. The bottom reduced in diameter and the sides relapped. This can be readily detected by the poor nailing.

5. A combination of (2) or (3) with (4).

6. Sides broken off.

7. Metal measures bent, broken or dented.

8. Measures falsely constructed, namely of wrong capacity.

9. Bushel baskets containing only $\frac{7}{8}$ or $\frac{3}{4}$ bushel when stricken full. These are very common.

10. Bushel crates or boxes containing only 2,150.42 cubic inches when stricken full to measure by striking measure, commodities usually sold by heaping measure.

11. Berry boxes used to repack berries.

12. Six-quart measures. These are illegal and are used for peck or eight-quart measures.

Faulty Equal Arm Scales or Balances Likely to be Encountered.

(Faults are in addition to those of possible falsity of the weights.)

1. Scale out of balance, heavy on the scoop side, the plea being that down weight is given.

2. Scales balance with no load, but not when equal weights are placed on both pans.

3. Scale balances when equal weights are placed in center of each pan but not when one of the weights is shifted forward or backward or to the right or left.

4. Scale is insensitive, due to worn or broken parts or poor construction.

5. Scale may be placed in an inclined position.

6. An outside obstruction, paper bag, box, etc., may be rubbing against one of the pans.

7. A rubber band may be placed around the beam and base.

8. A small spring or elastic may be placed under one side.

9. Metal articles, such as lead, iron rings, hooks, etc., or potatoes or other articles may be placed under the scoop or on the cross under the scoop.

10. Folded paper bags are put under scoop side or heavy paper in the scoop. This is clearly false.

11. Nested weights may be stacked to give the 8 oz., 4 oz. and 2 oz., giving 14 oz. instead of 16 oz.

12. The poise may be light, thus registering more than is really on the scoop.

13. Equal arm scales with separate scoop and a loose counterweight or ring, the omission of which will cause a serious error.

Faulty Equal Arm Scales or Balances Likely to be Encountered.

1. Scales not in balance when poises are all on zero and pan is empty.

2. Scales which balance without scoop or pan, this being used only when commodity is weighed.

3. Elastic bands attached around beam and framework, assisting or hampering action of beam itself.

4. Scales having objects (wood, old iron, paper, etc.) attached to beam which are weighed with each parcel of commodity sold.

5. Counterpoise hanger, counterpoise weights, weights or sliding poise lighter or heavier than correct value.

6. Scales having beams graduated irregularly.

7. Scales having poise or beam worn so that when poise is placed back as far as possible it will not be on zero mark of beam.

8. Scales having easily accessible adjusting screws by which balance may be easily and quickly changed.

9. Does not weigh properly on all parts of pan.

10. Has separate scoop and counterweight, the omission of which latter may cause a serious error.

11. Great friction in bearings or movable parts.

Kinds of Faulty Platform Scales Likely to be Encountered.

1. Scale does not balance when platform is empty and poise on zero.

2. Scale weights incorrectly for weights on platform.

3. Check rods too loose or too tight.

4. Counterpoise weights wrong.

5. Sliding poise wrong due to weight or wearing of the same at index.

6. Platform binds on the frame.

7. Scale does not weigh alike on different parts of the platform.

8. Balance ball will not balance scale when empty.

9. Dirt on scale or in pit; viz., straw, mud, etc., on any of the movable parts of the scale inside or outside.

10. Bearings broken.

11. Scale too sluggish.

12. Bearings dull.

13. Bending of parts of scale or levers, or giving of foundation when full load is placed on platforms.

14. Beam worn or unevenly notched or divided.

15. Scale insufficiently sensitive.

Faulty Spring Scales Likely to be Encountered.

1. Scales on which the hand or index marker does not point to zero when hook or pan is empty.

2. Scales of the straight front type on which the graduated face is not riveted to frame and can be raised or lowered while weighing is being done.

3. Scales having elastic bands attached to hook and frame so as to reinforce or retard action of spring itself.

4. Scales in which a stronger spring has been substituted for original spring or vice versa.

5. Scales on which pointer interferes with face which causes pointer to stop before indicating full value or weight.

6. Scales of the straight front type on which top bolt or ring holding spring has been loosened and can be raised or lowered at will of operator.

