

1  IFWA 1217  
Food Production and Planning

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2  Basic Calculations  
Units of Measurements

3  Welcome!

**Reminders-Related websites for Chapters 1-2**

- <http://www.foodnouveau.com/tables/>  
– (note the above web site is updated-update on your notes)

<http://www.menudesigns.com/>

<http://www.cs.cmu.edu/~mjw/recipes/other-sites.html>

4

**Learning Objectives**

- The learning objectives for this chapter are to ensure students understand the:
- two different systems for measurement
- difference between volume and weight units of measure
- conversion process between US standard and metric units
- importance of accurate measurement when cooking and baking

**Vocabulary**

- United States standard units of measure — gallon, quart, pint, cup, fluid ounce, pound and ounce.
- Metric units of measure — liter, milliliter, kilogram and gram

5  United States standard units of measure

- Volume units of measure
- Volume measurement tools
- Weight unit of measure
- Weight measurement tools
- Count as a unit of measure

6

- Liquids are volumes units of measure
- Fluid oz, cups, quarts, gallons, etc.
- Round to largest whole unit
  - Example 272 fluid oz, (2 gallons, 1 pint)
- You may also use numbers of fl. Oz only if below 8 fl. Oz
- Weight and volume are not the same!
- You must indicate fluid oz from oz

## 7 Tools and Volume

- Containers-gallon, quarts, half-gallon, pints, cups
- Spoons-tablespoon, teaspoon, partial unit of teaspoon,
- Nested Ladles-32 oz to 1 oz
- Dishes/Scoops-# based (based on how many scoops you can serve from 32 oz; #60=1/2 oz)
- Bowls, Cups, Crocks-filled to brims

## 8 Weight Units of Measure

- Solids are measured by weight
- Traditional units are pounds (#) and ounces (oz); 16 oz = 1#
- Weighed by scales where scales must be at zero
- Scales are different and weight different weights
  - Bakers Balance- graduations of 1/4 oz, very accurate- must be cleaned and zeroed after all uses. The purpose of this is for a truly consistent product no matter the size of the recipe
  - Portion Scale-spring loaded, raw or cooked portions are weighed for AP and EP. Each long mark is 1 oz with graduations of each 1/4 oz marked in between

## 9 Count as a Measurement

- Certain Types of Foods can be “measured”using counts
- Not as precise or accurate

## 10 The Metric System

### The Metric System

- Decimal based system that is the standard internationally recognized system for measurement (based on the number 10)
  - Metric volume units of measure
  - Comparison between metric and US standard
  - Metric weight units of measure
  - Comparison between metric and US standard

## 11 The Metric System Conversion

- Volume Units
  - Liter and Milliliter (1000 ml=1 L)
    - 1 liter is close to 1 quart and 30 milliliters is close to 1 oz
    - 3.8 L=1 gallon (128 fl. Oz)
    - .95 L=1 qt (32 fl. Oz)
    - .47 L=1 pt (16 fl. Oz)
    - .24 L= 1 cup (8 fl. Oz)

## 12 The Metric System Conversion

- Weight Units
  - Kilograms and Grams (1kg=1000g)
    - 1 kg=2.2 #
    - 454 g=16 oz (1#)
    - 28.35 g= 1oz
    - 1g=.035 oz

## 13 IFWA 1217

### Food Production and Planning

14  Then you purchase the ingredients...

Purchasing units and price

- How are items purchased?
- How do you know that a “bunch” of green onions weighs 6 oz? (secret tag)
- Unit and Price must match

15  The Book of Yields

The Book of Yields is a listing of As Purchased vs. Edible Portion measurements of foods

- As Purchased
- Edible Portion

Factors

- Trim
- Cooking Loss
- Type of Fabrication (meats)    Cuts (vegetables)
- Lean vs. Fat
- Quality of Item
- Skill of Employee

16  Terms to Know

- As purchased (AP) — the weight and price of the product ordered and received from the purveyor.
- As served (AS) — the weight and cost of the plated portion served to the guest.
- Edible portion (EP) — the weight and cost of the product available for sale after cleaning, trimming, preparation and cooking.
- Quality — the degree or grade of excellence.
- Quantity — the amount of product: pounds, cases, gallons, liters, etc.
- Value — the relationship between price and quality.
- Value added — the market price or value of a food product as it moves through the channels of distribution.
- Yield percentage — the amount of usable/saleable product left after cleaning, trimming, preparation and cooking.

