Introduction and Background

Have you heard of the "most important meal of the day?" That's breakfast.

A healthful, balanced breakfast can give you the energy you need to do well in school. If you do not eat breakfast, you are more likely to feel tired, restless and even crabby.

With so many breakfast foods out there, how do you know which ones are the most healthful options? Think about the food groups shown on MyPlate (grain, vegetable, fruit, milk, and meat and beans) and some foods you like from each group. Which foods would you enjoy for breakfast? For more information check out the MyPlate website www.myplate.gov

Let's take a closer look. What breakfast cereals are in your cupboards? Sweetened cereals are marketed skillfully to today's youth. The breakfast cereal aisle at your grocery store is loaded with colorful boxes and bags of dry cereal. The bright colors and cute cartoon characters on the packages may get your attention. Look beyond the advertising to find out what cereals are best for you.

Some Types of Breakfast Cereals

While many types of breakfast cereals are available, most of them can be broken into just five main categories.

Whole-grain Cereal

Nutrition experts recommend that we make half our grain choices whole-grain. Whole grains are an excellent source of fiber. Identify whole-grain products by reading the ingredients listing on the food label. You cannot identify whole grains by the color of the food. Examples of whole grains are whole barley, brown rice, bulgur (cracked wheat), whole wheat, oats and rye. Look for the whole-grain or made with whole grain cereals. Examples such as Cheerios, Kashi and Shredded Wheat feature whole grains with very little or no added sugars. To identify a whole-grain cereal, you can look for the health claim. Researchers at Columbia University Medical Center have found that oat-based whole-grain cereals can help reduce blood cholesterol and aid in heart health. Other whole grains, such as whole wheat, can help you feel full and satisfied as you start your day.
Hot Cereal
Hot cereals such as oatmeal, Cream of Wheat and Malt-O-Meal are a warm, comforting and wholesome way to enjoy breakfast. Some hot cereals are available in wholesome, unsweetened versions as well as instant, sweetened versions. By buying unsweetened, whole-grain hot breakfast cereals, you can add naturally sweet fruit or a drizzle of honey for a touch of sweetness.

Ready-to-eat Cereal
Many ready-to-eat cereals such as Corn Flakes and Rice Krispies are not made from a whole grain. These cereals are fortified and enriched to include some of the nutrients that we get from whole grains.

Bran Cereal
Bran cereals, such as Raisin Bran, Fiber One, All-Bran and Bran Flakes, are high-fiber offerings for your breakfast table. Fiber can help you keep feeling full and aid in digestion and regularity. Are you getting enough dietary fiber in your daily diet? Consider adding a bran-based cereal to your morning routine. When adding fiber to your diet, add it slowly and drink plenty of water.

Sweetened Cereal
Sweetened cereals sometimes are called "candy cereals," and they often are placed at a child's eye level in the grocery store. Check the ingredient label for added sweeteners, which may be listed as sugar, brown sugar, honey, molasses, high-fructose corn syrup, dextrose, sucrose, maltose or fruit juice concentrates.

If you enjoy sweetened cereals such as Reese's Puffs, Fruit Loops and Lucky Charms, have them as an occasional fun treat but not on a daily basis. Or mix sweetened cereals with unsweetened cereals. Many nutrition experts recommend that we look for cereals with 8 grams or less of sugar per serving. Look at the Nutrition Facts label and compare grams of sugar among types of cereal.

Organic Cereal
Nature's Path, EnviroKidz and Cascadian Farm are examples of organic cereal brands. Organic food is produced without using pesticides and fertilizers. Organic foods also cannot be genetically engineered. Compare the Nutrition Facts labels to help you decide if the added cost is worth the possible benefit to your health.

Questions to Ask Yourself
- Do you "make half your grains whole"? MyPyramid teaches us to make at least half of our grain food choices whole grains. For kids and teens, this means trying to eat at least 3 ounces of whole grains each day.
- How do you know if a food has whole grain? Look for a couple of clues.
1. Look for the word "whole" before grain on the ingredient list. It is usually under the Nutrition Facts panel. For example, the ingredient list for Cheerios is: Whole Grain Oats (includes the oat bran), Modified Corn Starch, Sugar, Salt, Tripotassium Phosphate, Wheat Starch.

2. Look for a “health claim” on the package. Some whole grain foods also carry a health claim, such as this: "Diets low in saturated fat and cholesterol and rich in fruits, vegetables, and grain products that contain fiber, particularly soluble fiber, may reduce the risk of coronary heart disease."

Do you like colorful cereal that is very sweet? Many cereals have lots of added sweeteners. We all can enjoy some sweet treats, but not if it crowds out healthier foods. Go for the nutrition bonus by enjoying naturally sweet fruit on your whole-grain cereal. Raisins or other dried fruits will add to the amount of sugar shown on the Nutrition Facts panel. This natural sugar is not distinguished from added sugars, so you only can estimate the amounts of natural versus added sugars.

Check the list of ingredients to help you determine how much sweetener has been added. Ingredients are listed on the ingredient label in order of weight, from most to least. If sugar is listed first, you may want to keep looking to get the most nutrition for your money. Is your cereal a good source of fiber? Fiber fills you up and may help with weight management. "Insoluble fiber" (found in bran cereals) may help prevent constipation. "Soluble fiber" (found in oatmeal) may help people reduce their blood cholesterol level.

How much fat does the cereal contain? Although many types of cereals are low in fat, many granolas and some other cereals may contain saturated fat from coconut or palm oil. Saturated fat and trans fat are not heart-healthy fats. Compare Nutrition Facts labels.

How hungry are you? Whole-grain breakfast cereals can be tasty, good for you and fill you up, too. Pay attention to the serving size on the package. Is it 1 cups, 1 cup, % cup or cup? We may eat more than the suggested single serving size found on the food label. Remember that the numbers on the Nutrition Facts label refers to the nutrients in one serving of the food, so you may need to do some math.

How much can you spend? To compare food items, you need to look at the cost per serving. To determine the cost per serving, you can divide the total cost of the snack by the number of servings.

Is it good for you? Your breakfast combines with the meals and snacks you eat to make your body strong and healthy. Calcium, iron, protein, vitamin A and vitamin Care important for growing bodies. These nutrients are listed on the Nutrition Facts panel.

Do you drink the milk in the bottom of your cereal bowl? Most breakfast cereals are fortified with vitamins and minerals and contain 10 to 100 percent of the daily value for nutrients. Some vitamins and minerals may end up in the bowl, so drink your milk to take advantage of the nutrients.

You deserve the best. Your body is an amazing machine, and food is the fuel. Choosing your breakfast cereal wisely helps you put the best fuel in your body and will keep your body running at its best.
Reading Food Labels

Sample label for Macaroni & Cheese

Nutrition Facts
Serving Size 1 cup (228g)
Servings per Container 2

<table>
<thead>
<tr>
<th>Amount per Serving</th>
<th>Calories 250</th>
<th>Calories from Fat 110</th>
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<tbody>
<tr>
<td>% Daily Value*</td>
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<tr>
<td>Total Fat</td>
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<tr>
<td>Sodium</td>
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<tr>
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<tr>
<td>Dietary Fiber</td>
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<td>0%</td>
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<tr>
<td>Sugars</td>
<td>5g</td>
<td>0%</td>
</tr>
<tr>
<td>Protein</td>
<td>5g</td>
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</tr>
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</table>

Vitamin A 4%
Vitamin C 2%
Calcium 20%
Iron 4%

*percent daily values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Calories 2,000 2,500
Total Fat Less than 65g 80g
Sat Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrates 300g 375g
Dietary Fiber 25g 30g

Information compiled by Monique Stelzer for North Dakota 4-H Consumer Choices
Reviewed and edited by Julie Garden Robinson, NDSU Extension food and nutrition specialist, 2010

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As you walk down streets of any major city or small town you are bound to pass a bank or two or three. With so many banks offering different options, including internet banks, it is hard to choose which one you should use. For the most part all banks will offer basic checking accounts. They will also offer saving accounts, long-term savings, certificates of deposit and many different types of loan options; house, car, small business loans, etc.

The big difference between each banks’ basic accounts are the features: benefits, transaction limits, balance limits, etc. Every bank will do something a little different to try to attract your business.

**THINGS TO CONSIDER WHEN CHOOSING A CHECKING ACCOUNT:**

1.) Convenience: bank location, disability access and services, hours.
2.) Interest: does it pay interest on the balance.
3.) Electronic services: Internet banking, Automated Teller machines, Free online bill payment, electronic bank statements, etc.
4.) Pricing: account charges, fees for checks, services, or problems.
5.) Other useful services: such as a link-up with savings, other checking accounts, charge cards, financial counseling.
6.) Personal relationship: courtesy, customer support.
7.) Bank is FDIC (Federal Deposit Insurance Corporation) insured

**WHAT TO LOOK FOR:**

**Account and check fees:**
Some banks charge a base monthly fee on all accounts; others charge for each check; still others have no charge up to a certain number of transactions. (such as 10 checks per month) and charge heavily after that. If you write a lot of checks, a monthly fee and no per-check charge is for you.

**Check Processing:**
Some banks put a “hold” on deposits that are personal checks, with a longer hold for out-of-state checks; others give you instant access to part of any deposit (for example, the first $100) but encumber some of your account balance until the check clears.

**Interest accounts:** You can make money on some checking accounts that earn interest on
balances over a certain amount. Often these accounts offer other services like free safe deposit boxes, and traveler’s or cashier’s checks for maintaining minimum balances. These accounts sometimes cost more to maintain if your balance is below the minimum.

Fees for services and problems:
Some accounts provide you with overdraft protection or can be linked to a savings account for this purpose. Some have very steep fees for “bounced” checks (from you or written to you); others waive these charges if the problem is infrequent.

• Checks as records: One advantage of using checks is that you have an automatic receipt (a canceled check) to record a transaction. Some banks send checks back with your monthly statement. Another option is to use checkbooks that have make carbon copies of the checks as you write them. Others copy them into a computer database, and destroy the originals. You may have to apply and pay a fee to get a copy or view them over the internet. Now, some banks offer this service for free, however, so shop around if this is important to you.

SHOULD YOU CONSIDER ELECTRONIC BANKING?
Electronic banking services can be especially useful for people on the go as well as disabled persons. Electronic banking includes: automatic deposit and bill paying, funds transfers, ATM/debit card services, telephone services, and personal computer / Internet access.

For people who do not like to carry cash or credit cards or for people with limited physical mobility, electronic banking can be a valuable asset in taking control of your money and your life.

• Automatic deposit and bill paying: Many employers will deposit your paycheck or benefits check directly into your account. It is convenient with less risk of loss. Many banks will also automatically debit your account for bills each month. Some banks charge fees and others offer this service for free. Compare banks to see what is offered.

• Telephone services: Most banks allow you to authorize certain transactions and access account information over the phone. Account information is usually free but fees sometimes are charged for transactions. You can access your account from anywhere with a touch-tone or cell phone. It is important to monitor your account, especially if you use electronic services for many of your transactions. You need to know if a specific bill was paid or if your check was
deposited or to be sure your balance will cover a check.

- **ATM/debit cards:** The “Automated Teller Machine: (ATM) is another easy way to complete simple banking transactions such as deposits and withdrawals. ATM machines are usually conveniently located outside banks, shopping malls, supermarkets and convenience stores. They allow 24-hour access to your account so the possibility also exists for overspending and impulse buying.

**THE PERSONAL BANKING RELATIONSHIP:**
A personal relationship should definitely exist between you and the bank you choose. Once you have narrowed down your choices by the services that are offered, and the fees that are charged, a visit to the bank will tell you what else the bank offers. Talk to bank officers and get to know the tellers. Determine whether or not staff members go out of their way to help you work out problems. Does the staff ignore you, tolerate you, or welcome you? Are bank officers willing and able to advise you? Trust yourself as you choose a bank. You are the consumer, and you are in charge.

**CHECK OUT THE CHECKING ACCOUNT**

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Prepared By: Cheryl R. Varnadoe, Extension 4-H Specialist, Georgia 4-H, May 2013
CONSUMER ACCESS TO CHEMICAL INFORMATION

Often, retail household cleaning products contain substances that are deemed hazardous. It is difficult to identify these substances because manufacturers are allowed to label these substances as confidential business information (CBI). The U.S. Environmental Protection Agency (EPA) has acknowledged that the inappropriate and excessive use of CBI claims has hidden important information from the public and even from EPA offices. Modifications to the chemical information reporting rule are ongoing. Visit the EPA website for more information on the agency’s efforts to increase transparency in chemical access (Increasing Transparency in TSCA available at http://www.epa.gov/oppt/existingchemicals/pubs/transparency.html).

CLEAN HOMES

A clean home reduces exposure to allergens, pesticides, consumer chemicals, and pest droppings and urine, and reduces shelter for pests. While it is important to keep your home clean to provide a healthy environment, cleaning product labels often display complex chemical terms. Additionally, commercial advertisements may exaggerate the performance of cleaning products. Therefore, to make informed decisions when comparing product performance and safety, consumers need to be familiar with the most common ingredients found in cleaning products.

This publication provides definitions of common ingredients and guidelines for selecting products for household use. Types of cleaning products include

- Disinfectants and sanitizers,
- Abrasives,
- Acids,
- Alkalis,
- Bleaching agents,
- Detergents, and
- Spirit solvents.

DISINFECTANTS AND SANITIZERS

Disinfectants are more often used in clinics and hospitals than in household products. A disinfectant is a chemical that completely destroys all disease-causing organisms (pathogens). These include disease-causing strains of salmonella and staph bacteria. To be labeled as a disinfectant, the EPA stipulates that the product must destroy 99.999% of pathogens within 5 to 10 minutes. Disinfectants are applied directly to non-porous surfaces, such as diaper changing tables, countertops, door and cabinet handles, toilets, and other bathroom surfaces.

Disinfectants for Household Use

Liquid chlorine bleach is a common household disinfectant. For detailed information, refer to the Bleaching Agents section in this publication.

Quaternary ammonium compounds are generally referred to as quats. These are salt compounds used with a variety of additional ingredients to create a safe and effective disinfectant. They are effective in destroying a wide range of harmful bacteria, viruses, and fungi. Quats are economical and effectively control odors when used according to the manufacturer’s directions. They can be used on sensitive floor surfaces and will not damage floor finishes.

Pine oil cleaners are all-purpose cleaners made from a natural resin distilled from pine trees. The pine oils are combined with alcohols and quats to improve their disinfecting and cleaning properties. Pine Sol is an example of a pine oil cleaner/disinfectant.

When mixed in water, pine oil cleaners do not dissolve, but instead make a milky soap. Most people like the way they smell and the fact that they can clean and deodorize at the same time. Overall, they are good cleaners. Caution: These cleaners are highly flammable. They can be very dangerous if swallowed or if the fumes are inhaled. Use with adequate ventilation and follow all

1Community and Environmental Health Specialist, Department of Extension Family and Consumer Sciences, New Mexico State University.
labeled precautions. Do not use these products full-strength or leave them soaking on waxed or freshly painted surfaces.

The EPA provides a limited listing of 500 registered disinfectant products. It is updated periodically, yet it is not a complete listing. The list is available at http://www.epa.gov/oppad001/influenza-a-product-list.pdf

Sanitizers for Household Use
Sanitizers are commonly used in restaurants and household products. A sanitizer is a product that reduces germs on surfaces to levels considered safe by public health codes or regulations. By EPA standards, these products must destroy 99.999% of pathogens within 30 seconds. Many sanitizers are a formulation of a detergent and disinfectant. Sanitizers can be used on food contact surfaces, such as dishes, eating utensils, and cutting boards. Pacifiers and toys that children may place in their mouths can be sanitized for safety.

By killing bacteria, sanitizers also destroy odors. These products are used when cleaning tubs, showers, toilet bowls, bathroom sinks, and ceramic or plastic bathroom tile. They are also used in laundering and dishwashing products. Often, household products sold as disinfectants are also effective as sanitizers. Household products that are effective sanitizers include bleach and products formulated with quats, such as pine oil cleaners.

The EPA recommends that EPA-registered products be used whenever possible. Only a disinfectant or sanitizer with an EPA registration number on the label can make public health claims that they are effective in destroying germs.

ABRASIVES
Abrasives are rough or gritty. They clean surfaces by creating friction that lifts off hardened food particles, grease, tarnish, and stains. Anything that is rough to the touch can be considered an abrasive when used to remove spots or stains from a surface. Types of abrasives include physical, mineral, and chemical.

- **Physical abrasives** include sandpaper, plastic and nylon meshes, scrubbing pads, and steel wool.

- **Mineral abrasives** are composed of particles. Baking soda, powdered borax, and salt are all examples of mineral abrasives that are considered natural cleaners.

- **Chemical abrasives** are also composed of particles. A common chemical used in commercial products that contain bleach is sodium dichloro-s-triazinetrione. These cleaners are often referred to as **scouring powders** and are used to kill bacteria in addition to general surface cleaning.

In household cleaning products, mineral and chemical abrasives are available in powder and cream (or thick liquid) forms. Generally, the larger the particles used in the product, the harsher the cleaner. Calcium carbonate (or calcite) and silica are two types of minerals often found in these products. Calcium carbonate is the mildest of abrasives, with the finest abrasive found in the cream form.

Uses
**Mild abrasives** are appropriate for surfaces such as fiberglass, laminate, countertops, grout, tile, sinks, tubs, cookware, and glass.

**Coarse or harsh abrasives** can be used to clean outdoor stainless steel grills, oven baking racks, and cement. Usually sold for removing tough stains, harsh abrasives will cause damage to many surfaces. Regular use may scratch the shiny finishes of sinks, bathtubs, and kitchen appliances, making them dull and rough. When surfaces are damaged in this way, they soil faster and stain deeper. It will then be necessary to continue to use a harsh abrasive to remove embedded dirt and stains.

**Caution**
Always check the manufacturer’s directions before using abrasives on any surface. Consumers should be aware that all abrasives can leave scratch marks on some surfaces. Use sparingly when cleaning aluminum, plastic, plated and highly polished metals, and appliance enamel on refrigerators, dishwashers, oven doors, and microwave ovens.

ACIDS
Acids are used to remove mineral deposits, rust stains, and hard water deposits. They can remove discoloration from some metals, such as aluminum, brass, bronze, and copper. Some acids are effective both in cleaning and disinfecting surfaces.

Acids range from very mild to very strong. Consumers must take care when choosing and using acids for cleaning. Acid-based disinfectant cleaners are very irritating to your eyes and skin and will burn your throat. When using toilet cleaners, it’s a good idea to wear latex dishwashing gloves to help protect your skin and safety goggles to help protect your eyes from splashes.

This section provides an overview of types of cleaning products that contain acids as well as best use practices. As always, read the manufacturer’s directions before using on any surface. Refer to Table 1 for examples of acids in household cleaners.
Uses

Very Mild Acids
Mildly acidic cleaners are used to dissolve hard water deposits, remove mild rust stains, and eliminate soap film from around the sink and on shower doors. They are useful in removing tarnish from brass and copper.

Mildly acidic cleaning products include vinegar (acetic acid) and lemon juice (citric acid). Mild cleaners made from these acids are safe for use around children and pets. Other acids are often found in household cleaning products.

- **Gluonic acid** – organic compound with very low toxicity
- **Hydroxyacetic (or glycolic) acid** – a mild organic acid (stronger than vinegar)
- **Levulinic acid** – a non-toxic sugar-derived chemical used as a platform chemical in the production of a number of products

Acetic acid is the acid in clear white vinegar and is a natural all-purpose cleaning agent. It is best for general household cleaning on surfaces that can tolerate a strong, acidic product. Vinegar removes hard water deposits from glassware, rust stains from sinks, and tarnish from brass and copper. After using alkaline cleaners, acetic acid can be used as a mild deliming rinsing agent. Although vinegar is widely used as a disinfectant in household cleaning, the packaging cannot claim the product as a disinfectant because it is not registered with the EPA.

Citric acid is a natural substance found in lemons, limes, oranges, and grapefruits. It is nontoxic, antibacterial, and antiseptic. It has much the same use as vinegar.