7. Scales which carry extra hook attached to spring on which objects can be hung, such as bills, etc.

8. Scales having two hooks of different weights which can be attached to spring or scales having two hooks which register different weights on graduated face according as object is placed on one of the other. These are used by many junk dealers.

9. Balances having easily accessible adjusting screws by which position of pointer may be quickly and easily changed.

10. Hanging scales on which the bar to which the pan or hook is attached works hard in its slot or catches at certain points.

11. Spring scales with no dampering device, oscillating so freely and so long that there is a tendency to read the pointer before it comes to rest.

12. Objects attached to the hook, pan frame, beam or under the beam.

13. Scales with graduation so closely spaced that an accurate reading is impossible.

14. Scales of large capacity and consequently each division representing a considerable weight used to weigh small quantities such as a 100-pound or 50-pound spring scale used in the sale of commodities when generally not over one or five pounds are weighed in retailing meats, groceries, etc.

15. The spring weakened or drawn up too tight.

16. Straight front spring scales from which the spring has been removed.

17. Spring scales ostensibly showing weight on the customer's side, but not so doing because no index line is provided.

18. Spring scales where the dealer's and customer's sides do not correspond.

Kinds of Faulty Computing Scales Likely to be Encountered.

Computing scales being either of the lever type or the spring type are liable to any of the faults enumerated under those types of scales and in addition:

1. The computing part of the scale, namely, the divisions or figures, may be falsely placed so that the correct values may not be indicated when a certain weight is placed on the scale; or inversely, when a certain number of cents' worth of a commodity at a certain price per pound is to be weighed, the wrong quantity of the commodity is delivered, although the money value indicated may be the required one.

2. Scales on which index mark or pointer is so far removed from the divisions or figures that the reading obtained depends on the position of the observer.

3. Divisions so closely placed that accurate reading is difficult.

4. The ounce and pound values on the customer's side not corresponding with the dealer's side, or the index mark on line omitted from either side.

5. The movable part of the scale vibrates so freely that accurate reading is impossible where rapid weighings are made.

DO YOU KNOW

That Nature never adulterates anything, but that man does?

That Nature never mislabels anything, but that man does? Read the labels on man-made packages.

That Nature never uses a false brand, but that man sometimes does. Study the brands and learn to know the difference between the false and the true.

That Nature never varies from the truth, but that man sometimes does? Know for yourself that what you buy is what it is represented to be.

That much depends upon you, Mr. Husband or Mrs. Housewife, whether pure food and pure drugs go into the homes of New Jersey?

That a little study of pure foods and honest weights will make you a valuable assistant to this department?

That when food products are artificially colored or preserved the fact must be stated on every package, and the name and per cent. of preservatives given?

That there are legal requirements for the labeling of canned goods and package goods intended to be sold?

That every kitchen should have an accurate scale and an accurate set of dry and liquid measures?

That every county, city and village has or should have a superintendent of weights and measures?

That your city or county superintendent will test and certify your scale free of charge?

That you should weigh or measure everything bought in bulk?

That only in this way can you be fair to your merchant and yourself?

BRIEF REFERENCE TABLES.

United States Linear Measure.

12 inches (in.)= 1 foot (ft).

3 ft.=1 yard (yd.)=36 inches.

5½ yards=1 rod (rd.)=16½ feet.

320 rods=1 mile (mi.)=1760 yards=5280 feet.

Chain Measure.

7.92 inches=1 link (li.).

100 li.=1 chain (ch.)=66 feet.

80 ch.=1 mile (mi.).

The engineer's chain is 100 feet long and consists of 100 links.

Square Measure.

144 square inches (sq. in.)=1 square foot (sq. ft.).
9 sq. ft.=1 sq. yard (sq. yd.).
30¼ sq. yd.=1 square rod (sq. rd.).
160 sq. rd.=1 acre (a.).

Surveyor's Measure.