17  Overview of accurate portioning and conversions

Considerations important to the operation

- price/cost
- quality
- employee skill level
- equipment
- storage space
- profitability

18  Portion Control

**Types**

- Portion controlled items
- Leftover issues are lessened
- Less storage
- No or less Waste
- No cutting equipment to purchase
- Less Labor

- Semolina's Example

#### **Methods of Controlling Portion Size**

- Weight
- Count
- Volume
- Equal Portions
- Portioned Fill

### 19 Measuring Devices

- Scoops and Dippers-serve food and control portion size, # relates to # of scoops or dips in 32 oz.
- Ladles-used to serve liquid to semi-liquid products and control portion size
- Bakers Balance- graduations of 1/4 oz, very accurate- must be cleaned and zeroed after all uses. The purpose of this is for a truly consistent product no matter the size of the recipe
- Portion Scale-spring loaded, raw or cooked portions are weighed for AP and EP. Each long mark is 1 oz with graduations of each 1/4 oz marked in between

### 20 What is the portion size?

- Appetizers
  - 3-5 count or 3-4 oz total weight
- Salad
  - 5-6 oz total weight or 8-10 oz total weight
  - 2 oz greens, 2 – 3 oz mix, ½ fl. Oz of dressing
  - 3-5 count
- Soup
  - 8 fl. Oz cup, 10 fl oz bowl
- Entrée
  - 6-8 oz protein, 3-4 oz starch, 3-4 oz. vegetable
  - 3-5 count
- Dessert
  - 4-6 oz

### 21 Portioning Food by Weight

- 1. # of guests being served?
- 2. Amount of portion
- 3. 1 multiplied by 2
  - = Total weight you must have as EP
- HINT- remember always scale to oz and then back to pounds

### 22 Example

- If you have to serve 400 people broccoli as a side item, how much broccoli do you need in pounds?
- Choose amount to serve (4 oz.)
- 4 oz x 400 guests = 1600 oz.



- 28  Important Chapter Definitions
- **Butcher test:** Test designed to determine standard portion costs for those items portioned before cooking
  - **Cooking loss test:** Test used to determine standard portion costs for those items portioned after cooking
  - **Yield factor (or yield percentage):** Ratio of the weight of part of a product to the weight of that product as purchased
- 29  Three Ways to Quantify Every Menu Item
- Weight (usually expressed in ounces or grams)  
*Examples:* meat, fish, vegetables
  - Volume (commonly expressed in liquid ounces or milliliters)  
*Examples:* soups, juices, coffee, milk
  - Count  
*Examples:* bacon, eggs, chops, shrimp, asparagus
- 30  Four Methods of Calculating Standard Portion Costs
1. Formula
  2. Recipe detail and cost card
  3. Butcher test
  4. Cooking loss test
- 31  Formulas Used in the Butcher Test
- $\text{Weight of part} \div \text{Weight of whole} = \text{Ratio to total weight}$
  - $\text{Total cost} - \text{Value of other parts} = \text{Value of primary part (usable meat)}$
  - $\text{Total value of usable meat} \div \text{Weight of usable meat} = \text{Cost per usable pound}$
  - $\text{Cost per usable pound} \div 16 \text{ ounces per pound} = \text{Cost per usable ounce}$
- 32  Formulas Used in the Butcher Test
- $\text{Portion size} \times \text{Cost per usable ounce} = \text{Portion cost}$
  - $\text{Cost per usable pound} \div \text{Purchase price per pound} = \text{Cost factor per pound}$
  - $\text{Portion cost} \div \text{Purchase price per pound} = \text{Cost factor per portion}$
  - $\text{Cost factor per pound} \times \text{Portion size (expressed as a decimal)} \times \text{Dealer price per pound} = \text{Portion cost at specified dealer price}$
- 33  Yield Percentage
- 34  Yield Percentage
- General formula:*
- $$\text{Quantity} = [\text{Number of portions} \times \text{Portion size (as a decimal)}] \div (\text{Yield percentage})$$
- Three variations on the basic formula:*
1.  $\text{Number of portions} = (\text{Quantity} \times \text{Yield percentage}) \div \text{Portion size}$
  2.  $\text{Portion size} = (\text{Quantity} \times \text{Yield percentage}) \div \text{Number of portions}$
  3.  $\text{Yield percentage} = (\text{Number of portions} \times \text{Portion size}) \div \text{Quantity}$
- 35
- Another way to determine net product yield % is to compute it directly using the

following formula:

- To compute actual EP cost, use the following formula:

36  **Managing the Food  
Production Area**

- Often, those individuals who manage restaurants do so because they relish managing the back of the house, or kitchen production area, of the food facility.
- Managing the food production process entails control of the following five areas: waste, overcooking, over serving, improper carryover utilization, and inappropriate make or buy decisions.

37

- Food losses through simple product waste can play a large role in overall excessive cost situations.
- In general, it can be said that food waste is the result of poor training or management inattentiveness.
- Increased cooking time or temperature can cause product shrinkage that increases average portion cost.

38

- To reduce losses from overcooking, management must strictly enforce standardized recipe cooking times.
- Over portioning has the effect of increasing operational costs, and may cause the operation to mismatch its production schedule with anticipated demand.
- Over portioning must also be avoided because customers want to feel that they have received fair value for their money. Consistency is a key to operational success in foodservice.

39

- In most cases, tools are available that will help employees determine proper portion size.
- Management should have a clear use in mind for each menu item that may have to be carried over, and those items should be noted on production schedules so they don't get lost in freezers or refrigerators.
- It is important to understand that carryover foods seldom can be sold for their original value.

40

- In general, the following guidelines may be of value when determining whether to adopt the use of a convenience product.
  1. Is the quality acceptable?
  2. Will the product save labor?
  3. Would it matter if the guest knew?
  4. Does the product come in an acceptable package size?

5. Is storage space adequate?

41  Questions?