In commercial products, citric acid is used to remove hard water buildup on dishes and glassware. It is also used as an acid spotter to remove coffee and tea stains, yellowing/browning discolorations, water stains, and urine or feces stains. Some commercial products that contain citric acid are water-based and may cause corrosion or rust on metals. Wash and dry the metal after cleaning to prevent rust.

**Cream of tartar** is a very mild acid salt. Made into a paste with water, it can be used to clean brass and copper, brighten aluminum, remove rust, and freshen coffee makers. Mix a small amount with vinegar to create a nonabrasive cleaner for use on grout, mold and mildew, oven tops, and cookware.

Phosphoric acid is a clear, colorless, odorless liquid. It is very mild, yet more acidic than vinegar or lemon juice. Commonly used for rust removal, it works quite well on most types of bathroom stains. In commercial products, phosphoric acid is found in tub, tile, sink, and toilet bowl cleaners.

Very Strong Acids
Strongly acidic cleaners are highly toxic. They may be corrosive, meaning they can eat away at metal surfaces or human tissue. Avoid getting them on your skin or in your eyes. Avoid getting them on other materials since the acids may have bleaching effects, eat through metals, or etch (scratch) surfaces and porcelain enamel. Always read the labels on the products you buy and follow the directions to ensure your own safety. See the *Caution* section (at the end of this *ACIDS* section) for more information on safe use.

Hydrochloric acid comes from a mixture of common table salt and sulfuric acid. Concentrated solutions of hydrochloric acid are extremely corrosive. Diluted solutions are commonly found in household cleaning products. Very dilute solutions are only mildly corrosive. When using hydrochloric acid, be careful to not let the cleaner come in contact with eyes and skin.

Hydrochloric acid is used in toilet bowl cleaners to remove dirt and grime. It is used for cleaning mortar spills off new bricks, removing rust from metals and other surfaces, and etching floors before sealing them. This product eats cotton, rayon, and mortar and is very corrosive to metals. In commercial products, hydrochloric acid is also called muriatic acid and is used for cleaning concrete; the acid cleans the concrete by etching away the top layer.

Hydrofluoric acid is a commercial rust remover that will burn the skin. Keep this one away from glass windows or glass products. See the *Caution* section before using.

Oxalic acid is a bleaching agent that is an effective rust remover. It is poisonous and corrosive. Make sure to keep children and pets away while using this

### Table 1. Examples of Acids in Household Cleaners

<table>
<thead>
<tr>
<th>Product</th>
<th>Acid Ingredients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toilet bowl cleaner</td>
<td>sodium bisulfate, oxalic acid, dilute hydrochloric acid, or dilute sulfuric acid</td>
</tr>
<tr>
<td>Rust removers</td>
<td>acetic, citric, gluconic, levulinic, hydrofluoric, hydroxyacetic (glycolic), or oxalic acids</td>
</tr>
<tr>
<td>Metal cleaners</td>
<td>citric or acetic acids</td>
</tr>
<tr>
<td>Hard water removers</td>
<td>levulinic, acetic, hydroxyacetic (glycolic), citric, or gluconic acids</td>
</tr>
<tr>
<td>Tarnish removers</td>
<td>levulinic, acetic, hydroxyacetic (glycolic), citric, or gluconic acids</td>
</tr>
</tbody>
</table>
product. Dispose of cloths and brushes used to apply oxalic acid. Otherwise, the acid could be transferred to kitchen utensils and dishes, from which this poisonous substance could be ingested. See the Caution section before using.

**Sodium bisulfate** (also known as sodium acid sulfate) can be found in toilet bowl cleaners. It is a compound made by combining sodium, hydrogen, sulfur, and oxygen ions. It is a poison and should be used with extreme caution. See the Caution section before using.

**Sodium hypochlorite** is a chemical used in bleaching solutions, disinfectants, water purifiers, and cleaning products. As a disinfectant, it attacks and destroys bacteria, viruses, and mold. It can be found in toilet bowl cleaners and tile and grout cleaners, among other products. Swallowing sodium hypochlorite can lead to poisoning. Breathing the fumes may also cause poisoning, especially if the product is mixed with ammonia.

**Sulfuric acid** is a strong drain cleaner and can be found in some toilet bowl cleaners. It also is a powerful oxidizer. However, it attacks nylon, vinyl, and most organic substances. It will burn the skin and emit dangerous fumes. Be sure to use it with caution. Store in a safe place away from other chemicals or heat, and definitely keep it away from children or pets. See the Caution section before using.

**ALKALIS**

Alkaline cleaners are composed of alkali salts, such as sodium bicarbonate (baking soda), sodium carbonate (also known as washing soda or soda ash), sodium metasilicate, and trisodium phosphate (TSP). Along with their detergent properties, certain alkali salts have water-softening characteristics and are used in cleaning products for that purpose.

Cleaning products are available in soaps, detergents, and all-purpose cleaners. Alkalis help clean food spills, oils, grease, and everyday things that get dirty. They remove oily dirt without rubbing and vary in strength from mild to moderate to strong. Refer to Table 2 for examples of alkalis found in household cleaners.

**Table 2. Examples of Alkalis in Household Cleaners**

<table>
<thead>
<tr>
<th>Product</th>
<th>Alkali Ingredients</th>
</tr>
</thead>
<tbody>
<tr>
<td>All-purpose cleaners</td>
<td>Ammonium compounds, sodium bicarbonate (baking soda), sodium carbonate, sodium metasilicate, trisodium phosphate (TSP), sodium borate (borax)</td>
</tr>
<tr>
<td>Drain cleaners</td>
<td>Caustic soda/sodium hydroxide (lye)</td>
</tr>
<tr>
<td>Oven cleaners</td>
<td>Caustic soda/sodium hydroxide (lye), ammonia</td>
</tr>
<tr>
<td>Scouring powders</td>
<td>Alkali salts, sodium metasilicate, trisodium phosphate (TSP)</td>
</tr>
<tr>
<td>Window cleaners</td>
<td>Ammonia or ammonium compounds, sodium bicarbonate (baking soda)</td>
</tr>
</tbody>
</table>

**Uses**

**Mild Alkalis**

For the most part, household cleaning chemicals listed in the mild alkali category are ones that contain sodium bicarbonate (baking soda). Mixed with water, this solution is used on areas that require a mild cleaning. It safely cleans glass, wall tile, and porcelain enamels. It also removes coffee and tea stains from china and plastic dishes. Mild alkalis are not corrosive. They are safe to use around children and pets.

**Moderate Alkalis**

**Ammonia** is a strong, colorless gas. When the gas is dissolved in water it is called liquid ammonia.

Ammonia is added to a number of household and commercial cleaners to boost their alkalinity and grease-cutting ability. It dries clear and usually won't streak. Ammonia also is found in glass cleaners and in cleaners used for shiny surfaces, like wax cleaners. Too much of it can ruin or damage some surfaces, so use it with caution.

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**Caution**

Always read the labels on the products you buy and follow the directions to ensure your own safety.

Oxalic acid, hydrochloric acid, sodium bisulfate, sodium hypochlorite, and sulfuric acid are all poisonous. They can also injure skin and eyes and damage clothing, leather, and some metals. Damage can occur when two or more different kinds of metals are treated together with acid. For this reason, avoid soaking a metal in a container made of another metal.

Never mix a toilet bowl cleaner with any other household or cleaning products. Doing so can result in poisonous gasses being released and cause very serious breathing problems. When cleaning your bathrooms, always be sure that the room has plenty of ventilation. Leave the door open, open a window, and use the exhaust fan, if you have one.
An effective cleaning agent, ammonia's odor is the main deterrent to its use. Never mix ammonia with chlorine and bleach products because this can release a highly toxic gas. For that matter, never mix any kind of chemicals since this can cause an unstable reaction and perhaps fumes, fire, or volatility (explosions).

- **Household ammonia**—containing 5 to 10% ammonia gas in water—cleans kitchen range burners, ovens, windows, and mirrors.

- **Sudsy ammonia** has soap or detergent added. Sudsy ammonia cleans garbage pails, kitchen range burners, and sinks.

**Borax**, also known as sodium borate, is a natural mineral compound. In the home, borax is used as a natural laundry booster; multipurpose cleaner for woodwork, walls, sinks, and carpets; deodorizer; and disinfectant. Borax is not flammable. It is not reactive and so can be mixed with most other cleaning agents, including chlorine bleach. It dissolves best in warm water. Borax is toxic if swallowed in large doses, and medical attention should be sought immediately if this occurs.

**Strong Alkalis**

A cleaner that fits in the strong alkali category destroys bacteria and dissolves proteins.

Cleaning products such as oven cleaner, lye, and drain cleaners are strong alkalis. They are highly corrosive and cause chemical burns on the skin and in the lungs when inhaled.

**Lye** (also known as caustic soda or sodium hydroxide) is sometimes found in drain and oven cleaners. These types of cleaners are used to unclog sink drains or in the bathroom. They should not be stored in the kitchen or bathroom cabinets. Lye emits dangerous fumes and can cause skin burns—and in some cases blindness—if the fumes come in contact with your eyes. Products with lye can cause death if swallowed. Wear gloves and safety goggles when using these products. Also, make sure that there is good ventilation in the room when these cleaners are used.

**Sodium carbonate** (also known as washing soda or soda ash) is used as a building block for powdered detergents and washing soda. It is used to remove fat from drains, greasy burners, and pans. This type of cleaner is slightly corrosive and will burn skin and corrode aluminum products.

**Sodium metasilicate** is mixed with water to form a cleaning solution. It makes a highly effective cleaner that can remove dirt and marks from walls in preparation for painting, and can attack stubborn soils on siding when cleaning the exterior of a home.

**Caution:** Sodium metasilicate is highly alkaline. Dust from the powder can irritate the nose, eyes, and lungs. Prolonged exposure can cause skin irritation. Wear protective gloves, eye protection, and long-sleeved shirts and pants while using this product. Wear a dust mask while mixing the powder with water if dust irritates nasal passages.

Store the compound in original containers in a dry location. Sodium metasilicate is highly poisonous when ingested. Store it out of reach of children or pets.

**Trisodium phosphate (TSP)** is not commonly found in products because most phosphates have been phased out of cleaning products due to environmental concerns. Products that do contain TSP are banned or restricted use in many states.

**Caution**

Most alkalis are toxic (poisonous), some are corrosive, and others irritate skin and eyes. Lye can burn skin severely. Alkalis remove oil from skin, so wear gloves. They also take oil from linoleum and oil-based paints and often result in cracking or peeling. They can darken aluminum. Damage to surfaces can be prevented by using a mildly alkaline solution and by rinsing well to remove all the cleaner.

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**BLEACHING AGENTS**

Bleaching agents are chemicals used to remove stains. Many bleaching agents can be used as disinfectants. If a product contains a bleaching agent, the product information label may state contains bleach, bleaches as it cleans, or chlorinated.

**Bleaching agents** may not list the term bleach on the product label. Therefore, it is important for consumers to recognize other names for bleach. Table 3 provides a list of possible chemical bleaching agents that may appear on product labels.

---

**Table 3. Chemical Bleaching Agents Found on Product Labels**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Use In Cleaning Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite</td>
<td>Solid bleach used in sanitizing.</td>
</tr>
<tr>
<td>Hydrogen peroxide</td>
<td>Bleaching textiles and fur.</td>
</tr>
<tr>
<td>Sodium carbonate peroxide (or, sodium percarbonate)</td>
<td>Oxygen-based bleaching agent. Releases hydrogen peroxide when dissolved in water. Whitens, brightens, and removes dirt and stains from surfaces and fabrics.</td>
</tr>
<tr>
<td>Sodium dichloroisocyanurate</td>
<td>Sanitizing and dishwashing agents.</td>
</tr>
<tr>
<td>Sodium hypochlorite</td>
<td>Household laundering and sanitizing.</td>
</tr>
<tr>
<td>Sodium perborate</td>
<td>Milder bleach for laundering and replacement for phosphates in detergents.</td>
</tr>
</tbody>
</table>
Chlorine bleach is one of the most widely available and affordable disinfectants on earth. Liquid chlorine bleach (Figure 1) is an alkaline solution of sodium hypochlorite dissolved in water. It is a base and is especially good at removing stains and dyes from textiles. Additionally, chlorine bleaches are used for controlling mold and mildew and for disinfecting surfaces.

**Figure 1.** A bottle of commercially available liquid chlorine bleach.

**Chlorine bleach** is one of the most widely available and affordable disinfectants on earth. Liquid chlorine bleach (Figure 1) is an alkaline solution of sodium hypochlorite dissolved in water. It is a base and is especially good at removing stains and dyes from textiles. Additionally, chlorine bleaches are used for controlling mold and mildew and for disinfecting surfaces.

**Caution**
Chlorine bleach is a strong corrosive material. Inhaling the fumes will irritate the eyes, skin, and respiratory tract. Never mix bleach with toilet bowl cleaners or rust remover because a poisonous gas is produced. Never mix bleach and ammonia because this produces a dangerous chemical compound that could result in fire.

Consumers should be aware that chlorine bleach can dull shiny finishes on sinks, bathtubs, and other porcelain enamel faces. Since it is an alkali, bleach will darken aluminum and make linoleum brittle.

**DETERGENTS**
Detergents are an ingredient found in many home cleaning products. A detergent is a chemical substance used to break up and remove grease and grime. Soap is an example of one kind of detergent. The most important ingredients in detergents are chemicals called surfactants—a word made from bits of the words “surface active agents.” Since water does not clean effectively alone, detergents help loosen dirt. The surfactants in the detergents are used to bond water to dirt and grease. They help water to get a hold of the grime, break it up, and wash it away.

Builders enhance the detergent’s efficiency. Phosphates are a type of builder commonly found in detergent products. Trisodium phosphate (TSP) and disodium phosphate are rarely used these days due to bans enacted for environmental reasons. Most phosphates in use today, referred to as complex or condensed phosphates, have a lower alkalinity than the banned phosphates. If a complex phosphate builder has been added, the detergent will remove oily dirt better. When a builder is present, the product is labeled heavy duty or all-purpose.

Some laundry detergents may be used for house cleaning jobs. The safety of a laundry detergent depends on the brand and the additional chemicals it may contain. Check the product label carefully. Liquid dishwashing detergent is safe for use around children and pets.

**SPIRIT SOLVENTS**
Solvents are cleaning chemicals that dissolve grease, oil, and oily dirt. The ingredients in solvents include (but are not limited to) acetones, denatured alcohols, and mineral spirits. Cleaners that contain solvents include spot removers, rug cleaners, sanitizers, drain cleaners, and all-purpose cleaners. Examples of spirit solvents are paint thinners, turpentine, and kerosene.

Many waxes and polishes for furniture and floors and floor wax removers contain spirit solvents. Spirit solvent floor wax removers are safe and effective for use on wood, wood composite, cork, magnesite, linoleum, concrete, and stone floors. They are used for removing wax, oil, and grease. These products are non-flammable.

**Note:** Spirit solvent floor waxes are not to be used on asphalt, thermoplastic tiles, PVC (vinyl), or rubber floors because the solvents will damage these types of floors.

Not all floor waxes contain spirit solvents. Some are water-emulsion waxes that will damage wood and cork products. Water-emulsion waxes can be recognized by the product label statement *Keep from Freezing.*
SAFE HANDLING OF CLEANING PRODUCTS

Most cleaning products used in homes today are considered safe when used according to the manufacturer’s instructions. Regulations require that all hazardous substances be labeled with the statement *Keep Out of the Reach of Children* (Figure 2). Not all products are hazardous, but when directions are not followed some of these products become dangerous—and some are more dangerous than others.

The most frequent misuse is accidental swallowing by curious children (Figure 3). Therefore, **never transfer cleaners into soft drink bottles or other containers that may seem harmless to children.** Keep cleaning products in the original packaging. Buy products in childproof containers and store them in cabinets with childproof latches.

Many household cleaners are stored under the kitchen sink in cabinets that are not locked. This is the worst place to store household cleaners. If this is the only place where you can store cleaning products, put safety latches (Figure 4) on the cabinets and drawers. The best practice is to put these products in a place that children cannot reach. Also, if possible, keep children and pets out of areas where cleaning products being used.

Keep products, such as strong acids and alkalis, directed away from skin and eyes when in use. Wear protective clothing, including gloves, safety goggles, and an apron. Immediately wash off any products that you splash or spill on your skin.

Products containing flammable liquids should never be used near open flames, including pilot lights on kitchen ranges or gas clothes dryers, furnaces, or lit cigarettes.

Do not leave aerosol (pressurized) containers on a kitchen range, radiator, or furnace; in direct sunlight; or near other heat sources. Never puncture aerosol containers. Before discarding this type of container,
hold the valve open until all the contents and gas have escaped.

Never discard an empty aerosol container in a fire or incinerator because some gas usually remains. This is true even in an apparently empty can. Heat causes the gas to expand, which may lead to an explosion.

**Accidents - What To Do**

If an accident occurs while you are using a hazardous substance, refer to the product label for the appropriate first aid procedures. Follow the directions carefully. If it is necessary to take a child or adult to the hospital or a physician’s office because of an accident, be sure to bring along the container of the product that caused the injury. The information on the label will help the physician give prompt and proper treatment.

If no other person is close by and you are hurt or starting to feel sick, then do the following.

- **Household chemical splashed in the eyes.** Rinse out your eyes for 15 to 20 minutes in the shower or under a faucet. Then call your poison control center at 1-800-222-1222. You can also call 911 or your local emergency ambulance number.

- **Household chemical splashed on the skin.** Take off the wet clothing and rinse the skin for 15 to 20 minutes in the shower or under a faucet. Then call your poison control center at 1-800-222-1222.

Be prepared for any emergency in your home. Keep your local emergency number, local ambulance number, and the local poison control center telephone numbers on or next to your phone. All poison control centers now have the same telephone number—it doesn’t matter which state you live in. The number is 1-800-222-1222.


**Figure 4. A childproof safety latch on a cabinet door.**

You can also call 911 or your local emergency ambulance number.

- **Household chemical swallowed.** First, drink a half glass of water. Then call your poison control center at 1-800-222-1222. You can also call 911 or your local emergency ambulance number.

- **Poisonous gas inhaled.** Quickly get to fresh air. If any other person is around, they should not breathe the fumes. If you can, open all the doors and windows wide. If not, stay in the fresh air. Call your poison control center at 1-800-222-1222. You can also call 911 or your local emergency ambulance number.
FAST FOOD MEALS

Fast foods are quick and easy substitutes for home cooking, and a reality with the busy schedules many families maintain. However, fast foods are almost always high in calories, fat, sugar, and salt.

Fast food used to mean fried food. However, today there are many more healthy alternatives available at fast food restaurants. Some restaurants still use hydrogenated vegetable oils for frying. These oils contain trans fats, which increase your risk for heart disease. Some cities have banned or are trying to ban the use of these fats. Now, many restaurants are preparing foods using other types of fat.

Even with these changes, it is hard to eat healthy when you eat out often. Many foods are still cooked with a lot of fat, and many fast-food restaurants do not offer any lower-fat foods. Large portions also make it easy to overeat, and few restaurants offer many fresh fruits and vegetables.

Before heading out, it is important to know your personal calorie limit. Staying within yours can help you get to or maintain a healthy weight. Most adolescents need 1800 (girls) to 2200 (boys) calories; however, knowing how many calories one needs is based upon age, sex, height, weight, and activity level. When choosing what to eat and drink, it’s important to get the right mix – enough nutrients, but not too many calories.

In general, eat at places that offer salads, soups, and vegetables. Select a fast-food restaurant that you know offers a variety of food selections that fit in your healthy eating plan. Along with that, the following tips can help you make healthier selections when dining at fast-food restaurants.

Check and compare nutrition information. Knowing the amount of calories, fat, and salt in fast foods can help you eat healthier. Many restaurants now offer information about their food. This information is much like the nutrition labels on the food that you buy. If it is not posted in the restaurant, ask an employee for a copy.