625 square links (sq. li.)=1 square rod (sq. rd.).
16 sq. rds.=1 square chain (sq. ch.).
10 sq. ch.=1 acre (a.).
640 a.=1 square mile (sq. mi.).
36 sq. mi. (6 mi. sq.)=1 township (tp.)=23040 a.

Cubic Measure.

1728 cubic inches (cu. in.)=1 cubic foot (cu. ft.).
27 cu. ft.=1 cubic yard (cu. yd.).

United States Liquid Measure.

4 gills (gi.)=1 pint (pt.).
2 pt.=1 quart (qt.)=8 gills.
4 qt.=1 gallon (gal.)=8 pints=32 gills.
31½ gal.=1 barrel (bbl.)=126 quarts.
2 bbl.=1 hogshead (hhd.)=63 gallons=252 qts.

Apothecaries' Fluid Measure.

60 minims (m)=1 fluid dram (fl. dr.).
8 fl. dr.=1 fluid ounce (fl. oz.)=480 minims.
16 fl. oz.=1 pint (O.)=128 fl. dr.=7680 m.
8 O.=1 gallon (cong.)=128 fl. oz.=1024 fl. dr.

United States Dry Measure.

2 pints (pt.)=1 quart (qt.).
8 qt.=1 peck (pk.)=16 pints.
4 pk.=1 bushel (bu.)=32 quarts=64 pints.

Avoirdupois Weight.

27 11/32 grains (gr.)=1 dram (dr.).
16 dr.=1 ounce (oz.)=437½ grains.
16 oz.=1 pound (lb.)=256 drams=7000 grains.
100 lbs.=1 hundredweight (cwt.)=1600 ounces.
20 cwt.=1 ton (t.)=2000 pounds.

Troy Weight.

24 grains (gr.)=1 pennyweight (dwt.).
20 dwt.=1 ounce (oz.)=480 grains.
12 oz.=1 pound (lb.)=240 dwt.=5760 gr.

Apothecaries' Weight.

20 grains (gr.)=1 scruple (ʒ).
3 ʒ=1 dram (ʒ)=60 gr.
8 ʒ=1 ounce (ʒ)=24 ʒ=480 gr.
12ʒ=1 pound (lb.)=96 ʒ=288 ʒ=5760 gr.

Number of cubic inches in U. S. Standard capacity measures:

Liquid Measure.

1 gallon contains 231 cu. in.
½ gallon contains 115.5 cu. in.
1 quart contains 57.75 cu. in.
1 pint contains 28.875 cu. in.
½ pint contains 14.437 cu. in.
1 gill contains 7.218 cu. in.
1 fluid oz. contains 1.804 cu. in.
1 dram contains .225 cu. in.

Dry Measure.

1 bushel contains 2150.42 cu. in.
½ bushel contains 1075.21 cu. in.
1 peck contains 537.60 cu. in.
½ peck contains 268.80 cu. in.
¼ peck contains 134.40 cu. in.
1 quart contains 67.20 cu. in.
1 pint contains 33.60 cu. in.
½ pint contains 16.80 cu. in.

The Metric System.

The metric system is based on a unit of length (the *meter*). A cubic box one-tenth of a meter on the side has the unit of capacity, a *liter*, and the water contained in a liter weighs one kilogram. The unit of weight, the *gram*, in the metric system is the weight of water contained in a cubic box one-hundredth of a meter on a side. (Note: These values are not precisely correct, but hold for all but the most refined measurements.)

The entire system is then built up by multiplying or dividing the unit by ten, one hundred and one thousand, using always the same prefix to indicate what the unit is multiplied or divided by, thus:

milli means $\frac{1}{1000}$ or divided by 1000
 centi means $\frac{1}{100}$ or divided by 100
 deci means $\frac{1}{10}$ or divided by 10
 deka means 10 or multiplied by 10
 hecto means 100 or multiplied by 100
 kilo means 1000 or multiplied by 1000
 The tables then become:

Length.

10 milli-meters=1 centi-meter.
 10 centi-meters=1 deci-meter.
 10 deci-meters=1 meter.
 10 meters=1 deka-meter.
 10 deka-meters=1 hecto-meter.
 10 hecto-meters=1 kilo-meter.

Weight.

