



Congratulations on being selected to participate in the Kansas 4-H State Family and Consumer Sciences Judging Contest.

This guide will help you and your team prepare for the 2023 Contest to be held Saturday, September 16 in Hutchinson, KS. The contest is in Dillon Hall at the 4-H Encampment Building on the Kansas State Fairgrounds.

Eligibility – Youth ages 9-13, as of January 1 of the current year, are eligible to participate in the Intermediate division. Youth ages 14-19 as of January 1 of the current year, are eligible to participate in the Senior Division. Each team must have at least 2 members and no more than 4 members.

The FCS judging contest will include three components:

1. **Judging classes** - These categories are chosen from the same list that the FCS National Championship and Conference uses for their contest. In 2023, an extra class has been included using Kansas developed resources. Participants may have ranking and/or reason classes.
2. **Group Think** – This is a team discussion modeled from the Western National Roundup. In this activity, youth work as a team to come up with a solution to the challenge presented. The team will be judged/scored as they complete this activity.
3. **Hands-on puzzle experience** – The team works together to solve a series of puzzles. In 2023, the theme will not be related to the study guide.

The 2023 Contest will utilize information included in the attached study guides for these topics:

- Food Safety for Frostings and Fillings
- Active Wear
- Beverage Appliances – Brewing Coffee
- Carry-on Luggage
- Dental Products – toothpaste and dental floss
- Event Venues
- Fast Food
- Lighting
- Wearable Technology

GROUP THINK - Video Example https://youtu.be/1Ldvcx_UktY

Step 1: State the problem or situation

The club needs \$200 to purchase plants and flowers for a Butterfly garden.

Step 2: Identify alternative solutions for the situation or problem

car wash - bake sale - fruit sale - magazine sale - rummage sale

Step 3: Identify the standards stated in the situation or problem. You may add additional standards even if they are not stated in the situation.

simple, short term, require minimal money and involve member of all ages

Step 4: Evaluate each alternative solution based on the standards. You can use a grid to make a plus or minus sign to indicate good or not good choices.

car wash - Yes simple, Yes short term (1 day), Yes minimal money needed (we have most of supplies); Yes appropriate or all ages - some younger members may need specific tasks. cons - unpredictable weather, not in winter

bake sale - Yes, simple (allergies - food items would need to be labeled); Yes short term (1 day); Yes minimal money (some may not be able to afford to bake something); Yes younger kids can help with baking

fruit sale - not simple - difficult to get fresh fruit; not short term - would need to order fruit in advance; money needed upfront before ordering

magazine sale - not simple because you have to go door to door or must host an event; longer term unless selling at a single event, requires minimal money to operate, Y- involves members of all ages

Step 5: Select the best choice for the situation and explain to judges (like providing a committee report to a 4-H club.)

...As a group, we ultimately chose the bake sale option because it was simple, short term, required minimal money and everyone would be able to participate.

NOTE: in the video example, the team identified 5 options and barely had enough time to accomplish their review. Your Kansas contest organizers suggest your team identifies 2-3 solution options with 3-4 standards. The video presentation is 9 minutes - you have 7 minutes.

Teams have 7 minutes for the Group Think activity and will be provided with a printed copy of

the situation (which relates to one of the identified topics in the study guide), paper and markers.

HANDS-ON PUZZLE/IMMERSION ACTIVITY

Your team will have a group activity to complete a series of puzzles related to a theme. Here are tips:

- 1) Review overall tasks
- 2) Communicate and delegate among group members
- 3) Take notes!

In 2021 and 2022, the content for the puzzle/immersion activity was related to topics in the study guide. In 2023, it will be a theme related to textiles and study materials are not provided. Participants will be provided with resources to complete the activity. (In other words, you can't study for this activity!)

FOOD SAFETY OF FROSTINGS AND FILLINGS

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INTRODUCTION

Foodborne outbreaks from icings and frostings are rare, but they do happen for a variety of reasons: sick food handlers preparing food, use of non-edible ingredients as decoration (such as “luster dust”), or formulating an icing requiring refrigeration for safety but storing at room temperature. While none of these were linked to a fair or exhibition, they show the susceptibility of these products to foodborne illness outbreaks. Some examples include:

2018. Rhode Island Department of Health uncovered an unusual outbreak involving copper toxicity from a glittery birthday cake that sickened six people with vomiting and/or diarrhea after attending a 1-year-old’s birthday party.

2013. Outbreak of norovirus occurred at a Minnesota wedding reception affecting 24 guests. Cake made by a bakery and served at the reception was the likely source. Supporting evidence shows norovirus-positive specimens and illness reports among both wedding guests and bakery patrons. The likely source was an ill food worker who prepared the cake icing.

2010. Outbreak of *Staphylococcus aureus* led to 100 illnesses associated with an Illinois bakery linked to a cream cake, fillings, and frostings due to improper bare hand contact.

2006. *Salmonella heidelberg* associated with meringue pie in Kansas. Thirteen people became ill, with six being confirmed with *S. heidelberg*. The pie was improperly cooked and cooled.

2002. Outbreaks of norovirus occurred with cakes from a Massachusetts bakery among guests of 46 separate weddings. Two bakery employees reported an illness compatible with norovirus which was isolated from the stool of one of these employees.

Baking contests at county and state fairs exhibit a variety of entries from the general public. As most fairs take place during warmer summer months, food safety risks increase for food judges or buyers at bake sales or auctions. This is largely due to using perishable ingredients, such as dairy products and eggs, which may require refrigeration for safety. Other factors include multiple people handling the foods before they are judged and/or sold. Recipes can vary greatly in ingredients and processes used. Therefore, risks from one entry to another can vary greatly.

PURPOSE OF THIS STUDY

This project was conducted to determine recipes that can be displayed safely at room temperature and those requiring refrigeration. Recipes were submitted by K-State Research and Extension district/county agents and specialists. A total of 49 recipes, some with variations, were submitted and tested in duplicate. Recipes were made in a home kitchen and brought to the Kansas Value Added Foods Lab for analysis. All recipes were tested for acidity (pH), water activity (A_w), and percent soluble solids (% Brix). These factors are crucial to determine the overall safety in the storage environment.

This study did not seek to test every kind of cake frosting and filling available, just recipes randomly submitted by county agents and specialists. The recipe examples give information about the ingredients included and are not recipes to be followed. Changes in the recipes will affect the pH, A_w , and % Brix values of products, and could change the way some recipes are categorized. Finally, brand names are intended for identification purposes only and are in no way endorsed by K-State Research and Extension.

ACIDITY (pH) OF FOODS

The overall acidity of a food product is expressed as pH, a logarithmic value measured from 0.0-14.0. Generally speaking, pH values below 7.0 are considered acidic, values above 7.0 are basic (alkaline), and pure water has a pH of 7.0. Disease causing bacteria do not grow well in an acidic environment, but molds and yeasts may still grow. Ingredients such as lemon juice and vinegar will lower the pH (more acidic), while ingredients such as eggs and dairy products will increase the pH (more basic).