Have it your way. Remember you don’t have to settle for what comes with your sandwich or meal – not even at fast-food restaurants. Ask for healthier options and substitutions. Adding bacon, cheese, or mayonnaise will increase the fat and calories. Ask for vegetables instead, such as lettuce or spinach, and tomatoes. With pizza, get less cheese. Also pick low-fat toppings, such as vegetables. You can also dab the pizza with a paper napkin to get rid of a lot of the fat from the cheese.

Keep portion sizes small. If the fast-food restaurant offers several sandwich sizes, pick the smallest. Bypass hamburgers with two or three beef patties, which can pack close to 800 calories and 40 grams of fat. Choose instead a regular- or children’s-sized hamburger, which has about 250-300 calories. Ask for extra lettuce, tomatoes, and onions, and omit the cheese and sauce. If a smaller portion is not available, split an item to reduce calories and fat. You can always take some of your food home, and it is okay if you leave extra food on your plate.

Skip the large serving of french fries or onion rings and ask for a small serving instead. This switch alone saves 200 to 300 calories. Or, ask if you can substitute a salad or fruit for the fries.

Strive to make half your plate fruits and vegetables. Take advantage of the healthy side dishes offered at many fast-food restaurants. For example, instead of french fries choose a side salad with low-fat dressing or a baked potato, or add a fruit bowl or a fruit and yogurt option to your meal. Other healthy choices include apple or orange slices, corn on the cob, steamed rice, or baked potato chips.

When choosing an entrée salad, go with grilled chicken, shrimp, or vegetables with fat-free or low-fat dressing on the side, rather than regular salad dressing, which can have 100 to 200 calories per packet. Vinegar or lemon juice are also healthier substitutes for salad dressing. Watch out for high-calorie salads, such as those with deep fried shells or those topped with breaded chicken or other fried toppings. Also skip extras, such as cheese, bacon bits and croutons, which
quickly increase your calorie count. If you forgo the dressing, you can find salads for around 300 calories at most fast food chains.

Opt for grilled items. Fried and breaded foods, such as crispy chicken sandwiches and breaded fish fillets, are high in fat and calories. Select grilled or roasted lean meats – such as turkey or chicken meat, lean ham, or lean roast beef. Look for meat, chicken, and fish that are roasted, grilled, baked, or broiled. Avoid meats that are breaded or fried. If the dish you order comes with a heavy sauce, ask for it on the side and use just a small amount.

Go for whole grains. Select whole-grain breads or bagels. Croissants and biscuits have a lot of fat. People who eat whole grains as part of a healthy diet have a reduced risk of some chronic diseases.

Slow down on sodium. Americans have a taste for salt, but salt plays a role in high blood pressure. Everyone, including kids, should reduce their sodium intake to less than 2,300 milligrams of sodium a day (about 1 tsp of salt). Adults age 51 and older, African Americans of any age, and individuals with high blood pressure, diabetes, or chronic kidney disease should further reduce their sodium intake to 1,500 mg a day.

When eating at a fast food restaurant, pay attention to condiments. Foods like soy sauce, ketchup, pickles, olives, salad dressings, and seasoning packets are high in sodium. Choose low-sodium soy sauce and ketchup. Have a carrot or celery stick instead of olives or pickles. Use only a sprinkling of flavoring packets instead of the entire packet.

Watch what you drink. What you drink is as important as what you eat. Teenagers often drink more carbonated and caffeinated beverages and eat more fast foods. This, along with peer pressure related to eating and exercise, make teenagers particularly vulnerable to becoming sedentary, overweight, and obese. An obese teenager has a greater than 70% risk of becoming an obese adult.

Many beverages are high in calories, contain added sugars and offer little or no nutrients, while others may provide nutrients but too much fat and too many calories. For example, a large regular soda (32 ounces) has about 300 calories. Instead, order diet soda, water, unsweetened iced tea, sparkling water or mineral water. Also, skip the shakes and other ice cream drinks. Large shakes can contain more than 800 calories and all of your saturated fat allotment for the day.

Drink water. This is a better choice over sugary drinks. Regular soda, energy or sports drinks, and other sweet drinks usually contain a lot of added sugar, which provides more calories than needed. Water is usually easy on the wallet. You can save money by drinking water from the tap when eating out. When water just won’t do, enjoy the beverage of your choice, but just cut back, avoiding the supersized option.

Don’t forget dairy. Many fast food restaurants offer milk as an option for kids’ meals, but you can request it! Dairy products provide calcium, vitamin D, potassium, protein, and other nutrients needed for good health throughout life. When you choose milk or milk alternatives, select low-fat or fat-free milk or fortified soymilk. Each type of milk offers the same key nutrients such as calcium, vitamin D, and potassium, but the number of calories are very different. Older children, teens, and adults need 3 cups of milk per day, while children 4 to 8 years old need 2 ½ cups, and children 2 to 3 years old need 2 cups.

The American Heart Association recommends some examples of healthier alternatives to common fast food picks.

<table>
<thead>
<tr>
<th>Instead of...</th>
<th>Try...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danish</td>
<td>Small bagel</td>
</tr>
<tr>
<td>Jumbo cheeseburger</td>
<td>Grilled chicken, sliced meats or even a regular 2 oz. hamburger on a bun with lettuce, tomato and onion</td>
</tr>
<tr>
<td>Fried chicken or tacos</td>
<td>Grilled chicken or salad bar (but watch out for the high-calorie dressing and ingredients)</td>
</tr>
<tr>
<td>French fries</td>
<td>Baked potato with vegetables or low-fat or fat-free sour cream topping</td>
</tr>
<tr>
<td>Potato chips</td>
<td>Pretzels, baked potato chips</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Milkshake</td>
<td>Juice or low-fat or fat-free milk or a diet soft drink (Limit beverages that are high in calories but low in nutrients, such as soft drinks.)</td>
</tr>
</tbody>
</table>

**References**

American Heart Association [www.heart.org/HEARTORG/GettingHEalthy?nutritionCenter/DiningOut/Tips-for-Eating-Fast-Food_UCM_308412_Article.jsp](www.heart.org/HEARTORG/GettingHEalthy?nutritionCenter/DiningOut/Tips-for-Eating-Fast-Food_UCM_308412_Article.jsp)


- Choose My Plate
- Make Half Your Grains Whole
- Salt and Sodium
- Make Better Beverage choices
- Enjoy Your Food, But Eat Less

Choose My Plate – Calories: How Many Can I Have?

Mayo Clinic
[www.mayoclinic.com/health/fast-food/MY01268](www.mayoclinic.com/health/fast-food/MY01268)

National Institutes of Health – Medline Plus

US Department of Health & Human Services - Office on Women’s Health
[www.girlshealth.gov/nutrition/fsatfood/fastfood_tips.cfm](www.girlshealth.gov/nutrition/fsatfood/fastfood_tips.cfm)

Selecting Headphones

Consumer Decision Making Study Materials

There are many different types of headphones, all ranging in price as well as style and comfort. When looking to buy a new pair of headphones the consumer wants to pick a style that best meets their needs and is in his/her price range. There are several types of headphones and features to consider in making this decision.

### Main Types of Headphones

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Best Uses</th>
<th>Price Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over-Ear/Full-Size</td>
<td>These are traditional-looking headphones with cushioned pads that cover the whole ear. Full-Size headphones are bulkier, but generally very comfortable because of generous padding and ergonomic design.</td>
<td>Home or Office</td>
<td>$40-$300</td>
</tr>
<tr>
<td>On-Ear/Lightweight</td>
<td>These are headphones which sit on the ears rather than over them. They typically have a thin headband that goes over or behind the head. Some other models use small clips that slip over your ear.</td>
<td>Exercising; Travel</td>
<td>$20-$130</td>
</tr>
<tr>
<td>In-Ear/Canalphones</td>
<td>These headphones rest in the ear canals. There are capable of producing incredible audio quality. For optimal use, they fit snugly and can be custom made in order to fit your ear canal.</td>
<td>Noisy Environments; Travel</td>
<td>$75-$420</td>
</tr>
<tr>
<td>Type</td>
<td>Description</td>
<td>Best Uses</td>
<td>Price Range</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Canalbuds</strong></td>
<td>Canalbuds are the middle ground between earbuds and in-ear canal. They sit just on the inside of your ear instead of deep inside. They tend to be more comfortable because they are not as tightly fitting as the inner-ear canal and are generally less expensive.</td>
<td>On the Go</td>
<td>$49-$100</td>
</tr>
<tr>
<td><strong>Earbuds</strong></td>
<td>Similar in size to in-ear headphones, earbuds are handy for listening to music while on the move. They sit outside the ear canal and don't fully seal your ear, meaning they are susceptible to sound leakage.</td>
<td>On the Go</td>
<td>$5-$90</td>
</tr>
</tbody>
</table>

**Other Types of Headphones**

In addition to the main headphone types, there are other specialized types available for specific purposes. Here are a couple of examples.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Best Uses</th>
<th>Price Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sports Headphones</strong></td>
<td>Ideal for exercising built to withstand the rigors of any workout; built for comfort and portability; designed to be water and sweat resistant.</td>
<td>Working out; running; any type of exercise</td>
<td>$10-$380</td>
</tr>
<tr>
<td><strong>Monitor Headphones</strong></td>
<td>Studio monitoring headphones; specialist headphone, designed to be used by audio professionals, where accurate sounds produced are crucial.</td>
<td>Sound engineering; audio mixing</td>
<td>$20-$2,500</td>
</tr>
</tbody>
</table>
Open versus Closed

Both the on-ear and in-ear headphones can also differ by the type of ear cups used. The ear cup variations create different listening conditions and the headphone type that is right for you is purely personal preference. Both designs have their pros and cons and it usually comes down to personal preference as to which ones to buy. It is a good idea to try each type out in-store before buying.

<table>
<thead>
<tr>
<th><strong>Open Back</strong></th>
<th>Open is when the back of the ear pads are not completely sealed off. This can provide a more natural sound but open-back headphones tend to leak more noise.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Open Back Headphones" /></td>
<td><img src="image" alt="Open Back Headphones" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Closed Back</strong></th>
<th>Closed is when the back of the ear pads are completely sealed off. They can sound a bit muffled, but are good at preventing sound leakage and blocking out unwanted noise.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Closed Back Headphones" /></td>
<td><img src="image" alt="Closed Back Headphones" /></td>
</tr>
</tbody>
</table>

Headphone Features

Some headphones offer additional features; for example, blocking out unwanted outside noise with noise cancelling or noise isolation. Other headphones are great for when you want to be mobile; such as wireless, or Bluetooth connectivity.

<table>
<thead>
<tr>
<th><strong>Feature</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Noise Cancelling Headphones</strong></td>
<td>Headphones with noise cancelling or noise reduction block outside sound keeping out all monotonous noise that is not your audio tuner. They tend to be good at eliminating unwanted low-frequency noise (such as traffic). This feature is mainly available with on- or over-ear headphones, but some in-ear models have it too.</td>
</tr>
<tr>
<td><strong>Noise Isolation Headphones</strong></td>
<td>Not to be confused with noise cancelling headphones, noise isolation headphones or earphones block outside sound by sealing in the ear when fitted. Some earphone models do look very similar to standard earbuds but the audio quality is improved.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Wireless Headphones</td>
<td>Wireless sets allow you to listen to music without being tethered to the audio source. They use radio frequencies to transmit sound from their base station to your ears. Long-range wireless connections such as FM systems allow you to move from room to room or even outside. But the downside is you might experience interference.</td>
</tr>
<tr>
<td>Bluetooth Headphones</td>
<td>Bluetooth is a type of short-range wireless technology commonly used with hands-free mobile phone kits. These headphones also double as headsets letting the consumer switch between music and voice features. These are best suited for portable use as you have to keep the transmitter close to you.</td>
</tr>
</tbody>
</table>

### Headphone Controls

Some headphones come with controls built into the cable or earpiece. Typical controls include playback functions such as play/pause and volume up/down. Others include mobile phone functionality, enabling the user to seamlessly switch between hands-free telephone calls and listening to music.

### Terms to Know

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decibels (dB)</td>
<td>The unit of measurement for sound</td>
</tr>
<tr>
<td>Ear Cup</td>
<td>The portion of the headphones that is placed over the ear and houses the speaker</td>
</tr>
<tr>
<td>Ear Cushions</td>
<td>The portion on the inside of the headphone ear cup that rests on your skin and around your ears</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>The range of frequencies, in kHz, that drivers are able to reproduce before a significant drop in volume level</td>
</tr>
<tr>
<td>Headphone Amplifier</td>
<td>An electronic device that is designed to drive headphones rather than speakers. A dedicated headphone amplifier can provide better dynamic range, clarity and volume when driving headphones than the often cheap headphone output circuits on consumer electronics equipment.</td>
</tr>
<tr>
<td>Impedance</td>
<td>How much opposition (or resistance) the headphone gives to the signal from the audio source. (The larger the impedance the quieter the headphones will sound for a given volume level from the source. In contrast a set of headphones with low impedance will sound louder.)</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Maximum SPL</td>
<td>A measure of how loud your headphones can get, indicated in decibels (dB).</td>
</tr>
<tr>
<td>Nose-induced hearing loss (NIHL)</td>
<td>Exposure to harmful noise/sounds that are too loud or loud sounds that last a long time causing sensitive structures in the inner ear to be damaged.</td>
</tr>
<tr>
<td>Plug</td>
<td>The headphone plug or headphone jack on the end of the headphone cord that plugs into the sound source. This jack plug is either 1/4” in diameter or 1/8” in diameter.</td>
</tr>
<tr>
<td>Plug Adapter</td>
<td>An attachment that slips over the plug making it useful with more sound sources. An adapter can convert a 1/8” plug to a 1/4” plug or a 1/4” plug to a 1/8” plug. Most headphones come with a 1/4” and a 1/8” plug which eliminates the need for an adapter.</td>
</tr>
<tr>
<td>Safe Hearing Levels</td>
<td>In general, sounds above 85 dB are harmful, depending on how long and how often you are exposed to them and whether you wear hearing protection, such as earplugs or earmuffs. (Average home noise is 40 dB and normal conversation is 60 dB.)</td>
</tr>
<tr>
<td>Sound Leakage</td>
<td>The ability of unwanted sound to flow in or outside of the headphones</td>
</tr>
<tr>
<td>Stereo</td>
<td>Designates sound reception to both ears.</td>
</tr>
</tbody>
</table>

**References:**
Headphones, Florida 4-H Consumer Choices 2011-12: Teacher Guide
Infographic: The different types of headphones illustrated (http://www.techhive.com/article/2000079/infographic-the-different-types-of-headphones)
Buying guide: Headphones/Macworld (http://www.macworld.com/article/1144708/headphones_buying_guide)
Headphones & Head-Set Reviews/InnerFidelity (http://www.innerfidelity.com/headphonereviews)
Top Headphone Reviews/Best Headphone –Consumer Reports (http://www.consumerreports.org/cro/headphones.htm)
Which? Technology Reviews, which.co.uk (http://www.which.co.uk/technology/audio/reviews/headphones/page/features-explained/)
National Institute of Deafness and Other Communicative Disorders

**Compiled by:**
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Mindy Turner, 4-H Youth Development Specialist, New Mexico State University
The hooded sweatshirt or “hoodie” is undoubtedly American in origin and style. The first hooded sweatshirt was created by Champion® in the 1930s for workers in frozen warehouses in New York. Today, hoodies can be seen on anyone from athletes to infants and the market for hoodies has become very diverse as a result.

What exactly is a hoodie and what are they good for? A hoodie is basically a hooded sweatshirt commonly used for exercising, protection during cooler weather, and/or fashion. Hoodies come in both pull-over and zip-up styles. An article of clothing performs according to what it is made of and how it is made.

Fiber Content

Most hoodies are made of cotton and/or polyester fibers and some made with spandex fibers. Review the classes of fiber listed in the 4-H publication Facts About Clothing and be sure to understand the advantages and limitations of cotton, polyester, and spandex.

Things to Consider Before Buying

The first thing to consider when buying a hoodie is its intended use. When will you wear the hoodie? What are the functional criteria that the hoodie must have to perform? Here are some examples of functional criteria:

- Breathes
- Keeps you cool or warm, as required
- Allows for movement
- Weather proof
- Remains dry regardless of sweat or humidity
- Comfortable
- Cost and Value
- Uses and Needs

Next, before buying a hoodie you should review the general criteria for garment selection described in Facts About Clothing (p.19). These criteria provide the information that will help you determine what qualities you should look for based on your functional criteria.

Moisture Management

Some hoodies are designed to keep the wearer dry during activity or humid conditions—such hoodies are described as moisture-wicking. It is common for manufacturers to have their own unique name associated with their moisture-wicking technology. Some of the common names are listed below. Some are associated with a particular brand of clothing while others are used across many brands industry wide.
- ClimaCool: (Adidas) allows air flow around the garment to regulate body temperature

- ClimaProof: (Adidas) keeps the wearer warm and dry during all weather conditions

- CoolMax: (DuPont) fibers are engineered to push perspiration to the surface of the garment; used in many brand-name moisture management systems

- Dri-Fit*: (Nike) water-wicking system to keep the wearer dry

- Dri-Power: (Russell) draws moisture away from the body

- PlayDry: (Reebok) moisture-wicking

- PolarTec: this is a leading manufacturer of synthetic and technology fabrics specializing in moisture-wicking, weather resistant, and insulation technologies

References: asipublications.com, hsc.csu.edu (Properties and performance of textiles), nytimes.com (A Look Under the Hoodie)
FACTS ABOUT CLOTHING

A Guide for Cotton Boll and Consumer Jamboree
Facts about Clothing

To judge clothing you need some basic knowledge. A garment performs according to what it’s made of and how it’s made. You need to know about the fibers from which fabric is made, fabric construction, color and design on fabric and fabric finishes. You also need to know about care labels.

A general knowledge of construction methods helps you recognize quality and also predict durability. Design features also determine how suitable a garment is for a person or a particular use.

This manual provides the basics on fiber content, fabric construction, color and design, fabric finishes, seam construction, care labels and general criteria (reasons) for garment selection. It’s a lot to learn, but remember – you aren’t just learning for a contest – you’re learning for a lifetime of smart choices.

Fiber Content

The Textile Fiber Products Identification Act protects consumers and producers from false advertising and mislabeling of the fiber content of textile fiber products.

This act requires most textile products sold at retail price to have labels stating the textile fiber content. To reduce confusion, the law establishes 21 generic or family names of textile fibers. If you learn the generic names, you won’t need to remember the hundreds of trade names. For example, polyester is a generic fiber classification; Dacron, Kodel and Fortrel are all manufacturers’ trade names for their polyester fibers.

Each label must give the following information.

- The generic or family name of the fiber.
- The name of the manufacturer or a registered identification number or trade mark.
- The percent of each fiber in the fabric listed in order of its predominance by weight. If a particular fiber is five percent or less, it may be designated as “other fiber.”
- The country of origin, if other than the United States.
- The fiber trade name may be given on the label, if desired. If so, the trade name cannot be used without the generic classification and the trade name may not be in larger print than the generic.

Fibers in each generic class behave much the same. It’s wise to learn the generic names and their general characteristics.
Here are the most common generic classes used for clothing items:

<table>
<thead>
<tr>
<th>Fiber</th>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber</td>
<td>Advantages</td>
<td>Limitations</td>
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<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Fiber</td>
<td>Advantages</td>
<td>Limitations</td>
</tr>
<tr>
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<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Rubber</td>
<td>Very elastic. Adapted for many uses.</td>
<td>Sensitive to heat. Damaged by perspiration, body oils, lotions, cremes and light. Bondings may become soft from perspiration or cleaning. Melts at relatively low heat.</td>
</tr>
<tr>
<td>Metallic</td>
<td>Adds a rich quality. Laminated yarns are lightweight, non-tarnishable and relatively inexpensive.</td>
<td>Sensitive to abrasion. Laminated yarns are sensitive to heat. Plastic coating on yarns may melt.</td>
</tr>
</tbody>
</table>
Fabrics

Fabrics are usually constructed from yarns. Fabrics vary as much as the fiber(s) yarns and construction processes used to make them. In addition to the many types and varieties of yarns, the yarns may be made into fabric by several processes. The appearance, design, texture, hand and serviceability can be affected by fabric construction.