10 milli-grams=1 centi-gram.
 10 centi-grams=1 deci-gram.
 10 deci-grams=1 gram.
 10 grams=1 deka-gram.
 10 deka-grams=1 hecto-gram.
 10 hecto-grams=1 kilo-gram.

Capacity.

10 milli-liters=1 centi-liter.
 10 centi-liters=1 deci-liter.
 10 deci-liters=1 liter (1 cubic deci-meter).
 10 liters=1 deka-liter.
 10 deka-liters=1 hecto-liter.
 10 hecto-liters=1 kilo-liter.

In the metric system there is but one standard of weight, one standard of measure for liquids and dry commodities alike, and but one standard of length.

A Few Useful Equivalents.

1 centi-meter=.394 inch.
 1 inch=2.54 centi-meters.
 1 yard=.914 meter.
 1 meter=39.37 inches.
 =1.09 yards.
 1 kilo-meter=.621 mile.
 1 mile=1.61 kilo-meters.
 1 nail= $2\frac{1}{4}$ inches.
 1 palm=3 inches.

Approximate equivalents.

$\frac{4}{10}$
 $2\frac{1}{2}$
 $\frac{9}{10}$
 $39\frac{1}{8}$
 $1\frac{1}{10}$
 $\frac{5}{8}$
 $1\frac{1}{10}$

Approximate equivalents.

1 hand=4 inches.
 1 barley-corn= $\frac{1}{8}$ inch.
 1 span=9 inches.
 1 cubit=18 inches.
 1 pace=3 feet.
 1 hairsbreadth= $\frac{1}{48}$ inch.
 1 dry quart=1.164 liquid quart (U. S.) 1½
 =67.2 cubic inches.
 1 liquid quart=.859 dry quart (U. S.) ¾
 =57.75 cubic inches.
 1 liter=1.056 liquid quarts (U. S.) 1½
 =.908 dry quart (U. S.) ¾
 1 cubic inch=4.43 fl. dr. 4½
 1 cubic meter=1.308 cubic yards. 1½
 1 cubic yard=21.696 bushels (U. S.) 21½
 1 fluid dram=.226 cu. in. ¼
 1 hecto-liter=26.42 gallons (U. S.) 26½
 =.765 cubic meter. ¾
 =2.84 bushels (U. S.) 2¾
 1 cord (firewood)=4 x 4 x 8 ft.
 1 barrel refined oil=42 gallons.
 1 heaped bushel=1¼ struck bushel or ordinary bu.
 1 firkin butter=56 pounds.
 1 gallon of water weighs 8.323 pounds.
 1 gram=15.43 grains. 15½
 1 mili-gram=.0154 grains. $\frac{2}{130}$
 1 grain=64.8 mili-grams. 65
 1 ounce (Av.)=28.35 grains. 28½
 1 kilo-gram=2.205 pounds (Av.). 2½
 1 pound (Av.)=.454 kilo-gram. ½
 1 ton=907.185 kilo-grams. 900
 1 metric ton=2204.62 pounds (Av.) 2200
 1 long ton=2240 pounds.

1 carat=3.171 grains (varies considerably).

To find the diameter of a circle from the circumference divide the circumference by 3.1416.

To find the capacity of a rectangular box or bin: Multiply the length by the breadth by the depth or height. The three dimensions must be in the same units.

Example: A bin is 6 ft. wide, 5 ft. 6 in. deep and 8 ft. 3 in. long. Its capacity is $6 \times 5\frac{1}{2} \times 8\frac{1}{4} = 272\frac{1}{4}$ cubic feet.

To find the capacity of a cylindrical measure or box, or bin: Multiply the diameter by the diameter by 3.1416 by the height and divide by 4.

Example: If a cylindrical measure is 13 inches in diameter and 6 inches in depth, its capacity is $(13 \times 13 \times 3.1416 \times 6) \div 4 = 796.39$ cubic inches.

Find the approximate capacity of a barrel of dimensions different from those given in the statutes by measuring the mean diameter and depth.