WATER ACTIVITY (A_w) OF FOODS

Water activity (A_w) is a ratio of the vapor pressure of food compared to that of distilled water, and indicates the amount of available free water within a food product. The A_w scale ranges from 0.0 to 1.0. Higher A_w values can promote the growth of bacteria, while lower values favor molds. For safety reasons relating to *Staphylococcus aureus*, the U.S. Food and Drug Administration (FDA) has established the A_w value of greater than 0.85 as an indicator of high-risk food products if the pH is not taken into consideration. Adding sugar, salt, or dehydrating a food product can lower the overall A_w, while adding water can increase the A_w. Fat does not contribute to or raise A_w. Dairy based products generally have a higher A_w. Their moisture level and sugar content have greater impact on the overall water activity of a product.

SOLUBLE SOLIDS (% BRIX) IN FOODS

Percent Brix measures the percentage of soluble solids in a food with a range from 0% (no dissolved solids) to 100% (all solid, no water). For sweet foods

— like jams, jellies, and icings — it indicates the percentage of sugar in the recipe. Percent Brix is an important measurement when determining the safety of a product as it relates to the A_w. The higher the % Brix, the lower the amount of available water for microbial growth. This is because sugar binds with free water in food, making it unavailable for bacteria to use.

For food service, the FDA has developed a table relating pH and A_w values to food safety. The 2017 FDA Food Code defines a Potentially Hazardous Food as those foods requiring Time/Temperature Control for Safety (TCS) and provides guidance in the table below to help identify such foods based on pH and A_w values (Table 1).

Recipes in this project were separated into three categories based on their measured pH and A_w values. Note that cooking does not necessarily make a food safe at room temperature. A full list of recipes tested can be found at rrc.k-state.edu/judging/index.html.

TCS FOODS – TIME/TEMPERATURE CONTROL FOR SAFETY FOODS

Due to their high pH and A_w values, these recipes are defined by the 2017 FDA's Food Code in Table 1 below as needing PA to further determine their microbial safety. TCS Foods held at temperatures between 41-135°F may allow pathogens to grow at a high rate and possibly produce toxins. In the absence of PA studies, the safety of these foods requires temperature control, outside the 41-135°F temperature danger zone, by refrigeration or heat.

Table 1. Interaction of pH and A_w for control of vegetative cells and spores in food not heat-treated or heat-treated but not packaged.

A _w values	pH : <4.2	pH: 4.2 – 4.6	pH: >4.6 – 5.0	pH: >5.0
< 0.88	Non-TCS food*	Non-TCS food	Non-TCS food	Non-TCS food
0.88 – 0.90	Non-TCS food	Non-TCS food	Non-TCS food	PA**
>0.90 – 0.92	Non-TCS food	Non-TCS food	PA	PA
> 0.92	Non-TCS food	PA	PA	PA

*TCS FOOD means Time/Temperature Control for Safety Food

**PA means Product Assessment required

TESTED RECIPE EXAMPLES FOR TCS FOODS:

Chocolate Ganache (2) (Cooked)

Ingredients: 4 ounces semi-sweet chocolate, ½ cup heavy whipping cream

pH: 5.5, **Water Activity:** 0.88

Red Velvet Cake Frosting (1) (Cooked)

Ingredients: 4 heaping tablespoons flour, 1 cup milk, ½ cup butter, ½ cup shortening, 1 cup sugar, 1 tsp vanilla.

pH: 6.2, **Water Activity:** 0.92

Low-fat Cream Cheese Frosting for Carrot Cake

Ingredients: 8 ounces nonfat cream cheese, 3 ounces Neufchatel cheese, 1½ cups powdered sugar, 1 tablespoon orange zest.

pH 5.2, **Water Activity:** 0.91

NON-TCS FOODS

These had pH and A_w values not conducive to pathogen growth. Non-TCS Foods are generally considered safe at room temperature. However, they are susceptible to microbial spoilage by bacteria, molds, or yeasts over time.

TESTED RECIPE EXAMPLES FOR NON-TCS FOODS:

Simple Buttercream Frosting

Ingredients: 2 cups unsalted butter (softened), 8 cups powdered sugar, ½ teaspoon salt, ¼ cup heavy cream, 2 teaspoons vanilla.

pH: 4.6, **A_w :** 0.83

Coconut Pecan Frosting (Cooked)

Ingredients: 12 ounces evaporated milk, 1½ cups granulated sugar, ¾ cup margarine, 4 egg yolks, 1½ teaspoons vanilla, 7 ounces coconut, 1½ cups chopped pecans.

pH: 5.2, **A_w :** 0.79

Lemon Deluxe Bars (filling) (Cooked)

Ingredients: 4 eggs, 2 cups sugar, ⅓ cup lemon juice, ¼ cup orange juice concentrate, ½ cup flour, 1 teaspoon baking powder, ⅛ tsp salt.

pH: 4.3, **A_w :** 0.79

NON-TCS FOODS WITH CONDITIONS

Some recipes qualify as Non-TCS Foods based on Table 1 above. But with A_w values above 0.85, and due to the lack of validation studies on frostings and fillings, production of toxins by *S. aureus* is possible.

S. aureus is a bacterium commonly found on the skin and hair of many people, but it does not generally cause illness in healthy individuals. The bacterium is a weak competitor with other bacteria. In pre-cooked foods where other bacteria have been killed, *S. aureus* may contaminate food by food handlers. With no other bacteria present, foods with a high pH and A_w greater than 0.85, then left at ambient temperature, *S. aureus* will multiply and create heat-stable toxins that lead to food poisoning. The control of *S. aureus* requires prevention, by practicing proper hand hygiene when preparing and consuming food, keeping equipment clean, and keeping foods outside the temperature danger zone.

TESTED RECIPE EXAMPLES FOR NON-TCS FOODS WITH CONDITIONS:

Lemon Curd (Betty Crocker)

Ingredients: 1 cup sugar, 1 tablespoon finely shredded lemon peel, 1 cup lemon juice, 3 tablespoons cold butter, 3 large eggs (beaten).

**Cooked*

pH: 3.2, **A_w :** 0.94

Chocolate Brownie Cake Ganache (Microwaved)

Ingredients: 1 cup heavy whipping cream, 12 ounces semi-sweet chocolate morsels.

pH: 5.2, **A_w :** 0.85

Basic Sugar Glaze

Ingredients: 1½ cups powdered sugar, 2 tablespoons milk, 2 teaspoons vanilla.

pH: 5.9, **A_w :** 0.85

CONCLUSION

This study was not aimed at performing individual product assessments to determine the final safety of each recipe due to lack of time and cost. Instead, intrinsic factors associated with foods commonly entered at fairs and exhibitions were analyzed to

make recommendations based on FDA guidelines and microbial growth requirements.

The key factor for frostings and fillings safety is the A_w level. Most TCS Foods in this study had dairy products such as milk, cream cheese, butter, and cream as primary ingredients, but not enough sugar to lower the A_w below 0.85. For example, in recipes using cream cheese, some require refrigeration, some do not. Therefore, as a general rule, no cream cheese based frostings or fillings will be allowed at Kansas fairs and exhibitions. Adding water as an ingredient will increase the A_w of a product. TCS frostings and fillings need refrigeration. Individuals should always practice proper hand hygiene, and maintain clean equipment and work spaces during preparation, handling, and consumption of foods.