**Woven fabrics** are made by interlacing two or more sets of yarn at right angles to each other. The set of yarns running lengthwise is called *warp*; the crosswise yarns are called *filling*. Woven fabrics have grain and the yarns may be raveled in the lengthwise and crosswise direction. The interlacing pattern gives interest to the fabric. The following are three basic weaves and several variations of these weaves:

- **Plain weave** is the simplest of weaves. The filling yarn passes over one warp yarn and under the next, alternating across the fabric. Broadcloth, poplin and taffeta are made by a plain weave using heavier yarns in one direction. Bengaline and faille are ribbed fabrics made by using a plain weave and heavy filling yarns.

- **Plain Weave**

- **Basket weave** is a plain weave treating groups of yarns as one yarn. Oxford cloth and monk’s cloth are basket weave. The more compact the yarns, the more durable the fabric.

- **Basket Weave**

- **Twill weave** is identified by diagonal ridges on the face of the fabric. In the simplest twill weave, the filling yarn is carried over one and under two warp yarn. Each yarn progresses one yarn to the right or left to create the diagonal pattern.

- **Twill Weave**

- **Satin weave** is created by passing a yarn over four or more yarns before going under one yarn. Some satin weaves may cross over as many as seven yarns. The result is long floats that create a luster on the fabric face. The floats may be warp or filling yarns. The long floats are easily picked and pulled. The fabric is easily abraded.

- **Satin Weave**
Because of their smoothness, satin weave fabrics make good linings. Satin, sateen, and crepe back satin are satin weave fabrics. Satin is considered a dressy fabric. But, some satin weaves are used for fabrics suitable for pants, jackets and upholstery.

*Pile weave* - Some fabrics are made using a base fabric plus an extra set of yarns. The loops of yarn extend above the base fabric.

*Uncut Pile* - Terrycloth is an uncut pile fabric. It's used in towels, robes and swim coverups. Corduroy, velvet and velveteen are cut pile fabrics. The loops have been cut giving a plush surface that reflects light. Cut pile fabrics show crush and abrasion. The ribs of corduroy make this wear less visible.

Knit fabrics are made by interconnecting loops of yarns. They are classified by the direction in which the loops are connected. Knits are known for being pliable, stretchy and wrinkle resistant. The open spaces trap and hold air, acting as insulation.

*Filling (west) knits* are interlooped, working in a crosswise direction. They're characterized by horizontal stretch. Filling knits can be made by hand or machine, either circular or flat.

*Warp knits* are inter-looped, working in a lengthwise direction. They're made on flat machines.

*Single knits*, often called jersey, are filling knits. They have a definite fabric face. Lengthwise wales show on the face and courses are visible on the underside. Single knits have a soft hand and drape well. T-shirts are single knits. Many sweaters are single knits.
Double knits are also filling knits and look the same on the face and back sides, unless the surface is textured or patterned. Because of the double thickness, they are heavier, have a firmer drape, hold shape better and are warmer than single knits. Double knits are used in outer apparel for men, women and children.

Tricot knits are warp knits. They have fine vertical wales on the face and crosswise ribs on the back. They’re run-resistant, non-raveling and have good stability and elasticity. Tricots are usually fine and lightweight. Summer jersey, lingerie fabrics, swimsuit linings and the backings on laminated fabric are usually tricot.

Raschel knits are warp knits with lacy open-work and surface patterns. The yarns are usually textured, giving additional interest. Raschel knits are used for laces, thermal underwear and women’s outer apparel.

Felt is a mat or web of wool or part wool fibers held together by interlocking of the scales on wool fibers. Heat, soap and agitation are used to mat the fibers and to shrink the cloth. Felt is used for some clothing.

It’s widely used for hats, house shoes, clothing decorations and pennants. It doesn’t fray, so it requires no finish on cut edges.

Films are made by extruding a fiber solution onto a drum, into warm air or pressing a molding powder between hot rollers. They may vary in thickness from a very thin transparent film to a heavy leatherette. Films may be finished to appear like leather, lace or woven fabric. Supported films have a woven bonded or knitted fabric backing. Expanded films are spongy and soft due to air cells that have been incorporated. Film has the advantages of being waterproof, low cost, resistant to soil and easy to maintain. Rain wear, upholstery fabrics and purses are often made of textile films.
Lace is an open work fabric, usually creating figures like flowers, made by knotting, interlacing, interlooping and twisting thread. Lace may vary in width from a fraction of an inch to more than 100 inches. Today lace is machine-made. Generally lace is less durable than most fabric. It has varied uses, like trim on garments, lingerie and as fabric for dresses, blouses and tablecloths.

**Color and Design**

Color and design make fabrics attractive and fashionable. Durability depends on how the color and design are made into or added to the fabric.

**Color**

Color may be introduced to fabric at several stages depending on the fiber content and the intended end use. Man-made colors are created by adding dye or pigment to the solution before the fiber is formed. This makes fibers that are the same color throughout. Fibers may be dyed before they’re spun into yarns. This method is used for tweeds and heathers. Fabric woven from colored yarn is considered yarn-dyed. However, most fabrics are piece-dyed. This means color is added to the fabric after it is made.

Color fastness is the term used to refer to the durability and performance of fabric color. Many conditions may change or destroy fabric color.

Conditions in the use and care of garments are important. Crocking refers to the rubbing of color from the fabric surface to another fabric surface. Bleeding is fading or loss of color in water. When color shifts from one area of a printed fabric to another, the change is called migration. Home remedies may help, but they aren’t satisfactory in making fabric colorfast. This should be done by the manufacturer.

Other conditions may cause color change. Sunlight can cause fading in fabric. Draperies, beachwear and fabric intended for outdoor use should be fast to sunlight. Fume-fading refers to color changes which take place due to contaminants in the air. These can come from cars, industry and even heating systems. Perspiration may also change a fabric color.

To be sure a garment is colorfast, you must depend on labels, hangtags, personal knowledge and experience.

**Design**

Design on fabric may be incorporated as the fabric is made or applied afterwards. This affects how it will last with wear and care.

**Structural Design**

Structural design is incorporated in the fabric as it’s constructed. It’s as durable as the fabric itself. Yarns, color, size, arrangement and combinations give great variety.

Checks, plaid and stripes are formed by the arrangement of different colored yarns as the fabric is woven. Checks, plaid and stripes that are printed onto a solid color fabric aren’t durable and may not follow the grain of the fabric.

Seersucker is formed by varying tensions on the yarns producing the stripes. The lengthwise yarns making up the flat stripes are held at tension; the ones forming the puckered stripes have the tension released at intervals.

Grouping together creates dimity and bengaline. Spacing of yarns creates the designs in ephrata cloth and lace striped voile.

Jacquard designs are woven-florals or scrolls. They’re made by a complex interlacing of designs as the fabric is woven. Brocade, tapestry, damask and matelasse’ are jacquard designs.

One-tone, satin-stripe fabric is made with a stripe of plain weave alternating with a stripe of satin weave. The choice of yarn for weaving creates tweed, true crepe and boucle fabric.

**Applied Design**

Design applied to fabric after construction can be created by a mechanical or chemical finish, printing or stitching.

**Design by Finish**

Moiré is used on ribbed fabrics such as taffeta and faille. Light is reflected from the fabric from the fabric in a rippling manner resembling the effect of waves on water.

Embossed designs are created with heat and pressure. Fabrics which are heat-sensitive (thermoplastic) can be made to have a permanent design.
Other fabrics can be resin-treated to give design permanence. Pleating is a variation of embossing.

Flocking is a process by which very short fibers are glued to the fabric surface. The fiber flocks are usually rayon. Flocking may be an overall pile surface or applied in areas to create designs such as dots, flowers, animals and scrolls.

Plissé is a fabric resembling seersucker. It’s made by chemically treating the fabric in lengthwise stripes. Plissé crinkles are not as durable as the woven-in crinkle of seersucker. In fact, the wrinkles can be removed by excessive heat in ironing. Plissé has the same number of yarns in all areas, while seersucker has a more dense weave in the smooth stripes.

Design by Printing

In the printing process, dye is applied to the fabric in a definite pattern by some mechanical means and a treatment is used to fix the dye.

Print designs are created by applying dye to fabric in a definite pattern. One or more colors may be used. A treatment is used to fix the dye. A print fabric can be recognized from the wrong side. The design is not as distinct and the colors aren’t clear and bright. You can tell that the fabric was solid and the print added. The clearer the design on the wrong side, the longer the fabric will hold color. You may hear these terms used to describe types of printing: roller, warp, duplex discharge, photographic, stencil, silk screen, block, tie-dye and batik.

Consumer Tips

Color fastness is important. Check labels and hang tags for information. Select fabrics with color-fastness suited to the intended use. Using textile products for the purpose the manufacturer intended will also help assure good performance.

Structural design, achieved by use and arrangement of yarns, is usually more durable than design applied after the fabric is constructed.

Plaids, checks and stripes which are woven are more satisfactory than when printed. In addition to being more durable, the grainline is true with the design.

Embossed designs and pleating are most durable on heat-sensitive (thermoplastic) fibers.

Flocked designs are subject to abrasion.

The puckered design of seersucker is more durable than that of plisse.

Burnt-out or etched designs tend to weaken the fabric.

Printed fabrics with a good penetration of color on the back side tend to hold color longer.

Block printing, tie dye, batik, and hand screening are all hand-crafted. Expect fabrics with these designs to be more expensive, come in shorter yardage length and many times one of a kind.

Embroidered designs are subject to picking and pulling. Longer stitches are less durable than shorter ones.

Quilting threads may break, pick or pull. Consider use when purchasing.
**Fabric Finishes**

Finishes are applied to fabrics to improve their appearance and to make them more serviceable. With today’s technology, fabrics can be finished to meet many demands made by consumers. These finishes play an important role in the consumer’s satisfaction with fabrics or clothing they buy.

Read labels and hangtags to find out if a garment has a special finish and what this finish will do for the garment. Many finishes are on garments today. Here are some common ones with a few trade names:

<table>
<thead>
<tr>
<th>Finish Type</th>
<th>Description</th>
<th>Trade Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlled shrinkage</td>
<td>Treatment used to reduce shrinkage. Some are more effective than others. Improper care may still cause fabric to shrink.</td>
<td>Bancora, Dylanized, Sanfor Set, Sanforized, Sanforknit, Zeset</td>
</tr>
<tr>
<td>Mercerization</td>
<td>Process increases strength, luster and dying quality of cotton fabrics.</td>
<td>Word “mercerized” on the label.</td>
</tr>
<tr>
<td>Glazed</td>
<td>Shiny, slick, somewhat stiff surface achieved with resins, glue, shellac or starch. May not be permanent. Chintz is most common example.</td>
<td>Vita-glaze</td>
</tr>
<tr>
<td>Antibacterial</td>
<td>Chemical treatment applied to a fabric to slow or prevent bacterial growth. Prevents odors and prolongs life of the fabric. Desirable for shoe linings, coat linings, lingerie, undergarments, socks, luggage, carpets and rugs.</td>
<td>Cyna-finish, Hygenized, Permacide, Sani-Age, Sanigard, Vancide, Vita-Fresh</td>
</tr>
<tr>
<td>Antiseptic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bacteriostatic</td>
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<td></td>
</tr>
<tr>
<td>Antistatic</td>
<td>Chemical treatment applied to fibers or fabric to prevent the buildup of static electricity. Some are temporary and others permanent. Desirable for undergarments, socks, various garments, carpeting.</td>
<td>Aston, Negastat, Permastat, Staticide</td>
</tr>
<tr>
<td>Crush-resistant</td>
<td>Resin treatment applied to pile fabrics to prevent crushing.</td>
<td></td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
<td>Examples</td>
</tr>
<tr>
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</tr>
<tr>
<td>Flame-resistant</td>
<td>Chemical treatment on a fabric that enables it to resist the action of a flame. Does not make fabric fireproof. Most finishes will remain durable even though they may be laundered as many as 50 times, while some are semi-durable or non-durable.</td>
<td>Banfire, Durette, Fireguard, FireStop, FWWMR, Lynrus FR-1, Permaproof, Pyrovatex CP, Roxell</td>
</tr>
<tr>
<td>Flame-retardant</td>
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</tr>
<tr>
<td>Mildew resistant</td>
<td>Chemical finish applied to a fabric to slow the growth of mildew and mold. May be used with other finishes such as water repellents.</td>
<td>Fresh-Tex, Mel-Tron 80</td>
</tr>
<tr>
<td>Moth resistant</td>
<td>Chemical treatment of wool to make it resistant to moth attack. There are durable and non-durable finishes. Some non-durable formulas can be used for moth-proofing by consumers or dry cleaners.</td>
<td>Mitin, Moth Snub, Mothspray, Woolgard</td>
</tr>
<tr>
<td>Permanent Press</td>
<td>Garments maintain sharp creases, pleats, flat seams and smooth appearance. Ironing is eliminated when garments are tumble-dried with cool-down cycle and are promptly removed from dryer. Garment alterations (lengthening and enlarging) cannot be done satisfactorily.</td>
<td>Semeriset, Coneprest, Dan-Press, Kara Set, Koratrot, Never-Press, Onyx Set, Pak-Nit RX, Penn-Press, Perma-Prest, Ranedare Press, Sharpe/Shape, Sta-Prest, Super-Crease, Tanapress</td>
</tr>
<tr>
<td>Durable press</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil release</td>
<td>Chemical finish applied on permanent press fabrics to provide greater ease in removing soil. Fabrics tend to resist oil-borne stains.</td>
<td>Come Clean, Cran-Set SR, Danclean, Dual Action, Miraclean, Rhoplex SR-488, Scotchguard, Soil-Out, Soilex, Visa, Wash Ease</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
<td>Products</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Stain and spot resistant</td>
<td>Treatment that imparts soil resistance as well as water and oil repellence.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laundering and abrasion during wear tend to reduce stain resistance; pressing</td>
<td></td>
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<td></td>
<td>after laundering helps restore stain resistance.</td>
<td>Aerotex</td>
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<td>Aquaguard</td>
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<td>Permal</td>
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<td>Ramedane Plus</td>
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<td>Scotchguard</td>
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<td>Syl-Mer</td>
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<tr>
<td>Wash and Wear Drip-Dry</td>
<td>Garments will dry smooth and need little or no ironing after washing.</td>
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<td></td>
<td>Similar to wrinkle-resistant finishes, but garment will not retain creases</td>
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</tr>
<tr>
<td></td>
<td>or pleats. Read and follow care labels carefully.</td>
<td>SanCare</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relfast</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coneset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Everglaze</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minicare</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perma-Pressed</td>
</tr>
<tr>
<td>Waterproof</td>
<td>Fabric completely sealed with rubber, lacquer, linseed oil compounds or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a synthetic resin. Treated fabric will not absorb water. Does not allow</td>
<td></td>
</tr>
<tr>
<td></td>
<td>passage of air or evaporation of perspiration.</td>
<td>K-Kote</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Koroseal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reevair</td>
</tr>
<tr>
<td>Water repellent</td>
<td>Resists penetration of water into the fabric, but it is not waterproof.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fabric is porous and permits the passage of air, water vapor and perspiration.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Finishes are often non-durable to dry cleaning.</td>
<td>Cravenette</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hydro-Pruf</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impregnole</td>
</tr>
<tr>
<td>Water-resistant</td>
<td>Resists penetration of water for a limited time. Not to be confused with</td>
<td></td>
</tr>
<tr>
<td></td>
<td>water repellent finishes.</td>
<td>Ayana</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Banguard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cransheen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fresh-Tex</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permel Plus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Winset</td>
</tr>
<tr>
<td>Wrinkle-resistant</td>
<td>Fabrics are resistant to wrinkles and creases and have improved wrinkle-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>recovery properties. Heat will not set sharp creases or pleats on treated</td>
<td></td>
</tr>
<tr>
<td>Crease-resistant</td>
<td>fabrics.</td>
<td>Ayana</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Banguard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cransheen</td>
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<td></td>
<td></td>
<td>Fresh-Tex</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permel Plus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Winset</td>
</tr>
</tbody>
</table>
Study care labels. You must read them carefully, so your favorite purchases will remain favorites after being worn and cleaned several times.

<table>
<thead>
<tr>
<th>When Label Reads:</th>
<th>It Means:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine wash</td>
<td>Wash, bleach, dry and press by any customary method, including commercial laundering and dry-cleaning.</td>
</tr>
<tr>
<td>Home launder only</td>
<td>Same as above, but do not use commercial laundering.</td>
</tr>
<tr>
<td>No chlorine bleach</td>
<td>Do not use chlorine bleach. Oxygen bleach may be used.</td>
</tr>
<tr>
<td>No bleach</td>
<td>Do not use any type of bleach.</td>
</tr>
<tr>
<td>Cold wash</td>
<td>Use cold water from tap or cold washing machine setting.</td>
</tr>
<tr>
<td>Cold rinse</td>
<td></td>
</tr>
<tr>
<td>Warm wash</td>
<td>Use warm water or warm washing machine setting.</td>
</tr>
<tr>
<td>Warm rinse</td>
<td></td>
</tr>
<tr>
<td>Hot wash</td>
<td>Use hot water or hot washing machine setting.</td>
</tr>
<tr>
<td>No spin</td>
<td>Remove wash load before final machine spin cycle.</td>
</tr>
<tr>
<td>Delicate cycle</td>
<td>Use appropriate machine setting; otherwise, wash by hand.</td>
</tr>
<tr>
<td>Gentle cycle</td>
<td></td>
</tr>
<tr>
<td>Durable press cycle</td>
<td>Use appropriate machine setting; otherwise, use warm wash, cold rinse and short spin cycle.</td>
</tr>
<tr>
<td>Permanent press cycle</td>
<td></td>
</tr>
<tr>
<td>Wash separately</td>
<td>Wash alone or with like colors.</td>
</tr>
</tbody>
</table>
When Label Reads: | It Means:
---|---
Hand wash | Launder only by hand in lukewarm (hand comfortable) water. May be bleached. May be dry-cleaned.
Hand wash only | Same as above, but do not dry-clean.
Hand wash separately | Hand wash alone or with like colors.
No bleach | Do not use bleach.
Damp wipe | Surface clean with damp cloth or sponge.
Tumble dry | Dry in tumble dryer at specified setting – high, medium, low or no heat.
Tumble dry Remove promptly | Same as above, but in absence of cool-down cycle, remove at once when tumbling stops.
Drip dry | Hang wet and allow to dry with hand shaping only.
Line dry | Hang damp and allow to dry.
No wring, No twist | Hand dry, drip dry or dry flat only. Handle to prevent wrinkles and distortions.
Dry flat | Lay garment on flat surface.
Block to dry | Maintain original size and shape while drying.
Cool iron | Set iron at lowest setting.
Warm iron | Set iron at medium setting.
Hot iron | Set iron at hot setting.
Do not iron | Do not iron or press with heat.
Steam iron | Iron or press with steam.
Iron damp | Dampen garment before ironing.
Dry-clean only | Garment should be dry-cleaned only, including self-service.
Professionally dry-clean only | Do not use self-service dry-cleaning.
No dry-clean | Use recommended care instructions. No dry-cleaning materials to be used.
Seams

The type and quality of a garment’s seams contribute to its general appearance and durability.

In appearance a seam should be:
- flat
- smooth
- even in width
- well-pressed
- sewn with stitches of the same length
- sewn with balanced tension
- sewn with matching thread or one chosen for decorative color
- finished to prevent raveling (if fabric ravels)
- as durable as the fabric
- reinforced when appropriate

A garment should be made with seams that will be as durable as the garment. A good seam choice can sometimes increase the durability of a garment.

A plain seam is often used. The cut edges of the fabric almost always needs a finish to prevent fraying or raveling in wear and washing or cleaning. A finish should be secure, without bulk and not show through to the right side.