Example: A barrel is 25 inches between the heads inside. The inside diameter of the top and bottom is 18 inches and the inside diameter at the center is 20 inches. Find the capacity. The average diameter is approximately $\frac{1}{2}$ of the diameter of the ends and of the center, or $(18'' + 20'') \div 2 = 19$ inches. Then proceed as in the case of a cylinder.

$$(19 \times 19 \times 3.1416 \times 25) \div 4 = 7088.2 \text{ cu. in.}$$

To find the capacity of a berry box which has sloping sides, the approximate capacity can be found by adding the area of the top and the area of the bottom and dividing by 2 and then multiplying by the depth.

Example: A berry box is 5.1×5.1 inches on top; 4.37×4.37 inches at the bottom, and 2.93 in depth, the content is $[(4.37 \times 4.37) + (5.1 \times 5.1)] \times 2.93 \div 2 = 66.1$ cubic inches.

To find the capacity of a berry box more exactly, find the area of the top and the area of the bottom, and the perpendicular depth. Then multiply one-third of the height by the sum of the top area plus the bottom area plus the square root of the product of the two areas.

Example: A berry box is 5.1 inches on the side at the top and 4.37 inches on the side at the bottom. The depth is 2.93 inches, then $1-3 \times 2.93 \{ [(4.37 \times 4.37) + (5.1 \times 5.1)] + \sqrt{[(4.37 \times 4.37) \times (5.1 \times 5.1)]} \} = 65.8$ cubic inches.

To find the number of tons of coal in a bin, find the number of cubic feet it occupies and multiply by the weight of a cubic foot of coal and divide by 2,000.

Example: Average nut coal weighs about 52 pounds to the cubic foot of coal. If a rectangular bin is 5 feet wide and 8 feet 6 inches long and filled evenly to a depth of 4 feet, there will be: $5 \times 8\frac{1}{2} \times 4 = 170$ cubic feet of coal, or $(170 \times 52) \div 2000 = 4.42$ tons of coal.

ARITHMETICAL TERMS, SIGNS, ETC.

All computations in Arithmetic are performed by one of the processes known as

Addition, Subtraction, Multiplication, and Division. The terms used in Multiplication are:

- The *Multiplier*, or number that Multiplies.
- The *Multiplicand*, or number to be Multiplied.
- The *Product*, or result of the Multiplication.

The terms used in Division are:

- The *Dividend*, or number to be divided.
- The *Divisor*, or number by which you divide.
- The *Quotient*, or result of the Division.

To find the SUM, add the numbers.

To find the DIFFERENCE, subtract.

To find the PRODUCT, multiply.

To find the QUOTIENT, divide.

+ plus or more signifies addition, as $6 + 3 = 9$

— minus or less signifies subtraction, as $8 - 5 = 3$

× multiplied by signifies multiplication, as $4 \times 2 = 8$

÷ divided by signifies division, as $8 \div 4 = 2$

= equal to signifies equality, as $3 + 2 = 5$

∴ signifies therefore. ∴ signifies because.

: :: : are signs of proportion.

6 : 14 :: 18 : 42 means, as 6 is to 14 so is 18 to 42.

√ sign of square root, as $\sqrt{9} = 3$.

³√ sign of cube root, as $\sqrt[3]{27} = 3$.

() { } [] are brackets, all quantities between them are treated as one.

\$ signifies dollars.

c signifies cents.

\$10 in gold is an eagle.

% signifies per cent.

MENTAL ARITHMETIC AIDS.

A Number will divide by

- 2 when last figure is even or a cypher.
- 3 when the sum of the digits can be divided by 3.
- 4 when the last two figures can be divided by 4 or are cyphers.
- 5 when last figure is 5 or 0.
- 6 when last figure is even or 0 and sum of digits will divide by 3.
- 7 when the number is composed of 6 figures all alike, e. g. 333,333;
when composed of 6 figures of which first three are like last three, e. g. 421,421.
- 8 when the last 3 figures can be divided by 8 or are cyphers.
- 9 when the sum of the digits can be divided by 9.
- 25 when last 2 figures are 0's or will divide by 25.
- 125 when last 3 figures are 0's or will divide by 125.
- 37 and 111 when the No. is composed of the same 3 digits, e. g., 333,111.