Therefore, for Kansas fairs and exhibitions, we will continue to NOT allow the following ingredients or products:

- Raw eggs in uncooked frostings or fillings
- Raw flour in uncooked frostings or fillings
- Cream cheese frosting or filling
- Chocolate ganache
- Heavy cream frosting
- Lemon curd
- Fresh cut fruit or vegetables as garnishes
- Custard pie
- Cream pie
- Chiffon pie
- Fresh (unbaked) fruit pie (ex: fresh strawberry pie)
- Any meat
- Friendship bread starter, not refrigerated

RECOMMENDATION FOR KANSAS FAIRS AND EXHIBITIONS

Recipe variations and the variability in A_w and % Brix make this complex. A choice to ensure stability at room temperature, without A_w testing, is to use a frosting or filling recipe with a minimum of 65% sugar by weight. If using corn syrup, it is only 70% sugar and the rest is water. The calculations below do not factor the sugar found naturally in fruit or other ingredients such as sweetened coconut or chocolate chips.

A metric kitchen scale helps make calculations easy by measuring weight in grams. Measure ingredients using household measuring utensils, then weigh each measured ingredient. A number of websites provide weight equivalents for household measurements of common ingredients. Examples include:

bakingcalculators.com/convertrecipe/Default.aspx

kingarthurbaking.com/learn/ingredient-weight-chart

thecalculatorsite.com/cooking/cooking-calculator.php

Alternatively, conduct an internet search for the specific ingredient, the amount, and to convert to grams. Some examples to show how to calculate % sugar are below.



Example 1: Simple Buttercream Frosting

Ingredients	Weight in grams
2 cups unsalted butter	454
8 cups powdered sugar	960
½ teaspoon salt	3
¼ cup heavy cream	59
2 teaspoons vanilla extract	8
Total Weight	1484

% sugar: $(960/1484) \times 100 = 65\%$

This frosting is more than 65% sugar and considered stable at room temperature.

Example 2: Filling for Lemon Cheese Filled Cake

Ingredients	Weight in grams
8 ounces cream cheese	227
¼ cup sugar	50
1 teaspoon lemon juice	4.79
2 teaspoons water	9.86
½ cup coconut	40
Total weight	331.65

% sugar: $(50/331.65) \times 100 = 15\%$

This frosting is below 65% sugar and therefore not stable at room temperature because of the high amount of dairy ingredients.

Example 3: Fudge Frosting (Betty Crocker)

Ingredients	Weight in grams
2 cups granulated sugar	400
1 cup baking cocoa	80
1 cup milk	245
½ cup butter	113
¼ cup light-colored corn syrup (70% sugar)	59 (41.3 g sugar)
¼ teaspoon salt	2
2 ½ to 3 cups powdered sugar	360 (based on 3 cups)
2 teaspoons vanilla	8
Total weight	1267

% sugar: $(801.3/1267) \times 100 = 63.2\%$

This frosting is below 65% sugar and therefore not stable at room temperature because of the high amount of dairy ingredients.

Example 4: Cream Cheese Frosting

Ingredients	Weight in grams
8 ounces cream cheese	227
½ cup butter	114
1 teaspoon vanilla	5
3 ½ cups powdered sugar	420
Total Weight	766
% sugar: $(420/766) \times 100 = 54.8\%$	
This frosting is below 65% sugar and therefore not stable at room temperature because of the high amount of dairy ingredients.	

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Athletic Wear

ATHLETIC WEAR

4-H Consumer Decision Making
Study Guide



Activewear

The activewear industry has witnessed significant growth in recent years, reflecting the increasing importance of sports and fitness in people's lives. With a worldwide market size of 303.44 billion in 2021, this sector shows no signs of slowing down. What began as clothing specifically designed for athletic pursuits has evolved into a diverse range of garments suitable for various physical activities. Today, activewear encompasses attire for sports and exercise and everyday routines that incorporate fitness elements. This surge in demand demonstrates the changing preferences and lifestyles of consumers who seek both comfort and functionality in their clothing choices. As the market continues to expand, the activewear industry is ready to offer a wide array of options to cater to the evolving needs and preferences of individuals worldwide.

Activewear or Sportswear is any apparel, including shoes, worn for physical activity or participation in sports. The fabrics and materials used in activewear are engineered to achieve the desired attributes for a particular activity. When selecting activewear, it is important to consider the type of activity you will participate in, activity impact level, your body type and if you will be using it indoors or outdoors. The right active wear can enhance your training and performance.

Brand-name activewear, including Under Armor, Nike, and Adidas, is popular with teens and adults. Private-label brands available in department and discount stores might be made of similar materials but cost less than the national brands.

CLOTHING

The right clothing can enhance your training and performance. Fabric and fit are most important when choosing clothing for specific sports or activities. Choose activewear that contains cotton, cotton blends and moisture wicking fabrics that will assist with moisture absorbency, ventilation, and comfort.

FABRIC

Fabrics are designed for different purposes. Some fabrics pull sweat away from your skin and others absorb it. When it comes to workout clothes, some choices are better than others on your workout.

Fabrics with wicking characteristics:

Wicking fabrics are breathable synthetic fabrics that provide moisture control for an athlete's skin during a mid to high intensity workout. The fabric "wicks" the sweat away from your skin which can help it evaporate quickly and keep your body cool.

Wicking fabrics tend to be soft, lightweight, and stretchy, making them an excellent choice for activewear. This broad category of fabrics is used to make garments like t-shirts, running and cycling jerseys, socks, and polo style shirts for any physical activity where the goal is to keep your skin as cool and dry as possible.

Moisture wicking fabrics are used to make apparel for outdoor activities such as hiking, fishing, mountain biking, snow skiing and mountain climbing.

There are products marketed for their wicking. Several fabrics are known for their wicking properties. Here are some common fabrics that offer wicking:

Polyester: Polyester fabrics are widely used in athletic and outdoor apparel due to their excellent moisture-wicking properties. They quickly pull moisture away from the skin and allow it to evaporate, keeping you dry during physical activities.

Nylon: Nylon is another synthetic fabric that offers good wicking properties. It is often blended with other fibers to enhance its moisture-wicking capabilities.

Merino Wool: Merino wool is a natural fiber known for its exceptional moisture-wicking properties. It can absorb a significant amount of moisture while still feeling dry to the touch. Additionally, merino wool has the advantage of being odor resistant.

Bamboo: Bamboo fabric, derived from bamboo pulp, has gained popularity for its softness and moisture-wicking abilities. It absorbs moisture from the body and allows it to evaporate quickly, making it a comfortable choice for activewear and undergarments.

Microfiber: Microfiber fabrics are made from extremely fine synthetic fibers, usually polyester or nylon. They have a high surface area, which helps in efficient moisture transport and quick drying.

Synthetic Blends: Many moisture-wicking fabrics are blends of different synthetic fibers. For example, a polyester/spandex blend can provide both moisture-wicking properties and stretch for enhanced comfort during physical activities.