Plain seams may be top stitched for reinforcement or a decorative look. Lace, cording or other trim may be stitched in the seam as it is formed.
A French seam looks like a plain seam on the right sides and a small, neat tuck on the wrong side. It’s a good finished look for sheer or semi-sheer fabrics.

A flat felled seam is very sturdy. It’s often used on sportswear and menswear. Two rows of stitching show on both the right and wrong side. On the right side you can see where the edge of the fabric has been folded under.

A stitched and serged seam is a plain seam about 3/8 inch in width. It’s stitched with a regular or chain stitch. The two edges are stitched together with a serging or over-edge stitch.

A serged seam is found in garments made of knits and stretch fabrics. The seam is very narrow. An over-edge or serging stitch is used. The multiple threads interlock over the cut edges. The two pieces of fabric are jointed and edges finished with the same stitching. The seams should give and stretch with the fabric without breaking any threads.

A reinforced seam has a woven tape stitched into the seams. This gives added strength or prevents stretching.
General Criteria for Garment Selection

As a review of what you’ve learned, use this checklist when choosing a garment.

<table>
<thead>
<tr>
<th>Color</th>
<th>Is there a color that will be cooler or warmer than the others for the specified wear and use?</th>
</tr>
</thead>
</table>
| Fabric | Is the fabric of good quality?  
|        | Is the fabric free from flaws?  
|        | Is the fabric a good one for the style of the garment?  
|        | Is the fabric a good one for the way the garment will be used?  
|        | When the garment is washed or dry-cleaned, will it feel and look almost the same as when new?  
|        | Will the fabric shrink?  
|        | Will the fabric stretch out of shape?  
|        | Will the fabric “pill”?  
|        | Will the fabric pick, pull or abrade with normal use?  
|        | Will the fabric look fresh while the garment is worn? |
| Fiber Content | How does the fiber content relate to moisture absorbency and thermal comfort (coolness, warmth)?  
|               | How does the fiber content relate to durability? |
| Finishes | Is there a special finish on the fabric that would make it a better choice for the person and the intended use? (Wrinkle resistant, permanent press, water resistant, waterproof, bacterial resistant) |
| Care | What does the fiber content and care label indicate about:  
|      | o drying time?  
|      | o ironing required?  
|      | o wrinkle resistance?  
|      | o special care?  
|      | Are there any extra costs involved with garment care?  
|      | Is there any extra caution needed to care for the garment? |
| Inner Fabrics And Materials | Is the pocket fabric durable and firmly woven?  
|                             | Is the elastic of a good quality?  
|                             | Is the elastic appropriate for the garment?  
|                             | Is the waistband backing of good quality?  
|                             | Will the waistband maintain shape?  
|                             | Is the lining a good quality?  
|                             | Can the lining be washed, ironed or cleaned the same way as the garment?  
|                             | Do interfacings (fabric that shapes collars and lapels and supports buttons and buttonholes) have the same hand as the outer fabric, not making these areas stiff but helping them hold their shape?  
|                             | Are zippers, snaps, hooks and other notions the correct weight or type for the garment? |
Trim  Will the trim wear as long as the garment?  
Can the trim be given the same care as the garment?  
Will the ribbing maintain its shape?

Style Features  Are there any style features that make one garment more useful or fashionable than another?

Closures  Is there an advantage to one type of sleeve or leg opening over another?  
(Cuffs, bands, elastic or no closures)  
Is there an advantage for one type of closure over another for wear or ease in putting on or taking off? (Buttons and buttonholes, zipper, nylon loop fastener, hook and eyes, snaps, grippers or plackets)  
Will the garment stay closed in wear?

Waist  Is there an advantage to one type of waist treatment over another? (Elastic, drawstring, fitted shape waistband)  
Is the number, style, size and placement of belt loops adequate?

Sleeves  Is one sleeve style more fashionable than another?  
Does one sleeve style provide more wearing comfort than another?

Necklines  Is there a preferred neckline style or treatment for comfort?  
Is one neckline better than another for the way the garment will be used?  
If two or more necklines are the same, is one better than another?

Pockets  Are pockets needed for the intended use?  
Is one style of pocket better than another?  
Is a pocket closure desirable?  
Is one type of pocket closure better than another?  
Are pockets placed so they can be used?

Construction  Are the garment pieces cut on the grain of woven fabric or with the rib of knit fabric?  
Do plaids or stripes match?  
Is the fabric design matched, centered or balanced?  
Is fabric nap or one-way design all in the same direction?  
Does the hem lie flat and smooth, and is the width even?  
Is the hem visible from the right side?  
Is the top edge of the hem finished to prevent raveling?  
Are seams smooth and free from puckers?  
Are darts smooth, tapered and secured at the point?  
Are darts evenly spaced?  
Are the sleeves smooth, without puckers; are gathers even?  
Are pockets flat, smooth and evenly spaced?  
Is the type of seam used the best for the garment type and the wear it will be given?  
Are seams straight and even in width?  
Are seams flat and smooth?  
Are seam edges finished so they won’t ravel?
Construction (cont.)

Are seams reinforced to prevent stretching or to provide durability?
Is stitching neat, continuous and straight?
Does the thread match the garment?
Is there extra stitching or reinforcing at points of strain such as underarms, seams, openings, pleats, pockets, knees and elbows?
Is the reinforcement adequate for how the garment will be used?
Are buttonholes neat and sturdy?
Are buttonholes the correct size for buttons?
Are buttons, hooks and eyes securely attached?
Is the zipper flat and smooth?
Is the zipper correct weight for garment?
Does the zipper work properly and smoothly?
Is trimming and decoration neat and firmly attached?
Are pockets even, flat and smooth?
Is the collar the same on each side?
Does the collar lie flat and smooth?
Is the collar stitched and pressed so the undercollar does not show?
Is the collar neatly joined to the garment?
Are collars, facings, waistband, cuffs and area behind the buttonholes and buttons interfaced for support and strength?
Are the lapels flat but not over-pressed?
Do facings lie flat and smooth?
Are outer edges of facings finished?
Is fusing smooth, with no bubbles?
Are linings finished and attached so they don't show?
Are gathers evenly distributed?
Are pleats uniform and smooth?

Price

How does the price relate to the amount of money available for the purchase?
How does the price relate to the overall quality of the garment?
How does the price relate to the amount of wear that will be expected from the garment?

Special Need

Does the garment have a particular feature that will make it especially suitable for the intended use? (Styling, fabric, finish, color, etc.)

By now, you should feel pretty confident of your garment-buying skills. Use that same buying confidence for the 4–H Cotton Boll and Consumer Jamboree Judging!
The University of Georgia and Ft. Valley State University, the U.S. Department of Agriculture and counties of the state cooperating. The Cooperative Extension Service, the University of Georgia College of Agricultural and Environmental Sciences offers educational programs, assistance and materials to all people without regard to race, color, national origin, age, sex or disability.

An Equal Opportunity Employer/Affirmative Action Organization
Committed to a Diverse Work Force
Judging Curriculum
JEANS

An estimated 450 million pairs of jeans are purchased every year, making them a staple of the American wardrobe. Indeed, jeans are the most widely produced piece of apparel in the U.S. Jeans have long been a cyclical market being driven in the main by factors such as employment conditions, productivity, fashion trends, lifestyle factors, and celebrity endorsements. Manufacturers and retailers are constantly challenged to maintain the market by staying on top of fads, changing tastes and consumer desires for different styles of jeans. Every brand and every style of jeans will fit a little differently, but knowing what to look for will help narrow down the selection to just those jeans that will look great on you. The type of fabric, the cut of the jean and the details can all affect how jeans fit.

Denim is denim is denim -- or is it?
You may have thought that all blue jeans were cut from the same cloth, but this isn’t so. Variations in the weave, the fibers and the finishes all create differences.

Weave
• All denim is cotton twill -- a weave that has a slight diagonal to it, but that’s where the similarities end. Some denim is a left-hand twill (the diagonal on the dark side runs from lower right to the upper left), which has a very soft feel. A few types of denim have broken twill (the diagonal line changes directions). All other denim is a right-hand twill (the diagonal on the dark side runs from the lower left to the upper right), which is the most common and has a durable feel.

The cotton
• The quality of the cotton the denim is made of will affect the look and feel of the jeans. Fine cotton fabric is made from longer stands of the fiber, giving the jean fabric a softer feeling and a smoother look. High-quality cotton also lasts longer because there are fewer small fibers to rub off -- this is often what you are paying for when you buy premium jeans.

Dyes and finishes
• Most jeans are made of denim that was dyed before it was woven into cloth (this is also called “yarn-dyed”); other jeans are dyed after they have been constructed into jeans. Jeans dyed after construction may have a more saturated color, but it may also fade faster. Blue jeans are dyed with the familiar indigo blue, but there are new innovations in denim dyes all the time. For example, some manufacturers layer the indigo dye with a yellow sulphur dye to gives jeans an aged, dirty-on-purpose look.
• After the pants are constructed, many manufacturers put the jeans through finishing processes. A few terms you may see in product descriptions are:
  • Stonewashed: Jeans are washed with chemicals or actual stones -- usually pumice stones -- to lighten and soften the denim. Occasionally, you may even find a few small pumice stones in the pockets when you first put on your new stonewashed jeans.
  • Sandblasted: To give new jeans a broken-in appearance, the jeans are blasted with sand in areas where wear would occur naturally. This can sometimes lighten the denim, and lighter areas will draw attention to that body part. If you buy sandblasted jeans, make sure the light area is on a part you want to emphasize.
  • Whiskered: Crease lines, called whiskers, are created across the lap to look like the jeans have been sat in many times. Whiskers are printed on, sanded on or created with lasers. They are horizontal lines, so if you are worried about your legs looking too heavy, choose jeans with subtle whiskers or none at all.

Stretch
• Many people love stretch jeans, and for women with more curves, stretch denim can be very flattering. Women with flat rear ends will want to avoid stretch jeans, however, because the stretch will just emphasize the lack of curves.
What makes jeans fit differently?

Legs
- Boot cut: Boot cut jeans flare slightly at the bottom. The slight flare -- not a bell-bottom flare -- balances out large hips and heavy derrieres.
- Wide leg: With a fitted waist, wide leg jeans can be a stylish alternative to your other jeans.
- Straight leg: Straight leg jeans are not as baggy as wide leg jeans, but they share the same stovepipe shape that lacks any flare at the ankle. The straight line of straight leg jeans gives a long, lean look to your legs.
- Skinny: Skinny jeans are slim-fitting jeans that are narrow all the way to the ankle. These are the perfect jeans to wear tucked into a pair of boots because they don’t have extra fabric around the ankles.
- Boy cut: With slim hips that sit a little higher and with straight legs. Because of the relaxed fit, these jeans can be the perfect casual jeans, or you can cuff them to your calf and dress them up.

Rise
- The rise is the length from the crotch to the waistband. A standard rise is about 30 inches, while low-rise jeans -- also called hipsters, hip-huggers or low-cut jeans -- have about a 20-inch rise. Low-rise jeans can elongate a short torso, but on a long torso, they can be a bit too revealing in the back.

Seat
- As long as the seat of your jeans fits well and is flattering, a tailor can fix just about everything else. Even if you prefer other pants with a loose fit in the seat, choose jeans with a snug seat. The center seam gives definition to your curves. Back pockets make or break a backside.

Understand the Washes of Jeans
- Jeans come in a number of distinct cuts and washes. Figure out which are right for you before selecting the perfect pair of jeans.
  - Stonewashed jeans: have a lighter, more broken-in appearance.
  - Dark jeans: The deep indigo color of dark jeans make them the ideal jeans for a night out on the town.
  - Distressed jeans: Holes, shredding, and crinkles create the highly worn appearance of distressed jeans.

What does a consumer look for?

Seams
- Flat fell seams have two rows of stitching and are enclosed on both the outside and inside of the jeans. Seams of this type leave no open seam allowances to unravel during wear and laundering. Make certain the seams are neatly constructed and firmly stitched. Where seams are not flat fell, they should be serged (overcast with thread) to cover the raw edge and reduce raveling. Seams that join at the crotch and in the back should meet accurately for smooth contour, comfort, and durability of the garment.

Waistband
- A waistband made of two or more layers of fabric will reduce stretching in the waist area. If the jeans have no waistband, look for interfacing (an extra layer of firm fabric sewn into the waist seam for stability).

Reinforcements
- Look for thread bar tacks or rivets at places of stress like corners of pockets, belt loops and the bottom of the zipper placket.

Zipper
- The zipper will be more durable if the fabric on both sides has been turned under and stitched. Because denim fabric is so heavy, a metal zipper offers more durability than a nylon zipper.

Select the Right Jeans for Your Body Type
With so many designer jeans on the market, it’s important to do your homework and select the right pair of jeans for your body type.
- Slim body types: Slimmer body types look great in a variety of jeans. Look for jeans that run straight from the hips through the knee, with a slight flare at the leg opening. Low-rise jeans with a high back and lower front are another good choice. Or, if you’re looking for a snug fit, choose jeans that are tight around the waist and backside.
• Curvy body types: If you have great curves to accentuate, choose jeans that run straight from the hips through the knee with a slight or more generous flare at the leg opening. A wide boot-cut silhouette is also flattering.

• Athletic body types: If you have athletic legs and narrow hips, consider a low-rise jean with a contoured waistband. Legs that taper out to a graceful and generous boot cut are also flattering—but without giving you the retro bell-bottom look. Or, to give the appearance of wider hips and a fuller backside, choose a cigarette-style jean.

• Full-figured body types: Choose a traditional five-pocket-style jean that isn’t too snug and has a little give. Many jeans woven with spandex stretch nicely to your frame. Remember also that a slight flare at the leg opening, such as a boot cut, will help to balance a wider or fuller figure, as well as make your legs look longer. Always opt for jeans in darker shades, as they’ll have a naturally slimming effect.

Caring for your jeans - Here are a few ideas for denim care:

• Cold wash will keep the color darker, longer. Cold will also prevent shrinkage.
• Warm water will shrink jeans, but may get our tough stains. BEWARE: don’t wash jeans with whites unless you want to turn all your clothes blue!
• Air dry jeans for the least shrinkage and the least fading.
• Use a warm iron to get out wrinkles.
• Turn jeans inside out, to preserve the dark color.
• To keep white denim looking brand new wash in warm or hot water. Pre-treat stains and re-wash if stains are still visible before the drying cycle.
• Wash and dry your denim before hemming or altering.
• Consider dry cleaning very expensive jeans. The process will remove dirt but won’t affect the wash as much as a machine.
Introduction and Background
Luggage is an essential purchase for those who travel, even if it’s only on occasion. Because buying luggage can be expensive, considering your purchase before you make it is important. You have several things to consider when buying luggage that may help you decide how much to spend on it.

Luggage can be stylish and practical. The more usage your luggage gets, the more quickly it will wear out. If you are a frequent traveler, you should consider durability and practicality to be the most important features. If your travel always includes checked baggage, you should not only consider durability and practicality; you also need to think about cost. Nothing is more frustrating than owning expensive, designer luggage only to find it lost or damaged by the airline. While statistically, the amount of lost luggage that never is recovered is fairly low; your odds increase the more often you travel.

Repair vs. Replace
In today’s marketplace, much of the luggage sold in the United States is made by overseas manufacturers who do not provide replacement parts for their products. This means if something breaks, you have little, if any, chance of having it repaired. Even if you purchase luggage that can be repaired, replacing those parts or repairing the damage may be as expensive as buying a new set of luggage. As a result, the initial purchase you make is very important.

Things to Consider When Buying Luggage
Size and Weight
Whether for convenience, cost saving strategies or to minimize the chance of lost or damaged bags, many people prefer to fly with a carry-on bag. The typical maximum external dimensions for carry-on bags are 22 inches by 14 inches by 9 inches, including any wheels and pockets. A carry-on bag larger than these dimensions will be taken from the passenger and checked with the rest of the luggage stowed in the cargo area of the plane, and is subject to regular checked baggage fees.

The weight of your luggage is a factor you should consider before purchase. Heavier luggage can prove to be more durable, but several manufacturers are creating lightweight products that can stand up to the pressure of travel. Today, most airlines have a weight limit for checked luggage. If your bag exceeds a certain weight, you will have to pay an additional charge.

Siding
The durability of the outside fabric or shell of a suitcase is very important. This area is exposed to the greatest amount of abuse, wear and tear. Luggage manufacturers use a variety of fabrics, including nylon, polyester, canvas, tapestry, denim, vinyl and leather.
Hard-sided shells tend to offer more protection for fragile items, but also may be heavier to carry. Hard shells are quite durable, resistant to heat and stains, and less likely to tear or rip. But they have a tendency to crack or dent in the corners if handled roughly. When purchasing hard-sided luggage, be sure the shell of the case is fairly thick. Thinner plastic shells are more prone to cracks and dents.

Soft-sided cases offer little to no protection for fragile items but are much lighter weight. Soft shells often are lined with urethane to make them water resistant. In addition, they often are treated with stain repellent.

**Handles and Zippers**

Your luggage should have a variety of smaller handles to help you carry your case. Helper handles, often found on the top and sides of a case, should be securely fastened to the luggage and should be comfortable in your hand during use. Always use these handles when placing luggage in overhead racks or pulling luggage over curbs.

Luggage has become much easier to maneuver with the upright handle system that most manufacturers use. This system brings convenience and ease to the travel industry. However, some of these handle systems have their downfalls. Some manufacturers mount their handle on the exterior of the bag, leaving them open to damage. Other handles do not remain locked in place or if they are hit, they may bend or break. Many manufacturers have taken precautions against these flaws and use strong materials to build their handle system. Strong handle tubes are less likely to dent or bend, which could disable the handle system. The handle is best if the tubing is on the interior of the bag. Few manufacturers who mount handles on the outside of a bag provide adequate protection for them.

You also should look for a handle locking system that locks in the extended and storage positions. If the lock does not work during a flight or other transit, the handle could be damaged. Handles that store flush with the suitcase are less likely to be damaged in transit. Make sure to test your handle for ease of operation before your purchase. It should extend to a comfortable length for your height to keep your bag from hitting you in the back of your legs.

Luggage today has two basic types of zippers. The coil zipper is made of one continuous strand of nylon or polyester that is wrapped and stitched into the zipper tape. This is the most common zipper.

The molded or chain zipper has individual teeth applied to the zipper tape. The chain zippers are more durable than coil zippers.

Avoid smaller-sized zippers. Many manufacturers use zippers that are commonly found in clothing items. These zippers are not strong enough to stand up to the stress of use on a suitcase. The larger, oversized zippers are much more durable, making them better able to withstand the repeated wear, tear and stress on a suitcase.
Frames
Many manufacturers have greatly increased the quality of their luggage frames. You can look on the inside of a suitcase to determine what type of frame a bag has.

Be aware of any frame that is plastic or metal. The single-ply plastic frames used by some lower-end manufacturers tend to crack and shatter. This makes them impossible to repair. The metal frames, though lightweight, tend to bend and provide little protection for the contents of the bag. They also have plastic corners, which tend to crack.

The most common type of frame used today is the honeycomb. It is lightweight and durable, and it has the ability to withstand pressure by flexing upon impact. Luggage salespeople say, “One thing has to give when the baggage handlers throw your luggage, and it usually isn’t the concrete.”

Wheels
Typically the most popular luggage for many is the suitcase on wheels. This makes taking even the heaviest luggage on vacation easy because all you’ve got to do is drag your luggage behind you. If you buy wheeled luggage, always ensure that the wheels are sturdy enough. A broken wheel on a suitcase can render a perfectly good piece of luggage useless.

Beware of luggage wheels mounted on the exterior of a suitcase. Any protruding objects are more susceptible to being caught on other items and becoming damaged. Wheels inset into the case are less likely to be damaged or broken.

Stitching and Hardware
Be sure you examine the stitching and hardware on any piece of luggage you plan to purchase. After all, the stitching and hardware hold it together and keep your clothes inside.

A well-constructed bag will have even stitching, and the closer the stitching is together, the better. Any stress points on the case, especially handles or shoulder straps, should be reinforced with extra stitching or rivets to ensure greater durability.