To multiply by

- 5 add 1 cypher and divide by 2.
- 25 add 2 cyphers and divide by 4.
- 125 add 3 cyphers and divide by 8.
- 625 add 4 cyphers and divide by 16.
- 10 add 1 cypher.
- 100 add 2 cyphers.
- 1,000 add 3 cyphers.

To divide by

- 5 multiply by 2 and place a . before last figure.
- 25 multiply by 4 and place a . before last 2 figures.
- 125 multiply by 8 and place a . before last 3 figures.
- 10 cut off last figure for a remainder.
- 100 cut off last 2 figures for a remainder.
- 1,000 cut off last 3 figures for a remainder.

To multiply a number consisting of two digits by 11, add the figures together and place the result between them as $71 \times 11 = 781$.

Simple Interest Formulæ.

- 1.—Interest = Principal \times Rate \times Time \div 100.
- 2.—Principal = Interest \times 100 \div Rate and Time.
- 3.—Rate = Interest \times 100 \div Principal and Time.
- 4.—Time = Interest \times 100 \div Principal and Rate.

Mensuration Formulæ.

- 1.—Area of square, rectangle, rhombus or rhomboid = base \times height. Base = area \div height. Height = area \div base.
- 2.—Area of Triangle = $\frac{1}{2}$ base \times height.
- 3.—Area of circle = diameter squared \times .7854, or = radius squared \times 3.1416.
- 4.—Circumference = diameter \times 3.1416.
- 5.—Cubical contents of a box or volume of a solid = length \times breadth \times height. Length = volume \div breadth and height. Breadth = volume \div length and height. Height = volume \div length and breadth.

Common and Decimal Fractions.

$\frac{1}{2} = .5$	$\frac{2}{5} = .4$
$\frac{1}{4} = .25$	$\frac{3}{5} = .6$
$\frac{3}{4} = .75$	$\frac{4}{5} = .8$
$\frac{1}{8} = .125$	$\frac{1}{5} = .3\frac{1}{5}$
$\frac{3}{8} = .375$	$\frac{2}{5} = .6\frac{2}{5}$
$\frac{5}{8} = .625$	$\frac{1}{6} = .1\frac{1}{6}$
$\frac{7}{8} = .875$	$\frac{2}{6} = .2\frac{2}{6}$
$\frac{1}{6} = .2$	$\frac{1}{6} = .16\frac{2}{3}$

Parts of an Acre.

- 80 Square Rods . . . One Half.
- 40 Square Rods . . . One Quarter.
- 20 Square Rods . . . One Eighth.
- 32 Square Rods . . . One Fifth.
- 10 Square Rods . . . One Sixteenth.

FOR MULTIPLICATION AND DIVISION.

Twice	3 times	4 times	5 times
1 are 2	1 " 3	1 " 4	1 " 5
2 " 4	2 " 6	2 " 8	2 " 10
3 " 6	3 " 9	3 " 12	3 " 15
4 " 8	4 " 12	4 " 16	4 " 20
5 " 10	5 " 15	5 " 20	5 " 25
6 " 12	6 " 18	6 " 24	6 " 30
7 " 14	7 " 21	7 " 28	7 " 35
8 " 16	8 " 24	8 " 32	8 " 40
9 " 18	9 " 27	9 " 36	9 " 45
10 " 20	10 " 30	10 " 40	10 " 50
11 " 22	11 " 33	11 " 44	11 " 55
12 " 24	12 " 36	12 " 48	12 " 60

6 times	7 times	8 times	9 times
1 " 6	1 " 7	1 " 8	1 " 9
2 " 12	2 " 14	2 " 16	2 " 18
3 " 18	3 " 21	3 " 24	3 " 27
4 " 24	4 " 28	4 " 32	4 " 36
5 " 30	5 " 35	5 " 40	5 " 45
6 " 36	6 " 42	6 " 48	6 " 54
7 " 42	7 " 49	7 " 56	7 " 63
8 " 48	8 " 56	8 " 64	8 " 72
9 " 54	9 " 63	9 " 72	9 " 81
10 " 60	10 " 70	10 " 80	10 " 90
11 " 66	11 " 77	11 " 88	11 " 99
12 " 72	12 " 84	12 " 96	12 " 108