It is important to note that the specific construction and treatment of the fabric, such as the addition of moisture-wicking finishes or mesh panels, can also affect the wicking performance. When selecting clothing for activities that involve sweating or moisture exposure, look for garments labeled as "moisture-wicking," "quick-dry," or "performance fabric" to ensure optimal comfort.

Cotton: Lacks the wicking properties that are found in other fabrics but can still be a good choice when choosing activewear. Cotton is breathable, soft, comfortable, and natural fiber that works well for lighter workouts. Cotton also tends to be less expensive than synthetic activewear. However, cotton is very absorbent and is slow to dry. When wet, cotton holds the moisture next to your body.

FIT

Choose activewear that fits your body and your workout. For example, if you are running or biking, avoid wide-leg or loose pants/leggings. Likewise, for activities such as yoga or Pilates, choose stretchy, fitted fabrics. Additionally, avoid fabrics that could chafe or irritate your skin during repetitive movement.

Pay close attention to fit more than size because some workout clothes tend to run smaller and more from fitting than regular clothes.

COST

There are many factors to consider when shopping for activewear. You may be surprised at how much activewear costs. Paying the top dollar does not necessarily mean that you will get the best activewear for you. Be sure that whatever price you choose to pay for activewear it is the right activewear for you and that it meets the needs you desire.

ATHLETIC SHOES

With the many types of athletic shoes that are available, it can be hard to choose the right shoes for you. There are differences in design and variations in material and weight. The American Academy of Orthopedic Surgeons says that these differences have been developed to protect the areas of the feet that encounter the most stress in a particular athletic activity. Let's review some of the several types of sports shoes available.

Athletic shoes

Athletic shoes are grouped into the following categories: **running, training, and walking**; they include shoes for hiking, jogging, and exercise walking. These shoes should have a comfortable soft upper, good shock absorption, smooth tread, and a rocker sole design that encourages the natural roll of the foot during the walking motion.

Running Shoes

Running and walking shoes might look similar, but there are significant differences. Traditional running shoes provide extra cushioning, because landing can generate a force of 1½ to 3 times your body weight. They should also provide easy flexing at the ball of the foot and enough stability. The outsoles should be durable and provide good traction on pavement or dirt. Features of a good jogging shoe should include cushioning, flexibility, control, and stability in the heel counter area, lightness, and good traction.

Be aware that longer distances typically call for more support. A shoe worn to run sprints is typically a lightweight minimalist shoe worn for its quick feedback and responsiveness. While a marathon shoe has much more cushioning and support for the longer runs. As a rule of thumb an increase in distance and or time on your feet calls for more cushion and support. Nurses typically wear marathon shoes as they must be on their feet all day moving around.

Cross-Trainers

Cross-trainers are all-purpose shoes that bridge walking shoes and sport-specific shoes like tennis or basketball shoes. They can be a money-saving alternative to several pairs of specialized shoes for people who pursue a variety of activities, but they don't provide the same flexibility or cushioning for running or other high-impact sports. A good cross trainer should have flexibility in the forefoot that you need for running, in addition to stability on the inside and outside of the shoe for the control needed for aerobics and tennis.

Walking Shoes

These are best for people who walk for fitness or who want casual shoes for everyday walking. They should provide enough cushioning to be comfortable. And their flexible soles, designed for the relatively low impact of walking, allow the foot to roll easily from heel to toe. Walking shoes should flex easily at the ball of the foot, which helps feet to push forward.

Sport Specific Shoes

Court sport shoes

Include shoes for tennis, basketball, and volleyball. Most court sports require the body to move forward, backward, and side-to-side. As a result, most athletic shoes used for court sports are subjected to heavy abuse. The key to finding a good court shoe is the sole. Another key factor is grip. A shoe worn for tennis must grip onto the clay surface while a basketball shoe must grip onto a hardwood court. You should ask a coach or shoe salesperson to help you select the best type of shoe for your sport.

Field sport shoes

Include shoes for soccer, football, and baseball. These shoes are cleated, studded, or spiked. The spike and stud formations vary from sport to sport, but they generally are replaceable or detachable cleats, spikes, or studs affixed into nylon soles. Soccer cleats are lightweight allowing the user to reach maximum speed and agility. Football and baseball cleats are heavier weight allowing the user to grip onto the turf/dirt field. Football and baseball cleats also have more spikes than soccer cleats allowing them to maintain a better grip

Track and field sport shoes

Are very specific to the sport. The needs of the individual are most important when picking the shoe. For example, foot types, gait patterns, and training styles should always be considered. It is always best to ask a coach about the type of shoe that should be selected for the event in which you are participating. Proper fitting sports shoes can enhance performance and prevent injuries.

Follow these specially designed fitting facts when purchasing a new pair of athletic shoes:

- Try on athletic shoes after a workout or run and at the end of the day. Your feet will be at their largest.
- Wear the same type of sock that you will wear for that sport.
- When the shoe is on your foot, you should be able to freely wiggle all your toes. There should be a thumb's width from the tip of the toe to the end of the shoe.
- The shoes should be comfortable as soon as you try them on. There is no break-in period. If they are not comfortable in the store, they will not be comfortable when you are exercising.
- Walk or run a few steps in the shoes. They should be comfortable. The heel of the shoe should not slip off the foot as you walk or run.
- Always re-lace the shoes you are trying on. You should lace through each top eyelet as you crisscross the lacing pattern to ensure a snugger fit and decrease slippage. Do not tie the laces too tight as this may cause injury to the nerves or tendons on the top of the foot and ankle.
- There should be a firm grip of the shoe to your heel. Your heel should not slip as you walk or run.

Athletic Shoe Features

Like other products, it is important to know the different parts and features of the shoe. This way you can appropriately identify the parts of the shoe and feel confident in knowing what you are purchasing.

The Sole

Three layers comprise the sole. The bottom layer, or outsole, is generally made of carbon rubber for durability. It is segmented for flexibility and grooved or patterned for traction. The squishy middle layer, or midsole, provides most of the cushioning. It is usually made of shock-absorbing foam and might incorporate gel or air sacs and plastic torsion supports. The layer directly underfoot, the insole or sock liner, provides some additional shock absorption and arch support. It is removable and washable in many running and walking shoes.

The Upper

This is the body of the shoe, the part above the sole. The toe box—the forward part of the upper—should be roomy enough to let your toes spread and leave a half-inch space ahead of your longest toe. The heel counter at the rear should keep your heel from slipping excessively. These days, the uppers on most running shoes are made of synthetics, though some walking shoes still use leather. The more your feet sweat, the more you will appreciate the breathability of mesh. But if you plan to be outside in the cold weather, a less porous material will provide a little more protection.

Lacing

Fabric, plastic, or metal speed-lacing loops make tightening easier. Extra top eyelets provide a snug fit at the ankle. Flat laces are less likely to loosen or come untied than round ones.

Style

If you are on your feet a lot all day long, you might want shoes that combine the comfort and support of a walking shoe with something dressy enough for the office. Unfortunately, the dressier walking shoes tested in the past did not perform as well, overall, as the ones that look like sneakers.