You also may want to check seams on the case where the material is stitched together. Poorly constructed suitcases have only a small amount of material that overlaps the stitch line, making it more likely to pull or tear loose from the bag.

In addition, you may want to check the bag’s hardware, which includes locks, handle posts and zipper pulls. While determining the durability of the hardware on a suitcase is not easy, you can look to see whether it is made of a heavy, solid metal constriction. Any hardware made of plastic or lightweight metal is more susceptible to damage than the heavy, solid metals.

The Bottom Line
❖ Look for a long warranty. Experts say this is the simplest way to estimate luggage quality, especially if the warranty covers accidental damage. However, a higher price tag doesn't always mean a better warranty.
- **Look for industrial nylon construction.** This is especially important for frequent travelers or for big bags that always will be checked rather than carried on. The two main types are Cordura by Dupont, which has more abrasion resistance, and ballistic nylon, which is slicker and is more resistant to tears. Leather is heavier and prone to mold in humid climates.

- **Check the denier of the fabric.** Denier is a unit of measurement for thread. Denier refers to the size of the yarn in the fabric; the lower the number, the finer the thread. Higher denier fabrics (larger threads) are more durable.

- **Consider water resistance.** Only a few bags pass soaking tests. This feature is especially important with bags that will be checked rather than carried on.

- **Handles and zippers are potential weak points.** Most complaints about durability involve handles and zippers breaking, bending or sticking. Chain zippers, which are fused to the fabric, are more durable than coil zippers, which are sewn on. Check handles for comfort, too.

- **Helper handles make a bag easier to lift.** Extra handles on the sides and bottom, as well as the top, make maneuvering bags into and out of luggage bins much easier.

- **Wheels or no wheels?** One-bag travel experts tend to recommend bags without wheels because they are lighter and have more capacity. If you do choose a wheeled bag, look for skate wheels set widely apart. Tests show that wheels set too closely together make luggage unstable and hard to maneuver in tight turns. Larger wheels will maneuver more smoothly over uneven terrain, and softer wheels will lessen vibration and noise.

**Resources**

Consumer Reports – [www.consumerreports.org](http://www.consumerreports.org)
Road & Travel Magazine – [www.roadandtravel.com](http://www.roadandtravel.com)
The Savvy Traveler – [www.thesavvytraveler.com](http://www.thesavvytraveler.com)
Consumer Search – [www.consumersearch.com](http://www.consumersearch.com)

Information compiled by Monique Stelzer for North Dakota 4-H Consumer Choices
2011 Consumer Choices Sample Class
Junior & Senior - Luggage
Sarah

**Situation Statement:**
Sarah is going to camp this summer. She wants to purchase a duffle bag to pack her clothes in for camp. Sarah has $50 to spend on her bag. She is planning to pack a lot of clothes, so she would like her bag to have wheels to help her move it. Since her favorite color is red she would like a red duffle bag.

**Standards:**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>Duffle bag</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Costs $50 or less</td>
<td>$30 X</td>
<td>$64.99</td>
<td>$60</td>
<td>$43.99 X</td>
</tr>
<tr>
<td>Has wheels</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Available in color red</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**Class Items:**
1. Adidas Duffle Bag
2. Samsonite Casual Wheeled Duffle
3. Coolstuff4u Giraffe Print Wheeled Suitcase
4. CalPak Arctic Circle Wheeled Duffle

**Placing:** 4-1-2-3
**Cuts:** 4-3-6

**Reasons:**
I placed this class of luggage 4-1-2-3.

I placed 4 over 1 because 4 has wheels while 1 does not.
4 is available in the color red while 1 is only available in black/white.

I placed 1 over 2 costs less than $50 at $30 while 2 costs $64.99.
Grant: 2 has wheels
Grant: 2 is available in the color red.

I placed 2 over 3 because 2 is a duffle bag and 3 is a suitcase.
2 is available in red while 3 is only available in black and white with pink trim.

I placed 3 last because it is not a duffle bag.
It costs more than $50.
It is not available in red.

For these reasons, I place this class of luggage 4-1-2-3.

The NDSU Extension Service does not endorse commercial products or companies even though reference may be made to trade names, trademarks or service names.
#1

**Adidas Duffle Bag**

- Zipper main compartment with zipper mesh valuables pocket and key fob; Easy-access front pocket; Wet/dry shoe tunnel with mesh panel for ventilation
- FreshPAK™ is a unique technology which inhibits odor-causing bacteria. Your bag and gear stay fresher, longer.
- Removable, dual adjustable shoulder strap
- No-slip contoured shoulder pad
- Wrapped haul handles
- Available in black/white
- Screen-printed adidas brand mark on front, end caps and shoulder pad; Screen-printed 3-Stripes on front
- Dimensions: 26" x 12.5" x 12"
- Polyester dobby
- Cost is $30.00

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Sample Class
Luggage
Sarah

#2

Samsonite Casual Wheeled Duffle

- Constructed of Samsonite's ballistic polyester
- Push button locking handle
- Extra carry handles on side and top of duffel
- Padded velcro carry grip for comfortable carrying
- Smooth rolling in-line wheels
- Available in red/black/gray
- Heavy-duty, self mending, #10 nylon zippers on main compartment
- Dual adjustable compression straps help to secure packed items
- Quick release buckles on nylon compression straps
- Padded velcro carry grip for comfortable carrying
- Bottom feet keep duffel lifted off floor when laying down flat
- Drop bottom/split case features
- Fully lined interior
- Large wet pocket
- Cost is $64.99

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Sample Class
Luggage
Sarah

#3

Coolstuff4u Giraffe Print Wheeled Suitcase

- Made of leather-like black and white PVC vinyl, with hot pink vinyl trim, the suitcase has an animal skin texture
- Features an expander zipper, which gives an extra 3 inches of space
- It has double zippers, which can be locked together
- ID holder on the back
- The suitcase has wheels, a telescoping handle and strap handle for easy carrying
- The pink nylon interior features a mesh pocket with a zipper closure, and crossed elastic straps to keep belongings secure
- The exterior dimensions are 22 inches tall, 14 inches wide and 8 inches deep
- Cost is $60.00

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Sample Class
Luggage
Sarah

#4

CalPak Arctic Circle Wheeled Duffle

- **Product Material**: Rip stop with polyester
- **Product Weight**: 10.16 lbs.
- Roomy main compartment is great for bulky clothing or gear
- In-line skate wheel system with ball bearings for smooth, quiet rolling
- Longer handle is more comfortable across a variety of heights
- Available in red/black/gray
- 2 side zippered pockets plus 3 additional zippered pockets on the front
- Side cargo handle aids in short lifts
- Self-repairing excel zippers
- Cost is $43.99
# Table of Contents

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This publication is a reference for fruit, vegetable, and herb identification and judging and is intended to reduce confusion as contestants, coaches, and judges prepare for this contest. Check with your local University of Wyoming Cooperative Extension Service office to make sure you are using the most recent version of this publication.

The 4-H philosophy for produce judging is that the qualities describing horticultural merit are identical to those traits that make produce ready for purchase and consumption. These qualities include: product uniformity, stage of ripeness, freedom from disease and insect damage, absence of bruises and blemishes, and so forth.

The correct stage of ripeness is determined by examining either the product’s skin or leaves. If the product’s skin is wrinkled, shriveled, or collapsed in any way, it is probably overripe. Leafy produce should be firm and not wilted. Unripe vegetables and fruits will have uneven color and usually are very hard. Underripe is better than overripe when selecting produce.

Another way to tell if a vegetable or fruit is edible is to look for bruises, growth cracks, or sunscald. Mechanical damage, such as bruises, may need to be cut out. Growth cracks, most often caused by erratic watering practices, may need to be removed. If large portions of a produce item must be removed due to damage, the produce item is low quality. Sometimes vegetables may be misshapen. This distortion often happens when root vegetables, such as carrots or radishes, are grown in heavy, compacted soil that has not been amended or properly worked. Odd shapes may occur in vegetables grown above ground or in fruits when they grow next to another plant, a rock, or some other obstacle.

Holes, chewed sections, and discolored areas on vegetables, fruits, and herbs are signs of insect damage. Disease damage results in discolored lesions, off-color and streaked appearances in the flesh, and rotted areas.

**Produce Descriptions, Merits, and Faults**

**Apples** (fruit) are round to slightly elongated. Apples commonly come in red, yellow, or green, but many of the newer varieties may be a mixture of these colors. The flesh of the apple should be white or, in some varieties, soft pink.

Merits of apples include: crisp flesh that is white and juicy, smooth skin devoid of blemishes, and firm tissue all the way to the core. The apple should have good symmetry. Faults of apples include: brown or bruised flesh, discolorations of the skin, corky tissue on the skin, soft flesh, and a watery core. Any apparent insect damage is also a fault.

**Artichokes** (globe) (vegetable) are actually immature flower buds that are edible. Each bud contains many layers of bracts (modified flower petals), of which the

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**Correct Produce Names**

<table>
<thead>
<tr>
<th>Produce Name</th>
<th>Produce Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>apple</td>
<td>cucumber</td>
</tr>
<tr>
<td>artichoke</td>
<td>dill</td>
</tr>
<tr>
<td>asparagus</td>
<td>edible pedded pea</td>
</tr>
<tr>
<td>banana</td>
<td>eggplant</td>
</tr>
<tr>
<td>basil</td>
<td>endive</td>
</tr>
<tr>
<td>beet (table)</td>
<td>garlic</td>
</tr>
<tr>
<td>broccoli</td>
<td>ginger root</td>
</tr>
<tr>
<td>Brussels sprout (plural is Brussels sprouts)</td>
<td>grape</td>
</tr>
<tr>
<td>cabbage</td>
<td>grapefruit</td>
</tr>
<tr>
<td>carrot</td>
<td>green onion</td>
</tr>
<tr>
<td>cauliflower</td>
<td>head lettuce</td>
</tr>
<tr>
<td>celeriac</td>
<td>jicama</td>
</tr>
<tr>
<td>celery</td>
<td>kale</td>
</tr>
<tr>
<td>chard (also called Swiss chard)</td>
<td>kiwi</td>
</tr>
<tr>
<td>Chinese cabbage</td>
<td>kohlrabi</td>
</tr>
<tr>
<td>chive (plural is chives)</td>
<td>leaf lettuce</td>
</tr>
<tr>
<td>collard</td>
<td>leek</td>
</tr>
<tr>
<td>mint</td>
<td>lemon</td>
</tr>
<tr>
<td>muskmelon or cantaloupe</td>
<td>mint</td>
</tr>
<tr>
<td>mustard</td>
<td>muskmelon</td>
</tr>
<tr>
<td>okra</td>
<td>mustard</td>
</tr>
<tr>
<td>onion (dry)</td>
<td>okra</td>
</tr>
<tr>
<td>orange</td>
<td>parsley</td>
</tr>
<tr>
<td>parsley</td>
<td>pea (green in pod)</td>
</tr>
<tr>
<td>parsnip</td>
<td>pepper</td>
</tr>
<tr>
<td>pea (green, in pod)</td>
<td>pineapple</td>
</tr>
<tr>
<td>potato (plural is potatoes)</td>
<td>pepper</td>
</tr>
<tr>
<td>potato (plural is potatoes)</td>
<td>pineapple</td>
</tr>
<tr>
<td>radish (plural is radishes)</td>
<td>pepper</td>
</tr>
<tr>
<td>raspberry (plural is raspberries)</td>
<td>pineapple</td>
</tr>
<tr>
<td>rhubarb</td>
<td>rosemary</td>
</tr>
<tr>
<td>rutabaga (table)</td>
<td>shallot</td>
</tr>
<tr>
<td>shallot</td>
<td>snap bean (yellow or green)</td>
</tr>
<tr>
<td>snap bean (yellow or green)</td>
<td>spinach</td>
</tr>
<tr>
<td>strawberry (plural is strawberries)</td>
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<tr>
<td>summer squash</td>
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<tr>
<td>sweet corn</td>
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<td>sweet potato (plural is sweet potatoes)</td>
<td>thyme</td>
</tr>
<tr>
<td>sweet potato (plural is sweet potatoes)</td>
<td>thyme</td>
</tr>
<tr>
<td>tomato (plural is tomatoes)</td>
<td>thyme</td>
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<tr>
<td>tomato (plural is tomatoes)</td>
<td>thyme</td>
</tr>
<tr>
<td>turnip</td>
<td>watermelon</td>
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<tr>
<td>winter radish or daikon (plural is winter radishes)</td>
<td>winter squash</td>
</tr>
<tr>
<td>winter squash</td>
<td>winter squash</td>
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</table>
lower bases of the bracts are edible. The heart of the artichoke, on which the bracts are attached, may also be eaten. 1

Merits of the artichoke include: leaves that are thick and firm, stem free of holes and blemishes, and all of the leaves should be tightly closed, perhaps even squeaking when handled.

Faults of the artichoke include: leaves that are soft and browning, stems with holes, which may be evidence of insect damage within the head, and leaves that are loose or open.

Asparagus (vegetable) has young, immature stem tips, and scales on the tips are tight. Asparagus may be dark green or white, or it may be green toward the tip and white toward the base.

Merits of asparagus include: uniform stalk length and size (at least ½ inch in diameter), juiciness, bright color, and tightly closed scales at tips.

Faults of asparagus include: loose scales, or undersized, spindly, wilted, or oversized stalks.

Bananas (fruit) are a curved, long fruit. The skin is yellow, and the flesh is white and creamy. Bunches usually grow in 6 to 25 individual bananas. 1

Merits of bananas include: bright yellow skin, absence of bruising on the flesh, and lack of skin browning near the stem. The flesh should be soft and creamy but not overripe.

Faults of bananas include: brown skin, bruised flesh, and squishy stem end.

Basil (herb) is a fragrant herb used as a seasoning in a variety of foods. Basil is sold dry or fresh.

Merits of fresh basil include: green bunches that are fresh and not wilted. Basil should be free of insect damage or yellowing and should have a strong, pleasing aroma.

Faults of basil include: yellow leaves, wilting, signs of insect damage, and blackening of the stems.

Beets (vegetable) have round or cylindrical roots. Beets may be red, yellow, or, rarely, white.

Merits of beets include: uniform size, color, and shape. Baby beets should be 1 ½ inches and table beets should be 1 ½ to 3 ½ inches in diameter. The crown should have very little browning and no cracks.

Faults of beets include: damaged, cracked, pithy, or wilted tissues.

Broccoli (vegetable) has immature green flower heads and is harvested before buds open.

Merits of broccoli include: fresh green color with florets close together. Broccoli should be tender, crisp, and free from worms. Stems should be less than 6 inches long.

Faults of broccoli include: heads that are soft or wilted or are showing yellow flowers.

Brussels sprouts (vegetable) are firm, green, round buds measuring about 1 inch across. Brussels sprouts look like small cabbage heads.

Merits of Brussels sprouts include: fresh, solid, and tightly closed buds with good green color.

Faults of Brussels sprouts include: small or loosely closed buds, yellowish color, or wilted buds.

Cabbage (vegetable) is a compact ball of thickened leaves. The heads can be green, red, smooth, or crinkled. Cabbage is solid and heavy with outer leaves intact. The head may be rounded, flattened, conical, or egg-shaped. The midribs may be white.

Merits of cabbage include: solid, firm heads that measure about 6 to 9 inches in diameter. Heads should be tender, crisp, and heavy for their size. Worm damage or rot should never be present. Knowing the cabbage variety is important as varieties differ in size and shape.

Faults of cabbage include: prominent midribs on leaves, incorrect size, light weight, loosely formed, wilted, or uneven color.

Carrots (vegetable) have yellow or orange roots. They are cylindrical, tapered, or round, without side roots.

Merits of carrots include: uniform type (diameter depends on variety), smooth surface, and pale to deep orange color (depending on variety). When carrots are cut, they should have a small core without rings. Carrots should be tender and sweet.

Faults of carrots include: off-color, wilted, rough, or cracked roots. Worm damage, crooked or branched roots, or green crowns also are considered faults.

Cauliflower (vegetable) consists of a firm, heavy, white head of immature flowers. Some types may be purple or green.

Merits of cauliflower include: solid heads with good color and smooth, fine-grained texture. Cauliflower should be crisp with outer leaves trimmed about 1 inch above the head’s center.

Faults of cauliflower include: wilted heads having yellowish color or rough, grainy texture.

Celeriac (vegetable) is a rough-surfaced, round root measuring about 2 to 6 inches in diameter. The root has crisp, white flesh. Celeriac smells like celery.

Merits of celeriac include: uniform color and solid roots.

Faults of celeriac include: incorrect size, wilted root, or damage from worms or insects.
Celery (vegetable) is the whole, above-ground portion of the plant. Leaf blades are trimmed off. Stalks may be green, white, or yellowish. Celery is a cylindrical cluster of leaf petioles attached to a very short stem.

Merits of celery include: thick, firm, and crisp petioles that are uniform and long. Color should be uniform.

Faults of celery include: stalks that are stale or wilted. Rust on the stalks is a fault. Stalks that are uneven in color, spindly, or unevenly arranged in the bunch also should be faulted.

Chard (vegetable) consists of large, thick, crumpled leaves. Chard can include single leaves or the entire plant with the roots removed. Stems are short. Petioles and midribs may be white, red, orange, or yellow.

Merits of chard include: firm, tender, crisp leaves free from insect or disease damage.

Faults of chard include: small or wilted leaves, roots that are still present, or uneven color.

Chinese cabbage (vegetable) has a compact, elongated head with thin, many-veined leaves. Chinese cabbage color can be light green to white. One type, bok choy, has dark green leaves and white petioles. Bok choy does not form a solid head.

Merits of Chinese cabbage include: solid, firm heads with tender, crisp leaves and uniform color.

Faults of Chinese cabbage include: very prominent midribs, incorrect sized heads, wilted leaves, or uneven color.

Chives (herb) are small, onion-like plants. Chives grow in clusters and are dark green. The leaves are hollow and thin.

Merits of chives include: fresh leaves that are evenly green and have no sign of blemish or drying.

Faults of chives include: wilted leaves, dried leaves, signs of insect damage, or unevenly colored leaves.

Collards (vegetable) consist of rosettes of tender, dark green leaves, which may be attached or detached from the main stem. The roots are removed.

Merits of collards include: firm, crisp leaves with uniform color and size.

Faults of collards include: wilted, dirty, or damaged leaves.

Cucumber (fruit) is an immature, firm, heavy, green fruit. Pickled cucumbers are 1½ to 5 inches long, and they are blocky. Slicing cucumbers are 6 to 9 inches long. European slicing cucumbers can be up to 16 inches long. Lemon cucumbers are egg-shaped and 4 to 6 inches long. Lemon cucumbers have light yellow skin. Some might assume cucumbers and several other fruits mentioned in this guide, including edible podded peas, eggplant, okra, peppers, snap beans, squash, and tomatoes, are vegetables. They are fruits because the botanic and horticultural definition of “fruit” is a mature ovary, which may or may not contain seeds (some fruits are seedless).

Merits of cucumbers include: uniform size, crisp and straight fruits, dark green color, uniform maturity, and evenly spaced spines (if present).

Faults of cucumbers include: non-standard size or color, or wilted, over mature fruits.

Dill (herb) has green, fragrant flower heads with stems and green leaves. Seeds are brown and immature and should not be shedding.

Merits of dill include: freshness, uniform and balanced bunches, and clean leaves and stems.

Faults of dill include: dirty foliage or flower heads, disease or insect damage, discoloration, or wilted foliage.

Edible podded peas (fruit) are tender, flat pods. The seeds inside should be starting to enlarge. Some varieties have rounder, crisp pods with nearly full-grown seeds. Both ends of the pods are intact.

Merits of edible podded peas include: uniform color and size, both ends intact, and fresh, crisp pods.

Faults of edible podded peas include: wilted or over mature pods, pale color, or insect or disease damage.

Eggplant (fruit) is a black, purple, or white, round to egg-shaped fruit. An eggplant may be as long as 14 inches.

Merits of eggplant include: well-shaped, firm, mature fruit. Other merits are a connected stem and a shiny surface.