10 times	11 times	12 times	13 times
1 " 10	1 " 11	1 " 12	1 " 13
2 " 20	2 " 22	2 " 24	2 " 26
3 " 30	3 " 33	3 " 36	3 " 39
4 " 40	4 " 44	4 " 48	4 " 52
5 " 50	5 " 55	5 " 60	5 " 65
6 " 60	6 " 66	6 " 72	6 " 78
7 " 70	7 " 77	7 " 84	7 " 91
8 " 80	8 " 88	8 " 96	8 " 104
9 " 90	9 " 99	9 " 108	9 " 117
10 " 100	10 " 110	10 " 120	10 " 130
11 " 110	11 " 121	11 " 132	11 " 143
12 " 120	12 " 132	12 " 144	12 " 156

NOTE.—These tables must also be learned backwards. Say 9 into 81 is 9 as well as 9 times 9 are 81.

PER CENT. TABLE.

50% $\frac{1}{2}$	90% $\frac{9}{10}$	11 $\frac{1}{6}$ % $\frac{1}{6}$
25% $\frac{1}{4}$	16 $\frac{2}{3}$ % $\frac{1}{6}$	22 $\frac{2}{3}$ % $\frac{2}{3}$
75% $\frac{3}{4}$	83 $\frac{1}{3}$ % $\frac{5}{6}$	44 $\frac{1}{6}$ % $\frac{1}{6}$
33 $\frac{1}{3}$ % $\frac{1}{3}$	14 $\frac{2}{7}$ % $\frac{1}{7}$	55 $\frac{5}{9}$ % $\frac{5}{9}$
66 $\frac{2}{3}$ % $\frac{2}{3}$	28 $\frac{1}{4}$ % $\frac{7}{28}$	77 $\frac{7}{9}$ % $\frac{7}{9}$
20% $\frac{1}{5}$	42 $\frac{1}{4}$ % $\frac{3}{7}$	9 $\frac{1}{11}$ % $\frac{1}{11}$
40% $\frac{2}{5}$	71 $\frac{1}{4}$ % $\frac{5}{7}$	8 $\frac{1}{3}$ % $\frac{1}{12}$
60% $\frac{3}{5}$	85 $\frac{5}{4}$ % $\frac{6}{7}$	6 $\frac{1}{4}$ % $\frac{1}{16}$
80% $\frac{4}{5}$	12 $\frac{1}{2}$ % $\frac{1}{8}$	3 $\frac{1}{3}$ % $\frac{1}{33}$
10% $\frac{1}{10}$	37 $\frac{1}{2}$ % $\frac{3}{8}$	2 $\frac{1}{2}$ % $\frac{1}{40}$
30% $\frac{3}{10}$	62 $\frac{1}{2}$ % $\frac{5}{8}$	2% $\frac{1}{50}$
70% $\frac{7}{10}$	87 $\frac{1}{4}$ % $\frac{7}{8}$	

CAPACITY.

1 $\frac{1}{4}$ cubic feet	1 bushel (about)
1 $\frac{1}{2}$ cubic feet	1 bushel (heaped)
4 quarts (dry measure)	268 $\frac{8}{10}$ cubic inches
1 gallon water	8 $\frac{1}{3}$ lbs. (about)
1 gallon milk	8 $\frac{9}{10}$ lbs. (about)
1 gallon kerosene.....	6 $\frac{1}{2}$ lbs. (about)
1 cubic foot water	62 $\frac{1}{2}$ lbs.
1 bushel wheat	60 lbs.

Part of a Ton.

10 cwt.	$\frac{1}{2}$ ton
5 "	$\frac{1}{4}$ "
4 "	$\frac{1}{6}$ "
2 "	$\frac{1}{10}$ "
1 "	$\frac{1}{20}$ "
20 lbs.....	$\frac{1}{100}$ "
2 lbs.....	$\frac{1}{1000}$ "

Parts of a Cwt.

qrs. lbs.	
2 or 50.....	$\frac{1}{2}$
1 or 25.....	$\frac{1}{4}$
12 $\frac{1}{2}$	$\frac{1}{8}$
11 $\frac{1}{6}$	$\frac{1}{6}$
8 $\frac{1}{3}$	$\frac{1}{12}$
10	$\frac{1}{10}$

Parts of a Quarter.