Reflectors

If you jog or walk at dawn or dusk, reflective tabs on the uppers can provide extra safety by reflecting cars' headlights. The reflector should be as big as possible, especially if you will be outside at dusk or dawn.

Heel to Drop

Also known as the Shoe Offset, Heel differential, or HTD. The HTD refers to the height difference between the heel and the forefoot of an athletic shoe. It is measured from the base of the heel and the middle point of the forefoot. It is measured in millimeters in running shoes. In general, a 0mm drop is called natural or barefoot running. Low drop shoes are common for trail running. The most common drop range for most running shoes is 10-12mm. A shoe with a higher drop will be easier on the lower leg, foot, ankle, Achilles, and calf while directing more stress to the knees and hips. A lower-drop shoe will typically spare the knees but put more stress on the lower leg.

Low Drop-Trail Running	1-4mm
Mid Drop- Minimalist Running	5-8mm
High Drop-Running/ Long Distance	8+mm

Pricing

In addition to being overwhelmed by all the choices of athletic shoes, you may be surprised at how much they cost. Slick ads and television commercials tout technological features, the latest gimmicks, and shoes named after sports celebrities. Paying more than \$100 does not necessarily get you a better shoe. Good quality shoes may be pricey, but don't overlook the less expensive shoes because they can outperform their costlier brandmates. Be sure that whatever price you decide to pay for the shoes, it's because the shoe has the features that meet your needs—not because it is a certain brand or has a sports celebrity's name on it.

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Beverage Appliances

Brewing Coffee

Brewing Coffee

Coffee is always changing and evolving – whether by roast profile, seasonality, or geography, there's always something new, different, and exciting to taste. For many people, they cannot start their day until they have had their first cup of coffee. Making coffee at home has benefits – like using beans you like, adding flavoring if desired, and lets you use your favorite mug. It also saves you money!

When choosing a coffee maker for home, there are a variety of things to consider.

- **Convenience:** When choosing a coffee maker, it is important to consider how you want your coffee experience in the mornings. Some may want a more of a hands-off experience that can be made in minutes by pushing a button. And others may want to have a more hands-on experience that can turn the brewing experience into a morning ritual and allow for more control over the end result.
- **Type of Coffee:** It's important to decide on the type of coffee that you are wanting to make with the coffee maker. If you prefer an iced coffee over hot coffee, then you want to look for a coffee maker that can make a cold cup of coffee. Some coffee makers have multiple functions – like brew over ice or are a hybrid machine that includes multiple kinds of coffee.
- **Brew size:** Determining how much coffee you are wanting to make in the coffee maker will also help you decide the kind to purchase. If you don't drink a lot of coffee, then a single cup coffee maker may be what you are looking to get. Counter space may also be part of your consideration.
- **Extra Features:** Some coffee machines have added features, including programming time to brew, keep warm or auto shut off. Higher end machines might include features like milk frothing and bean grinding.
 - **Programmable settings:** Do you want to just set your coffee up to brew and leave it? As we previously mentioned, some coffee makers will let you determine the settings in advance based on what you like and automate it for future use. From the amount of coffee brewed to the time in which it gets brewed, programmable settings can come in handy for a wide variety of situations.
 - **Built-in grinder:** Do you prefer your coffee grounds fresh? Depending on who you ask, freshly ground beans produce a better tasting cup of coffee. Having a grinder ensures that you are always using the freshest ground beans. Of course, you can always buy a coffee grinder separately, but having one that is built into your coffee maker adds convenience and helps you save counter space.
 - **Automatic shutoff:** We have all experienced that early morning rush and forgot something important while running out of the house. With the auto-shutoff feature, you can ensure that your coffee pot gets turned off and is not running all day long. This allows you to focus on what is truly important for your day, all while you have a cup of coffee in hand.
 - **Multiple warmers:** For offices or commercial settings where making multiple pots at a time is often convenient, a coffee maker that has multiple warmers to keep each pot hot is worth considering.
 - **Water filter:** Some high-end coffee makers will come with a water filter to help ensure that the flavor comes out just right. This is one of the more popular features that people consider when it comes to buying a coffee maker.

- **Size and height considerations:** Factor in counter space when choosing your model. If you plan to put your coffee maker on your kitchen countertop, be sure to measure the height available in your space. Many of the coffee makers require additional space above them to allow room for pouring water into the reservoir. Another factor is how much space are you willing to dedicate to a coffee machine.
- **Temperature feature:** The ideal brewing temperature for a pot of coffee is 196°F to 205°F, therefore if you're really into (good-tasting) coffee, you will want to make sure that you buy a machine that can brew at high heat. Hint: Most top-of-the-line machines will list their brewing temps on the box or online.
- **Price consideration:** When it comes to price, there is a notable range of several hundred dollars between the most and least expensive models.

Types of Coffee Makers

Drip coffee makers can come in a variety of shapes and sizes, but when you hear someone talk about making a pot of coffee (e.g., several cups at once), they are usually going to be using a coffee brewer. Their simplicity makes them easy to use, durable and capable of quenching a caffeine thirst for a large family of coffee drinkers, or the college student studying for exams.

Parts of the Drip Coffee Maker

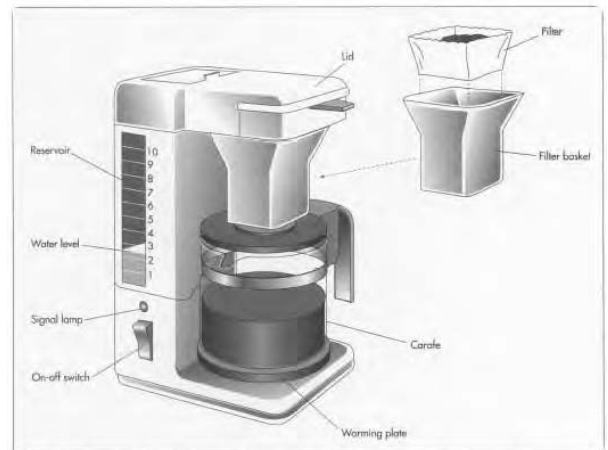
There is a **reservoir** that holds the water when you pour it into the pot at the start of the coffee-making cycle. Then the water flows through the one-way valve, into the aluminum tube in the heating element, and then partially up through the tube.

In the **shower head**, water arrives here from the hot-water tube and is sprayed over the coffee grounds. In some coffee makers, the water comes out of the hose onto a perforated plastic disc, called the drip area, and simply falls through the holes into the coffee grounds. The hot water flows through the ground coffee beans, picking up their oil essence on the way down into the coffee pot. This coffee oil, released during the roasting process, is called **caffeol**.

The **filter basket** holds the filter and the desired amount of coffee grounds. At the bottom of the filter basket there is a hole, which allows the water to drain through into the **carafe**.

The **carafe**, which is usually glass or insulated, holds the coffee on the warmer to keep the coffee at a desired temperature.

On the base of the coffee maker is the **heating element**. This component is comprised of an aluminum extrusion with two parts: a resistive heating element and a tube for water to flow through. When you turn on the switch, the resistive heating element starts heating the aluminum tube and eventually the water in the tube boils.