Faults of eggplant include: wilted or misshapen fruit, uneven color, or over maturity.

Endive (vegetable) is a green, leafy rosette plant. The roots are removed, and the center leaves are creamy-white.

Merits of endive include: fresh, uniform, and clean leaves and stems.

Faults of endive include: dirty, diseased, discolored, or wilted leaves or stems.

Garlic (herb) is a bulb 1½ to 3 inches in diameter. Garlic may be white to pink, and it has papery, dry skin.

Merits of garlic include: individual cloves that are uniform in size and shape. Clear skin also is a merit.

Faults of garlic include: soft or damaged bulbs.

Ginger root (vegetable) is actually an edible rhizome. The interior is golden white.

Merits of ginger root: few knots or branches, light brown skin that is smooth, and lack of blemishes or bruises.

Faults of ginger root: withered knobs, many knots and branches, and blemishes or bruised skin.

Grapes (fruit) are round fruits that grow in clusters on vines. The skin of the fruit may be green, red, purple, or yellow when ripe. The skin is usually thin and the flesh juicy. Seeds may or may not be present, depending on the variety.

Merits of grapes include: plump fruits, stems securely attached, rich coloring, and absence of shriveling or skin blemishes.

Faults of grapes include: blackening of skin near stem, soft or shriveled fruits, and mold present on fruits.
**Grapefruits** (fruit) are large, round fruits with a thick rind. The rind is yellow but may be slightly red or pink. The flesh of the fruit is pinkish-red or yellow and is slightly bitter in taste. 1

Merits of the grapefruit include: smooth and shiny skin, firm fruit, and absence of mold or bruising.

Faults of the grapefruit include: dull or wrinkled skin, soft fruit, and the presence of mold or bruising.

**Green onions** (vegetable) are immature onion plants. Green onions have thick, straight stems with roots trimmed short.

Merits of green onions include: no large bulge at the base, clear white base color, and dark green tops. Green onions should be fresh and clean.

Faults of green onions include: wilted or damaged tissues, or soft tops. Another fault is when the base bulges more like an onion.

**Head lettuce** (vegetable) is a solid, round head of green leaves. The midribs and center leaves are nearly white.

Merits of head lettuce include: a firm, crisp, clean, solid head heavy for its size.

Faults of head lettuce include: wilted, dirty, loose, or damaged leaves.

**Jicama** (fruit) is a large tuberous root from a legume plant.

Merits of jicama include: tubers free of bruises or cracks and tissue that appears fresh and firm.

Faults of jicama include: cracks, bruises, and soft tubers.

**Kale** (vegetable) has grayish or blue-green curly leaves. Kale looks like a non-heading cabbage.

Merits of kale include: firm leaves uniform in color.

Faults of kale include: wilted, dirty, or damaged leaves or uneven color.

**Kiwi** (fruit) is an egg-shaped fruit with bright green flesh and brown skin covered with brown fuzz. A ring of small black seeds is embedded in the flesh. The seeds are edible.

Merits of kiwi include: plump, fragrant fruit with skin free of spots or blemishes.

Faults of kiwi include: wrinkled, soft, or very small fruits, and blemishes or soft spots on the fruit.

**Kohlrabi** (vegetable) has an enlarged stem measuring about 2 to 3 inches in diameter. Leaf scars and petioles of kohlrabi are in a spiral pattern. Kohlrabi may be round or shaped like a toy top.

Merits of kohlrabi include: uniform size, tender stem, and even color.

Faults of kohlrabi include: uniform size, tender stem, and even color.

**Leaf lettuce** (vegetable) consists of a rosette of tender, green leaves attached to a stem. The roots are removed.

Merits of leaf lettuce include: firm, crisp leaves attached to the stem and having uniform color and size.

Faults of leaf lettuce include: wilted, dirty, or damaged leaves.

**Leeks** (vegetable) look like large, green onions with thick, straight, 1- to 2-inch thick stems. Leeks have flattened, green leaves.

Merits of leeks include: uniform size, shape, and color with dark green tops and white clear bulbs.

Faults of leeks include: uneven color, faded or pale tops, or a wilted or damaged product.

**Lemons** (fruit) are a bright yellow, oblong shaped fruit. The skin is smooth, and the fruit may have a slight protrusion at the stem end. The inner flesh is light in color with a fragrant smell and acidic taste. 1

Merits of the lemon include: skin that is vibrant colored and smooth. The skin should lack blemishes. The flesh should be juicy and fragrant.

Faults of the lemon include: pulpy or dry flesh. Avoid skin that is bruised or blemished.

**Mint** (herb) is a perennial herb known for its distinctive minty smell.

Merits of mint include: green bunches that are fresh and not wilted. Mint should be free of insect damage or yellowing and should have a strong, pleasing aroma.

Faults of mint include: yellow leaves, wilting, signs of insect damage, and blackening of the stems.

**Muskmelons or cantaloupes** (fruit) are netted or ribbed, round to oval fruits. The fruits have cream-colored netting on rinds and greenish to yellow skins.

Merits of muskmelons include: clean, firm fruits free of soft spots, scratches, or decay. Netting should be deeply ridged over melons. Color should be even.

Faults of muskmelons include: over or under ripeness, poor color, blemishes, or coarse netting.

**Mustard** (vegetable) consists of green leaves that are used fresh or cooked.

Merits of mustard include: fresh, uniform, and clean leaves and stems.

Faults of mustard include: dirty, diseased, discolored, or wilted leaves or stems.

**Okra** (fruit) has pointed, velvety pods. The pods may be green, yellow, or somewhat red. The pods should be partially mature.

Merits of okra include: uniform pod size, shape, and color. Pods should be clean, fresh, and crisp.

Faults of okra include: uneven color, damaged, overly mature, or wilted pods.

**Onions** (vegetable) are mature bulbs with dry roots and dry necks. Outer scales are dry and can be red, brown, yellow, or white. Onions may be flattened, round, or spindle-shaped, but they should be heavy for their size.

Merits of onions include: even color and heaviness for their size. Onions also should have clear skin, thin necks, good color, and good shape, and they should be uniform in size.

Faults of onions include: any damage, too many layers of outer skin removed, or thick, soft necks.
Oranges (fruit) are a round fruit that bears similarity to grapefruit but are smaller. The rind tends to be somewhat rough and is orange to yellow-orange in color. The flesh is yellow-orange and sweet to the taste.  
Merits of the orange include: smooth and shiny skin, firm fruit, and absence of mold or bruising.  
Faults of the orange include: dull or wrinkled skin, soft fruit, and the presence of mold or bruising.

Parsley (herb) has curled or smooth green leaves with no flowers or seed heads.  
Merits of parsley include: fresh, deep green color and crisp, clean leaves.  
Faults of parsley include: wilted or yellowish foliage, or foliage damaged by insects.

Parsnip (vegetable) is a long, tapered, creamy-white root.  
Merits of parsnips include: uniformity in size and true-ness to type. Parsnips should be free of side roots. They also should be firm, solid, and exhibit good color.  
Faults of parsnips include: cracked or branched roots, rubbery flesh, or uneven color. Warty or over or undersized roots also should be faulted.

Peas (vegetable) are full-size, tender, green seeds in fresh, green pods.  
Merits of peas include: freshness, bright green color, and uniform length and size.  
Faults of peas include: large, empty, or partially filled pods. Discolored, damaged, or over mature peas also should be faulted.

Peppers (fruit) are green, red, or yellow fruits. They have three or four lengthwise lobes, and their shapes may be round or long and tapered. Peppers have deep color. Peppers are firm and heavy with thick walls.  
Merits of peppers include: uniform size, color, and variety. Peppers should be crisp, heavy, smooth, and free of blemishes. Stems should be attached but cut cleanly. Peppers should have the same number of lobes or sections.  
Faults of peppers include: dull or rough texture and fruits that are off-color or light weight. Other faults include: soft spots or damage from sunscald, disease, or insects.

Pineapples (fruit) are oval or cylindrical and are topped by a crown of coarse leaves. The pineapple is a multiple fruit, or one that is made up of numerous flowers fused together. The skin of the pineapple has many scales and is yellow when ripe. The inner flesh is juicy, sweet, and yellow in color. There are no seeds inside the fruit, but the core of the pineapple is fibrous and white.  
Merits of pineapples include: green and healthy top, firm fruit, and a bright yellow color.  
Faults of pineapples include: brown leaves, soft fruit, bruises, mold, and sour smell.  

Raspberries (fruit) are aggregate fruits (one flower with multiple sections). When picked, their central core remains on the plant; therefore, the fruit is hollow when picked. Raspberries may be red, black, purple, or golden in color when ripe.  
Merits of the raspberry include: fruit is juicy and fragrant and has a rich color; the fruitlets are firmly held together; the fruitlets are not over or underripe, and they have unblemished skin.  
Faults of the raspberry include: fruitlets that are soft and falling apart, leakage from fruitlets, and bruising or mold on the skin.

Radishes (vegetable) are crisp, swollen roots measuring up to 1¼ inches in diameter. Radishes may be round or long, and their skin may be red, white, or purple. They are white inside.  
Merits of radishes include: firm, crisp roots with bright color. Radishes should show good shape for their variety, and skins should be smooth and clean.  
Faults of radishes include: poor shapes or colors, rough textures, or wilting. Radishes that are over mature, woody, or pithy should be faulted.

Rhubarb (vegetable) is a leafstalk with a small portion of the leaf blade included. The skin and inside of the stalk either may be red or green. Rhubarb is a vegetable because the edible leafstalk is not the seed-bearing portion of the plant.  
Merits of rhubarb include: clean stalks and foliage, uniform color, and uniform stalk sizes.
Faults of rhubarb include: absent, wilted, or dirty leaf blades or damaged stalks.

**Rosemary** (herb) is an aromatic herb with slender, point-ed leaves.

- Merits of rosemary include: leaves that are green and pliable.
- Faults of rosemary include: leaves that are brittle and dry.

**Rutabagas** (vegetable) are large, round, or slightly elongated roots. Rutabagas may include several smaller roots at the base. Their skin will be white to yellow, and the top may be purplish.

- Merits of rutabagas include: uniform size and trueness to type. Rutabagas should be free of side roots, be firm and solid, and exhibit clear color.
- Faults of rutabagas include: roots that are cracked or branched, rubbery flesh, or uneven color. Warty, under or oversized rutabagas also should be faulted.

**Shallots** (vegetable) are round or oblong bulbs. Shallots have dry yellow or red skin and measure about 1 inch in diameter. They may be up to 2½ inches long.

- Merits of shallots include: bulbs that are crisp and have uniform color. Shallots should be relatively heavy, have clear skin, and be uniform in size and shape.
- Faults of shallots include: thick, soft necks. Damaged or over or under mature bulbs also should be faulted.

**Snap beans** (fruit) are crisp pods containing nearly full-size seeds. The pods may be green, yellow, purple, or green with purple spots.

- Merits of snap beans include: freshness, uniform color and length, and long, slender shapes. The pods should be brittle and fleshy, well-filled, and free from defects. Both ends of the pods should be intact, and pods may be straight or curled, depending on the variety.
- Faults of snap beans include: pods that are tough, wilted, stringy, pale or discolored, rusty, unevenly filled, or over mature.

**Spinach** (vegetable) consists of thick, dark green leaves that may be smooth or crumpled. Spinach is often harvested as a whole plant.

- Merits of spinach include: clean and crisp foliage with fresh, green color.
- Faults of spinach include: wilted foliage, dark or poor foliage color, or a gritty texture. Evidence of bolting is also a fault. Bolting is when the plant becomes reproductive and sends up a flower stalk.

**Strawberries** (fruit) are cone-shaped, red fruits having a skin scattered with small, hard seeds. Strawberry inner flesh is rich red and juicy. The green calyx (the outer covering of the flower bud) may be attached at the stem end. The strawberry is an aggregate fruit.

- Merits of the strawberry include: rich red skin with a juicy red flesh. The core should be fleshy and juicy. The skin should be free of bruises and blemishes. If present, the calyx should be healthy and green. No visible dirt should be present on the fruits.
- Faults of the strawberry include: mold present on the skin, pulpy core, bruised flesh, and a brown calyx or soft tissue near the calyx.

**Summer squash** (fruit) is a tender, immature fruit. Squash is crisp and even in color, and the seeds are very immature. Summer squash has thin skin. The shape of summer squash varies. The color can be yellow or light to dark green, or squash can be striped.

- Merits of summer squash include: an attached stem, heavy weight for size, clear and even color, maturity, and freedom from blemishes.
- Faults of summer squash include: stems that are absent or soft, light weight, presence of blemishes, or fruits not uniform to type. Over-maturity is a very common fault of summer squash. Over mature squash are often squishy and show bruising.

**Sweet corn** (vegetable) has well-filled kernels on ears covered with fresh, green husks. Sweet corn kernels should be in the milky stage. In this stage, kernel juices are milky white when kernels are squeezed.

- Merits of sweet corn include: uniform in length, size, and color ears, according to variety. Kernels should be full and in the milky stage.
- Faults of sweet corn include: immature, unfilled, overripe, or hard kernels. Sweet corn with uneven rows of kernels or rows not filled to the tips of the ears should be faulted.
- Also, damage from worms, insects, or disease is a fault.

**Sweet potatoes** (vegetable) are round, spindle-shaped, or cylindrical roots. Sweet potatoes may have red, orange, or yellow skin, and skin can be smooth or russet.

- Merits of sweet potatoes include: uniform shape, size, and color. Sweet potatoes should be free from blemishes and should be fresh.
- Faults of sweet potatoes include: roots that are branched or cracked, uneven in color, or blemished.

**Thyme** (herb) is a perennial herb. Thyme has a strong lemony flavor.

- Merits of fresh thyme include: green bunches that are fresh and not wilted. Thyme should be free of insect damage or yellowing and should have a strong, pleasing aroma.
- Faults of thyme include: yellow leaves, wilting, signs of insect damage, and blacking of the stems.

**Tomatoes** (fruit) can be red, orange, or yellow. Tomatoes can range from ½ inch to 6 inches in diameter and weigh
up to 1 pound. They are firm and heavy but not soft or over-ripe. Cherry tomatoes are smaller in diameter than standard tomatoes.

Merits of tomatoes include: medium size according to variety. Tomatoes should be firm and should show clear color typical of variety. They should be clean with no cracks. Stems should be closely trimmed, or all stems should be removed. Tomatoes should show only a small blossom scar.

Faults of tomatoes include: coarse skins or over or under ripeness. Bruised, soft, cracked, or lobed tomatoes should be faulted.

**Turnips** (vegetable) are round roots that may either be pure white or have a purple top. Turnips have thin, tender skin.

Merits of turnips include: uniformity in size, trueness to type, and freedom from side roots. Turnips should be firm and solid with clean, clear color.

Faults of turnips include: roots that are cracked or branched, rubbery flesh, or uneven color. Warty or under or oversized turnips for the type should be faulted.

**Watermelons** (fruits) are round or oblong fruits with gray-green, green, striped, or yellow skin. Watermelon flesh may be red, pink, or yellow and size varies.

Merits of watermelons include: good weight and medium to large size (10 to 20 pounds). Watermelons should exhibit bright color with even striping over the whole melon. Watermelon shapes should be even and without bulges, furrows, or dimples. If there is a yellow spot (rather than white) where the melon rested on the ground, it is ripe.

Faults of watermelons include: light weight, uneven shape or color, or presence of blemishes. A white, rather than yellow, ground spot also should be faulted.

**Winter radishes** (vegetable) are large, round, or elongated roots. Their skins may be black, white, or pink. Their flesh should be firm, crisp, and white.

Merits of winter radishes include: firm, crisp, and bright colored roots. Winter radishes should show good, uniform shapes for the variety and should have smooth, clean skin.

Faults of winter radishes include: poor shape or color, rough texture, wilting, or over mature roots.

**Winter squash** (fruit) is a mature, hard-shelled fruit. Winter squash shapes and sizes vary. Winter squash should be heavy for its size.

Merits of winter squash include: an attached stem and heavy weight. Winter squash should show clear, even color, be mature, and be free from insect, disease, or mechanical injury damage.

Faults of winter squash include: lack of or a soft stem, uneven color, immaturity, or light weight. Winter squash also should be faulted if the fruit is blemished or not true to type.

### Suggested Judging Points Scale (Use as a Guide)

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>20</td>
</tr>
<tr>
<td>Condition</td>
<td>20</td>
</tr>
<tr>
<td>Form</td>
<td>20</td>
</tr>
<tr>
<td>Size</td>
<td>20</td>
</tr>
<tr>
<td>Uniformity</td>
<td>20</td>
</tr>
</tbody>
</table>

Suggestions for assigning points in each of the above categories follow:

**Color**
- If the produce’s color is clear, bright, and typical of the type: 11 to 20 points
- If the color is faded or not uniform: 10 points or less

**Condition**
- If the produce’s condition is fresh, unblemished, and mature for the type: 11 to 20 points
- If the produce is bruised, injured, or scarred by insect or disease damage: 10 points or less

**Form**
- If the produce is formed symmetrically and is typical of the type: 11 to 20 points
- Produce may vary in shape, but they will almost always be bilaterally symmetrical. If the produce’s form is misshapen, over or under mature, or distorted by insect, disease, or mechanical damage: 10 points or less

**Size**
- If the produce’s size is typical for ideal edibility and consumer use: 11 to 20 points
- If the produce is too small or overly large: 10 points or less

**Uniformity**
- If the produce has uniform size, form, color, and condition: 11 to 20 points
- If size, form, color, or condition is not optimal: 10 points or less
Descriptive Words: Merits
Fresh   Smooth
Tender   Clean
Succulent   Straight
Crisp   Firm
High quality   Compact
Tapering   Ripe
Maturity   Mature
Solid   Heavy
Edible   Table use

Words concerning uniformity:
Uniform size
Uniform shape
Uniform color

Words concerning trueness to variety:
Same type
Same variety
Typical shape
Typical color

Descriptive Words: Faults
Blemish     Cracks
Bruise     Decay
Weather damage   Blossom scars
Insect damage   Soft
Mechanical damage   Sunburn
Diseased    Rust
Deteriorated    Waste
Woody     Fibrous
Tough     Stringy
Pithy     Puffy
Withered    Over mature
Wilted    Discolored
Overripe    Shriveled
Yellowing    Immature
Dull color

Points to Remember:
Make comparisons
Grant merits, and criticize faults
Use different terms
Be sure you know what you are talking about
Judge as if the produce would be eaten immediately
Learn and enjoy!

Sample Reasons
• “I placed corn tray 1 over tray 4 because the latter tray offers the consumer the highest amount of quality product. It has fuller, plumper kernels with more evenly spaced rows. The corn ears in tray 4 showed insect damage and lacked overall consistency of color and size of kernels. Therefore, I placed corn tray 1 over tray 4.”
• “I placed tray 2 of beans over tray 4 because of the rusty and shriveled appearance of the beans in tray 4. Although I grant that tray 4 was more uniform in size, shape, and maturity, the presence of the rust and shriveling reduced tray 4’s use by the consumer. Tray 2 has the merits of bright color, a more edible product, and a crisp appearance; therefore, I placed tray 2 over tray 4.”
• “I placed corn tray 1 over tray 4 because of the numerous faults in tray 4. The corn ears in tray 4 were not fully developed and had many empty spaces. The earworm insect damage evident on ears in tray 4 also decreased its appeal to the consumer. Although the ears are not as large as those on tray 4, tray 1 showed more consistent color, filling of kernels, and freedom from insect damage. Therefore, I placed corn tray 1 over tray 4.”