12 $\frac{1}{2}$ lbs.....	$\frac{1}{2}$
6 $\frac{1}{4}$ lbs.....	$\frac{1}{4}$
3 $\frac{1}{8}$ lbs.....	$\frac{1}{8}$

Parts of a Year.

292 days.....	$\frac{4}{5}$
219 "	$\frac{3}{5}$
146 "	$\frac{2}{5}$
73 "	$\frac{1}{5}$

TABLE OF FACTORS.

12 = 2 × 6	33 = 3 × 11	66 = 6 × 11
12 " 3 " 4	35 " 5 " 7	70 " 7 " 10
14 " 2 " 7	36 " 3 " 12	72 " 6 " 12
15 " 3 " 5	36 " 4 " 9	72 " 8 " 9
16 " 2 " 8	36 " 6 " 6	77 " 7 " 11
16 " 4 " 4	40 " 4 " 10	80 " 8 " 10
18 " 2 " 9	40 " 5 " 8	81 " 9 " 9
18 " 3 " 6	42 " 6 " 7	84 " 7 " 12
20 " 2 " 10	44 " 4 " 11	88 " 8 " 11
20 " 4 " 5	45 " 5 " 9	90 " 9 " 10
21 " 3 " 7	48 " 4 " 12	96 " 8 " 12
22 " 2 " 11	48 " 6 " 8	99 " 9 " 11
24 " 2 " 12	49 " 7 " 7	100 " 10 " 10
24 " 3 " 8	50 " 5 " 10	108 " 9 " 12
24 " 4 " 6	54 " 6 " 9	110 " 10 " 11
25 " 5 " 5	55 " 5 " 11	120 " 10 " 12
27 " 3 " 9	56 " 7 " 8	121 " 11 " 11
28 " 4 " 7	60 " 5 " 12	132 " 11 " 12
30 " 3 " 10	60 " 6 " 10	144 " 12 " 12
30 " 5 " 6	63 " 7 " 9	144 ÷ 12 = 12
32 " 4 " 8	64 " 8 " 8	

Intelligent purchasing is done upon definite specification of quality and quantity.

It is fundamental to know the quantity—how much is received for a certain money's worth. A progressive business man checks everything that goes into his place and knows how much goes out. The reason why so many consumers are imposed upon is because so many housekeepers do not conduct their business intelligently and economically.

BE ALIVE, MADAM HOUSEKEEPER

Remember

It pays to patronize the cleanly grocer, the conscientious butcher, the baker whose shop is open to inspection.

Remember

It is not wise to condemn the tradesman unless you know. Our merchants are honest; sometimes they make mistakes, so do their clerks. Mistakes need not always be dishonest ones. But they are always costly and two mistakes mean carelessness you cannot excuse or designed fraud.

Remember

Cheapness is not economy. Good milk at eight or ten cents a quart is far cheaper than dirty milk at half the price. Sound meat from inspected animals is worth more than the uninspected meat from some local butcher. The dealer who advertises **cheap food** is not the dealer for you. Margins on food values are too small to allow discount sales.

Remember

That New Jersey has laws that compel the sale of pure food and drugs; that punish the dealer who gives short weight or uses incorrect measures; that regulate the sanitation of food establishments.

Remember

All dry commodities must be sold by standard dry measure. **Liquid measure is for liquids only.** All commodities must be sold by weight or measure or be marked with correct net weight. (Butter cannot be sold by the roll unless each roll is marked. Berries cannot be sold by the box unless the box is standard dry quart or pint.)

Remember

No kitchen is complete without a good scale, and a set of accurate dry and liquid measures.

GET BEHIND THE LAW

Be a supporter of forward looking measures. Help your health officer, your milk inspector, your inspector of weights and measures, your tradesman and so get better service, better protection, better living for

YOURSELF