In an automatic drip coffee maker, a measured amount of cold water is poured into a reservoir. Inside the reservoir, a heating element heats the water to boiling. The steam rises through a tube and condenses. The condensed water is distributed over the ground coffee in the filter through a device like a shower head. The water flows through the filter, infusing with the coffee, and falls into a

<http://www.madehow.com/Volume-3/Automatic-Drip-Coffee-Maker.html>

The resistive heating element and the aluminum tube heat the water. The heating element has two jobs: When you first put the water in the coffee maker, the heating element heats it. Once the coffee is made, the heating element keeps the coffee warm.

Benefits:

- Extremely easy to use
- Affordable to buy and use on a daily basis
- Very convenient, as it makes a whole pot of coffee at once
- Lots of options for different models, shapes, sizes and brands
- Offers easy flexibility in brewing the best-tasting coffee for your taste buds

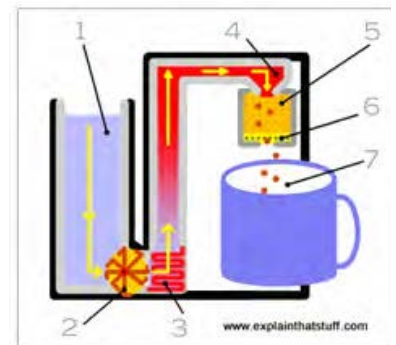
To Keep in Mind:

- Only makes basic coffee. Nothing fancy, and likely will not be satisfactory for those that prefer espresso drinks.
- Makes a lot at once. While a benefit, there may be instances where you end up wasting a lot of coffee.

Single-serve pod coffee machines have gained popularity due to their efficiency and ease in using. They rely on grounds held inside “pods” or “capsules,” which are usually produced by the same company that makes the machine. These force water through a small packet, either a hard-shelled capsule (also called pods) or a soft packet resembling a tea bag. Some brewers accept an adapter that takes your favorite loose grounds. Pod machines are more expensive to operate than other types because you need to buy special coffee refills. With plastic pods, there is also a lot of unrecyclable waste.

Parts of the **single-serve pod coffee** machine:

1. The **water reservoir** is what holds the water when you pour it into the pot at the start of the coffee-making cycle.
2. The **pump** at the bottom of the machine sucks the water and pumps it through the machine.
3. The water heats up to the perfect temperature as it flows up past the **heating element**.
4. The water is pumped through a narrow **needle sprayer** to increase its pressure.
5. The hot, high-pressure water pumps through the ground coffee in the **pod**, releasing the flavor.
6. A piece of **filter paper** at the bottom of the pod stops the coffee grounds from falling through into the coffee.
7. Coffee drips through into your **personal coffee cup**.



Benefits:

- Extremely easy to use and clean
- This type of coffee maker is usually very affordable
- Coffee pods come in many flavors
- Less waste of coffee if you only want to drink one cup at a time
- Great for offices, as co-workers can brew coffee precisely to their taste Will also brew tea or other hot beverages (cider pods, hot chocolate pods, etc.)

To Keep in Mind:

- Buying individual pods will get expensive over time
- Not great for the environment, because constant use and disposal of K-cups will produce a lot of plastic trash over time

French Press coffee makers have a smaller footprint as they don't take up as much space and can be stored in a cabinet when they aren't being used. French presses brew coffee by pouring hot water over coffee grounds, then plunging the grounds to filter them out. They don't use a paper filter so more of the oils inside the coffee bean are in the brew. The oils are what gives the coffee its taste. With a French Press you are in control of the water temperature and brewing time. This gives the user more freedom to experiment to find the kind of coffee they prefer. These type of coffee makers are simple to use and don't require a lot of skill to get a great result.



<https://thedarkestroast.com/how-to-use-a-french-press/>

Benefits:

- Don't require electricity to brew a cup of coffee.
- Coffee can be made anywhere with hot water
- Brewing method yields a rich and delicious tasting coffee
- Compact and portable which makes it easy to travel with, if desired
- Easy to use

To Keep in Mind:

- Can be more time consuming than other methods
- In most French Press models, the coffee grounds are in the bottom when you will have to empty out and clean. Compared with other kinds of coffee makers that have a filter to make removing the grounds easier.
- Sometimes coffee grounds will end up in the bottom of the cup.

Espresso Machines open the various options of craft coffee at home. You get to explore coffees from any roaster you want and decide on your favorites. Espresso machines can range from inexpensive models to high-end models, so it is a matter of what you are looking to purchase. There are machines that are dedicated to making espresso, but there are also hybrid machines that can brew both regular coffee as well as espresso. While the hybrid models aren't usually the best espresso machines, the advantage is that you don't need two separate machines for your coffee needs.

With an espresso machine, you can enjoy a straightforward shot of espresso or create your favorite drinks, like cappuccinos, lattes, and macchiatos. These machines typically control the pressure of the brew but allow you to control the amount of water you brew with, among a few other factors depending on the model.

When purchasing an espresso machine, you want to consider budget, types of espresso drinks, frequency and quantity of drinks, kitchen space and grinder selection.

Budget: Home espresso machines are an investment that can save you money in the long run. If you enjoy these types of specialty coffee drinks, a home espresso machine can give you that specialty drink at a lower cost.

Types of espresso drinks: The type of espresso machine you may purchase will depend on the types of drinks you enjoy. If you prefer large milk drinks, then you may want to purchase an espresso machine that has a dual boiler or heat exchanger machine whereas if you just prefer straight espresso then a single boiler machine would work.

- In a *single boiler machine*, the boiler has one heating element with two thermostats. One thermostat is set for a temperature range that is ideal for brewing coffee. The other is set at a temperature meant to boil water and produce steam.
 - Benefits
 - Relatively low cost
 - To keep in mind:
 - You cannot pull shots and steam milk at the same time.
 - You'll always have to wait for the water to come to the correct temperature when changing from espresso to steaming and vice versa
- *Heat Exchanger Machine*. Instead of using a boiler to heat water for both brewing and steaming, the water in the boiler is only used to make steam. An additional water line is run from the pump and connects to a copper tube, or heat exchanger. This passes through the body of the boiler. The steaming water in the steam boiler heats the water in the heat exchanger without bringing it to a boil. In an heat exchanger machine, the brew water will never come in direct contact with the boiler water
 - Benefits:
 - The brew water is separate from the steam boiler
 - The machine is able to steam milk and pull shots simultaneously
 - To keep in mind:
 - The temperature of the brew water is hard to control
 - The brew water in the exchange coil can overheat if left too long
 - Requires a cooling flush. It is important to bleed or purge a small amount of water immediately before brewing an espresso, a practice called temperature surfing.
- *Thermoblock Machine*. A thermoblock is a thick piece of metal with a small coil machined into it. The whole block is heated by a built-in heating element. Small bursts of water are sent from the pump through the coil. These bursts are rapidly heated to past boiling, turning them into steam. There is a separate brew boiler, but since the steam and brew water are heated separately, the machine is able to do both at the same time.
 - Benefits:
 - Less expensive
 - Can brew and steam simultaneously
 - More temperature control of brew water
 - To keep in mind:
 - Not recommended for producing lots of drinks or large milk drinks
- The *Dual Boiler machine* has a pump that sends the water to two separate boilers. One heats water to boiling and the other heats water to brew temperature. Most dual boiler machines feature a digital temperature controller, so temperatures for both boilers can be carefully controlled.
 - Benefits:
 - Can brew and steam simultaneously
 - Precise temperature control
 - Most consistent brew and steam temperatures