Sample Class Placement
• “I place this class of leaf lettuce 1, 2, 3, 4. I placed tray 1 over tray 2 because of the crisp, green leaves on the rosettes and the uniformity of the rosettes on the tray. I placed tray 2 over tray 3 because tray 3 shows damage on the leaves from either weather or harvesting. Leaf lettuce on tray 2 is less uniform than that on tray 1 but does not show the damaged foliage like that on tray 3. I placed tray 3 over tray 4 because, even though there is damage to the leaves on tray 3, there is no wilting and the foliage is clean. I placed tray 4 last because the rosettes are wilted and are not of uniform size, and the foliage is dirty; therefore, I place this class of leaf lettuce 1, 2, 3, 4.”
• “I place this class of strawberries 4, 3, 2, 1. I placed tray 4 over 3 because of the bright colored fruits, juicy ripe flesh, and healthy green calyx tissue on the strawberries on tray 4. I placed tray 3 over tray 2 because tray 2 shows bruising of the fruit and brown calyx tissues. While tray 3 has some blemishes on the fruit, no bruising is evident, and the calyx tissues are green. I placed tray 2 over tray 1 because tray 1 has white mold growing on the fruit, and the flesh is extremely soft. Therefore, I place this class 4, 3, 2, 1.”

References
1 Many of the fruit descriptions were adopted from the University of Florida. Many topics relating to gardening and plant sciences are at http://florida4h.org/projects/plants/index.shtml.


Tablet computers or tablets are small mobile computers that are primarily touch-screen operated. They can be used for reading, watching movies, using apps, listening to music, taking photos, surfing the Internet and more. When purchasing a tablet, you should consider:

- Price
- Hardware
- Preferences for Use
- Average Battery Life
- Dimensions / Weight
- Internal Storage Capacity
- WiFi & 3G/4G Data Plans
- Resolution
- Camera
- Operating System
- Accelerometer

**Price:**
Tablet computers vary greatly in price, from around $200 up to $2,000 depending on the features they offer. It is important to consider the quality of the tablet associated with the price. A more expensive tablet may have more capabilities and last longer than a lower priced tablet. Choosing a tablet will depend on the budget you have to spend. If you have a tight budget, you might consider purchasing a tablet with less advanced hardware specs of without the addition of a 3G or 4G data plan.

**Hardware:**
Compare the hardware.
- Speed and processor: A tablet worth purchasing should be able to open a webpage, launch an app, or adjust settings within a few seconds. Processors of 1GHz speed or more are optimum and will be your best bet for fast performance.
- RAM: Tablets within the range of 512MB or more of RAM will produce better performance and overall improved interface.

**Preferences for Use:**
- Will you use the tablet on the go, or primarily at your home?
- Will you use it for entertainment purposes only, or for taking notes in class?
These are also very important considerations when deciding on a tablet.

**Average Battery Life:**
Tablet computers can have a battery life for anywhere from 2 to 16 hours.
• Will you take your tablet on the go frequently without access to a power outlet?
• Or, will you use it at home and be able to plug it in if needed?
These are important questions to ask when considering battery life.

Dimensions and Weight:
• Tablet screen sizes range from 2.8 inches to 14 inches. The median size for a tablet screen is 9.7 inches. Screen size can affect which cases you are able purchase and how you transport them. The screen size impacts how easy the tablet is to hold and use with one or both hands.
• The weight of a tablet computer is a key factor to consider, especially if you plan on carrying your tablet computer with you. The weight of a tablet ranges from around .15 lbs. to 5 lbs. and affects how easy it is to hold and use. Does it feel heavy or too bulky for easily being carried around? Or, is it lightweight and easy to hold with one hand?

Internal Storage Capacity:
Internal storage is the amount of data the tablet can hold. One thing to look for in a tablet is whether you can add additional storage. Some tablets have a relatively small amount of internal storage, but allow you to add a considerable amount of removable storage. On others you cannot add any storage, so what you see is what you get. You will need to consider how much you intend to store on your tablet. Internal storage capacity ranges from 0 GB to 500 GB.
The larger the storage capacity, the more downloads you will be able to store on your device.

WiFi & 3G/4G:
If you plan on using your tablet computer in your home, at school, or in a location where WiFi is available, it is easiest to connect to a WiFi network so you don’t have to pay for a 3G or 4G data plan. If you are looking for more mobility, you will need a 3G or 4G data plan so that you can get online when you’re not within a WiFi network range. A data plan is an extra cost you will have to pay to use your tablet computer wherever you like. 4G connectivity is the fastest connection available for mobile devices. However, it uses much more data than a 3G connection and will cost more.

Resolution:
The resolution of the screen affects how sharp the image will appear on the screen. It is measured in dimensions of pixels. The higher the pixel numbers, the higher the resolution of the screen will be.

Camera:
• Would you use your tablet computer as a camera or to make videos? Not all tablets feature built in cameras.
• Is it important that a camera is featured on both the front and the back of the tablet computer? You will possibly need this for video calling and self-portraits.
• Is the quality of the camera important to you?
These are important questions to consider when considering the use of your tablet computer as a camera.

Operating System & Software Platform:
Tablets, like regular computers, run a number of operating systems. There are two types of operating systems. One is a traditional desktop-based operating system, which includes Microsoft Windows™ and OS X™. The other is post-PC mobile based (“phone-like”) operating systems, including Apple iOS™, BlackBerry®, and Google Android™.

Additionally, these operating systems have significant differences in how they handle apps. Android is an open model, which means that anyone can create an app and release it for purchase. Apple is a closed model, meaning that all apps created must be approved before being sold in their app store. This difference is especially important if you are a programmer.

Three platforms are dominate right now: Android™, BlackBerry® tablet OS and Apple™ iOS 6. Your choice of tablet affects the operating system it runs on, so it is important to consider which OS you prefer.

Accelerometer:
Accelerometers are small motion sensors inside tablets that detect the orientation of the device. When you rotate your tablet, accelerometers are what changes the tablet from landscape to portrait orientation.

Additionally, the accelerometers can be used to interact with apps and games. By tipping it left, right, downward and forward you can affect what is going on in the game.

If you plan on using your tablet for a lot of web-surfing or document reading, you may want to use a landscape orientation so you can read the material on the screen easier.

GPS:
Some tablets have GPS capability with the use of a 3G/4G data plan. This might be ideal if you are planning on taking your tablet with you when you travel. If you are planning on purchasing a data plan, the GPS capability of your tablet might be important for you to consider.
Shop wisely, compare prices, and select the features you want. Using this guide you will be able to purchase the tablet that best meets your needs while staying within your budget.

Cheryl Varnadoe, Georgia 4-H
Extension 4-H Specialist
May, 2013

With appreciation to Brittney Anne Macdonald, UGA student.
TELEVISIONS

Shopping for a television (TV) doesn’t have to be stressful! You don’t have to be an expert to get a great deal on a TV. It just takes a little time and patience and you need to know what you want in the product before you can make a wise decision.

Key Terms

- **3-D Capability** – A feature which allows for content to be viewed in 3-D. For example a DVD that is in 3-D could be viewed properly if this feature is included in that TV model.
- **Anti-burn-in Features** – A feature on plasma TV’s which prevent static images from permanently etching into the TV’s phosphor coating. Examples include screensavers and motion adaptive technology where the picture shifts on the screen every few seconds when the program is paused.
- **Anti-glare Screens** – Generally on a plasma TV, a screen that reduces the reflectivity on the viewing area, making the picture quality better.
- **Component-Video Inputs** – Connections that allow for other devices to be hooked up to the TV. Examples include DVD player, video games, or other such items. The inputs are usually color coded as green, blue and red.
- **Digital Tuner** – A feature that enables the TV to receive free digital TV signals, including high definition programming via an over-the-air antenna. This feature has been required on all TV’s since March 2007.
- **Extended Warranty** – A warranty that can be purchased when a TV is bought that will extend beyond the factory warranty on the item. Extended warranty coverage varies depending on the policies offered, the number of years the policy will last, and more.
- **Film Mode** – This feature improves the appearance of movies converted from film to video. Other terms used to describe this feature include: 3:2 pull down, motion compensation, or brand-specific names such as CineMotion and Film Mode.
- **Flat Screen** – A type of television that is only 4-6 inches thick that can be put on a stand or mounted on the wall like a picture.
- **Front Projection** – A projector that is used with a screen to project movies or television on to a larger surface. Front projection systems require additional equipment such as speakers, cables, and a screen to work properly.
- **HDMI Inputs** – Connections on a TV that allow for HD capable input devices to be connect to things such as cable and satellite boxes, Blue-ray DVD players, or other HD equipment.
- **High Definition** – Refers to video having a resolution substantially higher than traditional television systems. Sometimes referred to as “HD” or “HDTV”.
- **Internet-enabled** – Televisions that provide a broadband internet connection without using a computer. Internet-enabled TV’s can be used to subscribe to services such as movie rentals (Netflix, Blockbuster, or Amazon on Demand), music from services such as Pandora, YouTube, Twitter, Flickr photos, and more. Also known as “web services.”
- **LCD** – The use of lights behind the display screen to help illuminate it. These are typically fluorescent bulbs or some new sets use LED (light-emitting diode) backlights. LCD stands for “liquid crystal display.”
- **LED-lit** – LED means “light-emitting diode. This refers to backlights used behind the display screen to help illuminate it.
- **Picture in Picture (PIP)** – This feature allows the viewer to watch two channels at once. One channel is in a small window while the other is shown on the full screen.
- **Plasma Screen** – A type of TV which has many tiny cells between two panels of glass which hold a mixture of noble gasses. The gas in the cells is electrically turned into a plasma which emits ultraviolet light to create the picture.
- **Rear Projection** – The technology used in large-screen TV’s to generate the image on the screen from behind the viewing monitor. The technology uses a series of lenses and mirrors to direct the image toward the screen.
- **Resolution** – The degree of sharpness or clarity of a displayed image. Resolution is defined as a matrix of “pixels” per inch. For example, a screen resolution of 1920 X 1080 means that the first number is the number of horizontal rows of pixels on the screen and the second number is the number of vertical rows of pixels on the screen. Some models may list only one number such as 1080p. This number references the vertical rows of
Shopping for Televisions

When shopping for televisions, there are a number of considerations that may need to be reviewed before a decision is made. Below are brief explanations of some of the important aspects to take into account in selecting a TV.

1. **Price Range** – It is important to know how much money is budgeted for this purchase. This type of product is not an expendable item or something that is replaced often. There will be several choices of products, depending on how much money is available to spend.

2. **TV Type** – There are several different types of TV’s on the market today. Most models are now flat screens, but there are different types of flat screens. The most common types are plasma or LCD. They look very similar but the technologies are different. There are also front projection models available. A front projection TV is a good choice for a large home theater but not very practical for everyday use.
   - **LCD TV** – This type of TV is lightweight, comes in a range of sizes and well suited for viewing in a bright room. Screen size can range from 23-60 inches from most manufacturers, but a few offer screens as large as 100 inches. Most LCD TV’s are only 4-5 inches thick. Prices vary, depending on screen size and other features. There are more companies selling LCD TV’s than plasma TV’s, but LCD TV’s generally cost more than plasma sets, but the gap is narrowing. Many LCD sets 40 inches or larger have 1080p resolution.
   - **Plasma TV** – This type of TV is 42 inches or larger. Most common sizes are 42-58 inches. Most models are 6 inches or less in depth and some new ultra-slim models are becoming available. Prices vary, depending on the screen size and other features. There are more models which have 1080p resolution.
   - **Front Projectors** – This type of TV is best for a theater-like experience at home. The projector is a separate piece from the screen and is usually mounted on the ceiling. The screen area is typically 70 to 200 inches. Price begins at $1000 and goes up from there. Screens are an additional cost of several hundred dollars, depending on the size. The size of the picture can be altered, depending on the distance the projector is from the screen, if the projector is not mounted on the ceiling. Other items that must be purchased separately include speakers, TV tuner, cables, mounting brackets, and possibly other items.

3. **Screen Size** – In order to determine what size TV to purchase, it is important to know how big the space is where the TV is going to be placed. This will impact the size of the screen that is chosen. If the TV is going to be placed in a cabinet, be sure to measure the opening, allowing for a few inches of clearance to be able to insert the TV. If the TV is going to be mounted on the wall and there is a limited amount of space, be sure to measure the wall space.

   Screen size is measured on the diagonal of the TV viewing area. It will be important to take a tape measure when looking for TV’s so that the actual width and height can be measured on the TV if those dimensions are not provided on the product information or box.

   Another consideration is the size of the room. It is recommended that for an average size room such as a living room, a 37-inch screen is recommended. For smaller rooms such as a bedroom or kitchens, smaller screens are recommended.

   The distance that seating is from the TV may also impact the screen size. It is recommended that seating be at least 5 feet from 40-47 inch screen or six feet for 50-inch or larger screens. The larger the screen, the farther from it the viewer should be. When viewing a TV close up, the picture may not be as clear or look “snowy” or lines may be visible on the screen.

4. **Screen Resolution** – This refers to the number of pixels, or picture elements, a screen contains. The higher the resolution, the better the picture. The resolution may be given in a set of two numbers such as: 1920 X 1080. This means that the first number is the number of horizontal rows of pixels on the screen and the second
number is the number of vertical rows of pixels on the screen. Some models may list only one number such as 1080p. This number references the vertical rows of pixels. The screen resolution chosen will determine if specific other features will be available. In order to be able to access HD signal formats or use Blue Ray DVD players, the screen resolution must be at least 1080p.

5. Features – What are the features that are most appealing to the buyer? Are those features available within your budget? Features may include but are not limited to the items listed below. Be sure to review the Key Terms for additional features.
   • Flat Screen
   • High Definition
   • Rear Projection
   • Video Conferencing Capabilities
   • Wireless connectivity

6. Brand – Research the different brands of TV’s and choose brands that provide the features that are wanted. How well a brand is rated could have bearing on the decision.

7. Customer Reviews -- There may be helpful information that can be gained from customer reviews about specific products or brands. Take the time to read customer reviews if they are available and take that input into consideration.

References
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UMBRELLAS

Umbrellas are available in a wide range of colors, styles and designs. They are used as protection from rain or sun. The word umbrella comes from the Latin word umbra, meaning shade or shadow.

Parts of the Umbrella

Umbrellas are composed primarily of three sections: the canopy, the shank, and the handle.

The canopy is that part of the umbrella that spreads and protects the user from rain or sun. The material from which the canopy is made is stretched over metal ribs, which form the frame for the canopy. These ribs arch radially and impart the desired shape to the canopy. The ends of the canopy are stitched to rounded tips that slip over the ends of the ribs and hold the canopy in place. A tape attached to the canopy may be wound around it and fastened or a sheath may be slipped over the umbrella. Spreaders or stretchers are attached at the center of the ribs to enable the canopy to be opened or closed.

Between the canopy and the handle is a shaft (if wood) or rod (if metal). Over the shaft is a metal sleeve that slides up and down and enables the spreaders to which it is attached to be opened or collapsed. Two small springs, which can be depressed into the shaft by slight finger pressure, hold the sleeve in position. Some umbrellas have push-button, self-opening spreaders that operate with a hidden spring. A metal or plastic cup that fits over the tips of a closed umbrella may be affixed to the shank.

A rigid handle enables the user to hold the umbrella. Straps or cords are frequently attached to umbrellas so that they can hang over the wrist or shoulder. Many umbrellas also have carrying cases, pouches or loops.

Special Construction Features

The number of ribs in an umbrella differs, depending on the size of the umbrella, its construction, and its shape. The sturdiness of the ribs determines the quality of the umbrella. Self-opening umbrellas usually have 7 to 8 ribs; folding umbrellas usually have 8 ribs; umbrellas for young people usually have 8 ribs; slim umbrellas usually have 10 ribs; and other styles may have 16 ribs.

To stand up to the wind, umbrella frames must be strong yet flexible. The same rib material should be able to give, but spring back to its original form.

Materials Used for Umbrellas

The canopy is made from fabrics or plastics that are water repellent. Cotton is frequently used; it must be closely woven and may or may not have a plastic finish to increase its protective qualities. Teflon, a lightweight, quick-drying, coating is common. Gloria, originally a cotton and worsted combination but now a silk or rayon and cotton fabric, is a tightly woven, plain weave material commonly used in men’s black umbrellas. Drill, a twill-weave cotton is often used for beach umbrellas. These materials are often colorfully dyed or printed.

Silk, acetate, rayon, and nylon make rain- and sun-resistant fabrics for umbrellas. Transparent umbrellas may be made from vinyl plastic. Outer sheaths may be made from the same material as the canopy or from leather or plastic.

The larger the canopy the more susceptible it is to the wind. The fabric in a parasol, which is used to provide protection from the sun, does not have to be water repellent and may be organdy or lace.

The ribs and spreaders are usually made of grooved metal. Steel is most commonly used for these parts. Better umbrellas have very sturdy steel ribs and spreaders. Brass plating for inexpensive umbrellas and chromium plating or enameling for more costly umbrellas keep the steel from rusting. Solid brass ribs and spreaders add to the sturdiness of the frame.

The shaft is made from wood; if made from metal (aluminum), it is called a rod. Shafts are often reinforced with fiberglass for strength and lightness. The tips are made from metal or plastic. Handles are made in a wide range of materials, such as woods, plastics, bone, horn, cane, bamboo, leather, or metal. They may be carved, studded with jewels, engraved, or hand painted. The most common shapes for handles are the crook (shaped like a question mark), the straight, the golf, and the opera. Umbrellas may have braided cord, leather, or plastic straps; beads; or chains that permit easy carrying.
Some Types of Umbrellas

Descriptions of various types of umbrellas follow:

**Ballerina or Parasol:** Dainty looking with ruffled edge that resembles ballerina’s skirt.

**Beach:** Made from waterproof materials. Usually has gaily colored stripes or figured patterns. Center pole is usually made of wood, plastic or aluminum and is pointed on one end to fit easily into sand or soil. Size varies from 5 to 8 feet in diameter.

**Bubble Shape:** Deeply domed to cover the head and shoulders. Must be made of transparent material.

**Folding:** Ribs fold to permit umbrella to be reduced in size for ease in carrying or packing.

**Golf or Sports:** Large, colorful umbrellas with 8 ribs. Usually has alternating color panels in the canopy. The ribs are 27 to 35 inches long and the handle is correspondingly longer.

**Child’s:** Approximately 15 inches in length, with 8 ribs. Often made in clear plastic or is colorfully decorated.

**UV:** Some umbrellas have sun protection ratings. A good sun umbrella has a UV rating of 50 or more.

**Self-Opening:** Push button works hidden spring that releases sleeve, pushing ribs into place. When closed, tip ends of ribs are held in place in metal or plastic cup.

**Windproof:** Can be snapped back into shape if blown inside out and will not break when pulled back into shape. Regular or folding style.

**Wind-Resistant:** Built for strength against the wind and can withstand fairly high winds without breaking or turning inside out.

Care of Umbrellas

It is desirable to open a wet umbrella after use to allow it to dry thoroughly. This keeps the fabric from spotting and from wrinkling excessively. When dry, the umbrella may be rolled neatly and fastened shut or encased in a sheath. On a windy day the top of the umbrella should be directed into the wind to avoid its being blown inside out.

Price

Umbrellas range in price from $3.00 to over $200 and, for the most part, the price reflects the quality of the umbrella. Although, some people prefer to buy cheap and replace the umbrella when it breaks, those who’ve had to deal with a cheap umbrella in a rainstorm often choose to pay a little more to avoid having their umbrella flip inside out, drip water on their head, or fall apart just when they need it most.

Still, not many people are willing to spend more than $50 or $75 for an object that is easily lost or misplaced. Fortunately, there are quite a few reasonably good quality umbrellas available in moderate price ranges. Umbrellas are also available in various styles and choosing an umbrella may mean compromising one advantage for another.

The right umbrella is a balance between cost and quality, as well as convenience and durability. Spend the time to find a good quality, reasonably-priced umbrella and it will serve you well for years to come.

SOME OVERALL CONSIDERATIONS:

Select type appropriate for intended use.
Select size in relation to use.
Closed size is important for some usage.
Folding (travel size is ideal for book bags, brief cases, riding buses, travel.
Shape may be important for use.
Plastic canopies may puncture.
Color may be selected to match raincoat, briefcase, etc.; to be easily identified; to not show soil; add color to dreary weather.
Strong, sturdy ribs are more durable and wind resistance.
Number and closeness of ribs may be indicator of durability.
Cost should be evaluated in relation to funds available, predicted loss, and intended use.

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