- To keep in mind:
 - More expensive than other options

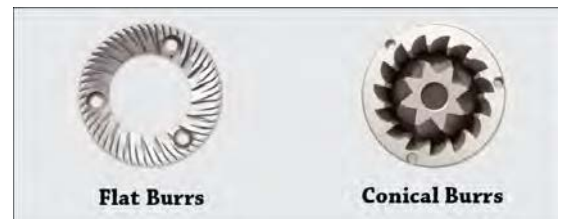
Frequency: How often will you use the espresso machine? Will it be a single morning cup of coffee or will you want multiple cups throughout the day? If you are single cup drinker, purchasing a single boiler would meet your needs whereas if you drink multiple cups in a day, you may want to get a larger dual boiler machine.

Space: Figuring out how much space the machine will take on your counter is essential to figuring out what kinds of machine to purchase. Making sure that the cabinet clearance for an espresso machine is important as some have a top filling reservoir.

Grinder Selection: The most important part of getting an espresso machine is choosing the right grinder. The espresso grinder is what determines how we unlock the flavor hidden within the beans. The criteria for selecting a grinder is simple – uniform particle size without excess heat or static.

There are three elements of a grinder that will determine the best outcome for a grinder: burr size, burr shape and motor power.

- **Burr Size** is what is used to explain the difference between grinders. The larger the burr size, the more cutting area available. A greater diameter burr means that for any quantity of beans, there will be fewer rotations of the burr set to grind them thoroughly, which leads to a faster dose of ground coffee. The more rapid the dose, the less chance for static electricity to build between the grinds, which leads to clumping, uneven distribution and channeling.
- **Burr Shape** often goes hand in hands with burr size, as conical burr grinders have far more cutting surface than a flat burr for the same given diameter. Burr shape is a personal preference. Conical burr grinders can create more “fines” than flat burr grinders. “Fines” are smaller coffee particles that dissolve more quickly in the cup, bringing out the lighter, more floral flavors. The flat burr grinders tend to have a more uniform particle size which allows the coffee particles to extract at a more consistent rate. This absorption allows for a more balanced, traditional type of espresso.
- **Motor Size** will determine the power of the grinder. The bigger the motor means it will have more power and make better espresso.



<https://clivecoffee.com/blogs/learn/what-makes-a-grinder-great>

Cold Brew Coffee, or cold brew, is coffee made by steeping ground coffee in water for several hours (usually 12 to 18 hours) then straining out the grounds and chilling it before serving it as-is, over ice, or diluted with water. Like other coffee, additional add-ins like milk, cream flavoring, and sugar are used.

There are two brewing methods for cold brew coffee.

- The first style is called immersion brewing. Immersion is the process of placing coffee grounds in water and letting them steep for a period of time. Coffee solubles are slowly extracted by the water over 12 to 24 hours and then the grounds are filtered out to create the coffee.

- The second is a drip process that also takes several hours. The drip process separates the cold water from the coffee grounds completely. This technique requires a cold drip apparatus or drip tower that allows the iced water to slowly drip over freshly ground coffee. The ground coffee absorbs the water, which then drops into a separate container at the bottom of the tower. Cold drip coffee is usually served over ice as an espresso-sized shot.

Cold brew coffee is not done in the refrigerator. Cold temperatures actually slow down the extraction process. If done in the refrigerator, it will taste weak by comparison with one that is steeped for the same amount of time at room temperature.

Benefits:

- Easy to make
- Stays fresh for several days
- Less acidic and tastes less bitter than conventionally brewed coffee
- The strength can be adjusted between a concentrated or diluted brew
- The immersion method can be done with a jar you have at home or you can buy a special cold coffee brewer

To keep in mind:

- Long steeping time
- Need to plan ahead of time for your coffee

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Carry-On Luggage

CARRY ON LUGGAGE

4-H Consumer Decision Making
Study Guide



Carry-on Luggage and Personal Item Bags

Heading out on a trip? Looking to purchase luggage that meets all airline guidelines? There are lots of items to choose from. With high demands on luggage comes higher competition, which means innovation, creativity and lots of choices. To ensure that you get from point A to point B smoothly, choosing the best carry-on luggage will make travel less stressful. Be prepared by knowing the airline guidelines and be knowledgeable of available options.

Carry-on bags are convenient for air travel because it avoids the cost and hassle of checking a bag. The golden rule is that the bag must either fit under the seat or in the overhead bin. For domestic flights, your carry-on can be no larger than 22 inches high by 14 inches wide by 9 inches deep. (The maximum linear size is 45 inches, but none of the dimensions can exceed the measurements above.)

Measure the height of your luggage from the floor to the top of the handle in its lowered position — but even rule-abiding luggage is not a guarantee that your bags will not be relegated to the plane's underbelly, because the flight crew can impose further restrictions even after boarding has begun. Most airlines do not have a weight limit for carry-on luggage, and if they do most do not actually weigh carry-on bags. The exception is for small commuter planes.



Figure 1. Airline carry-on rules
Consumerreports.com



Figure 2 Sample Personal Item
<https://thewirecutter.com/guides/best-personal-item-carry-ons/>

Personal item bags must fit underneath the seat in front of you on the plane. This type of bag can include a backpack, laptop bag, tote bag, brief case or camera bag. But to get the most out your personal item, it is beneficial to buy a bag specifically for this purpose. For U.S. domestic flights, the measurement rules range from 18 X 8 X 14 inches to 17 X 9 X 10 inches, but there is no standard size for these bags. The size also varies based on the location of the seat on the same aircraft. A growing number of airlines offer a lowest-class base-price that only includes one personal item. A few items that are important when looking to purchase a personal item bag for air travel includes durability, organization and multiple carrying options.

When purchasing a new carry-on or personal item, it would be beneficial to look at one of the sites that includes the sizes and limits for multiple airlines. One such site is:
<https://www.smartertravel.com/personal-item-vs-carry-on/>.

Comparing Transportation Security Administration (TSA) vs. the Airlines

The airline will determine how large or heavy bags may be to be able to board a flight. TSA does not enforce any rules regarding luggage size and weight; therefore, just because it makes it through security does not mean it will make it on the plane. The job of TSA is to screen the contents of the luggage, not to approve or reject the luggage itself. All checked bags are subject to screening and TSA agent may be required to cut off any non-TSA-approved locks. TSA has collaborated with many companies to make travel locks that can be opened by a TSA master key. At TSA security check points, passengers are required to remove any electronic device larger than a cellphone from their carry-on. TSA encourages travelers to pack their electronics in

security-checkpoint-friendly bags or cases. These bags have dedicated compartments that hold laptops or tablets, which zip open to lay flat on the X-ray conveyor belt. These compartments do not have metal zippers or pockets that block the scanner's view of the items within.

The Anatomy of a Bag

Every bag comes with its own pros and cons. Take time prior to purchasing a bag to determine what your needs are and find the best travel bag that meets those needs.

Soft-Sided or Hard-Sided

Soft-Sided luggage is usually made of a woven nylon fabric, such as Cordura or ballistic nylon, which are designed for maximum durability and abrasion resistant. If you select a suitcase made from ripstop nylon, or "parachute" material, make sure that it is a high-denier fabric, which means that it is heavier.

Pros: Lightweight and can conform into tight spaces

Cons: Not as protective as hard-sided suitcases and is vulnerable to ripping

Hard-Sided Luggage

Hard-sided luggage is made from high-tech plastics, such as ABS (acrylonitrile-butadiene-styrene) and polycarbonate, which are lightweight and durable. ABS is the lighter of the two, but polycarbonate is more durable. Hard-sided luggage is usually designed like a clamshell, which features a 50/50 split, allowing you to pack an equal amount on each side.

Pros: Protects breakable contents and can be stacked

Cons: Scratch and scuff easily; No outside pockets

Pro/Con: Limited amount of space; Helps avoid overpacking

Wheels or No Wheels?

No Wheels

There are a few occasions where "no wheels" luggage proves to be the best choice.

Pros: Ensures maximum interior space and traveling to locations where wheels are difficult to manage due to uneven surfaces

Cons: Can be heavy and burdensome to carry

Two-wheel luggage

These are called "rollers" since they utilize the same type of wheels that are found on in-line skates, which only roll forward and backward, not side-to-side. This requires the suitcase to be rolled behind you as you pull it.

Pros: Wheels are recessed, which protects them — two-wheelers are better for clearing curbs.

Cons: Can be hard to drag a two-wheel bag in a crowded space. Recessed wheels take up interior storage space.

Four-Wheel Luggage

These have wheels that swivel 360 degrees and are known as “spinners.” They can either be pushed or pulled.

Pros: Easy to navigate in tight spaces. Large or heavy suitcases are easier to manage on four wheels and are ergonomically better for shoulders when maneuvering them.

Cons: External mounted wheels are more likely to break off. According to experts, the wheels attached with screws are more secure than those with rivets. Carry-ons with spinners may have less room inside since the maximum allowable dimensions includes the wheels.

Zipper

There are two types of zippers: chain and coil. The chain zipper, which slides on two sets of interlocking teeth, can be made of metal or plastic. A chain zipper is much stronger than a coil zipper, which has slides on two parallel coils that is usually made of polyester. A “YKKK” zipper is widely believed in the industry to be the most reliable zipper on the market.

Handles

For maximum comfort, look for an adjustable-length and soft-grip handle. Many travelers use the two-post handle system because of its ability to piggyback a smaller bag.

Compartments

The number, size, and configuration of compartments can be an important consideration.

Weight

Consider the weight of your empty suitcase. For airline travel, most of the weight you lug around should be your belongings and not the bag.

Smart Features

Luggage now includes built-in electronics to help you stay connected. Some of the new “connected” suitcases help you know where it is, how much it weighs, and control who can access it by virtue of such functions as location tracking, built-in digital scales, digital locks and fingerprint recognition. (Federal airline safety rules prohibit lithium-ion batteries in checked bags, so you need to look for a bag that has the option to remove them or “pop-out” batteries. Pack the battery in your carry-on with the terminal contacts covered to prevent short circuits.)

Locks

For domestic travel within the United States, luggage locks have to be TSA-compliant, which means that security agents can use a universal master key to open your lock without breaking it. If you are buying an aftermarket lock, check the packaging to see if it is TSA-compliant.

Shopping Tips

Measure it Yourself

Measure the dimensions yourself and make sure that they account for all parts of the bag, including wheels, outer pouches and handles. Do not trust the labels or tags that proclaim, “official carry-on size luggage.”

Check the Interior Capacity

Many manufacturers do not disclose the interior volume. Look for features that maximize the interior space if that is what you need.

- Squared edges vs. curved corners
- Integrated outer compartments
- No wheels or handles (this opens every inch of interior space)

Warranty

If you want to keep your bag for a long time, get one with a manufacturer’s warranty. A lifetime warranty to repair or replace the bag is, of course, the best option.

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Dental Products

Toothbrushes and Dental Floss

2023

Dental Products

FCS CONSUMER DECISION MAKING STUDY GUIDE



TOOTHBRUSHES AND FLOSS

Brushing your teeth is a vital part of a daily routine that our parents teach us from a young age. But there's one lesson many of us have yet to learn from our parents or dentists: how to choose the right toothbrush.

Have you ever stopped to think about how to choose the best toothbrush? It is such an everyday item that most people have not. They either use the toothbrush their dentist provided or select one based on color or price. Every store has many different toothbrush options, and it can be overwhelming. It is essential to consider the most important factors before choosing a toothbrush to ensure good dental health.

While brushing correctly daily is the most important consideration, your toothbrush matters. New toothbrushes have been shown to remove 30% more plaque than older ones. Dentists recommend purchasing a new toothbrush or replacing the brush head on an electric toothbrush every three months or when the bristles show wear to maintain good oral hygiene and dental care. Always look for specific features best suited to your unique dental needs and dentist recommendations.

Manual or Electric: Which One Should I Use?

Manual toothbrushes have been on the market for years, but electric toothbrushes are increasing in popularity. The good news is it doesn't matter which type of toothbrush you use; as long as you brush your teeth effectively twice a day for two minutes using fluoride toothpaste, the effect on your oral health is the same.

Electric and manual toothbrushes each have multiple benefits. As long as the American Dental Association (ADA) has placed the seal of approval on the toothbrush, it is safe and effective.

Electric Toothbrushes

Electric toothbrushes can be powered by a rechargeable or removable battery that, when turned on, has rotating, moving, or vibrating bristles that clean the plaque as you move the toothbrush across your teeth and gum line. The vibrations allow for micro-movements as you move the brush through the mouth.

Electric toothbrushes clean teeth and gums much better than manual toothbrushes, according to a study by the



Oral Health Foundation. Scientists found that people who use an electric toothbrush have healthier gums, less tooth decay, and keep their teeth longer than those who use a manual toothbrush. The following factors should be considered if you are considering an electric toothbrush.

Types of Electric Toothbrushes:



- **Oscillating rotary toothbrushes.** These toothbrushes have small circular heads that rotate back and forth to clean each tooth. Some models combine this rotating feature with vibrating and pulsing to help dislodge more plaque. Studies have indicated that oscillating toothbrushes are the most effective at removing plaque.
- **Sonic toothbrushes.** Sonic toothbrushes have vibrating brush heads that move bristles side-to-side at high speeds. To be classified as a sonic toothbrush, the vibration has to be fast enough to produce an audible hum. Sonic toothbrushes today offer frequencies up to over 50,000 movements per minute.
- **Ultrasonic toothbrushes.** Instead of relying on physical motion to clean your teeth, ultrasonic

toothbrushes use a high frequency of vibration called ultrasound to remove plaque and food debris.

Ultrasound generates waves at a frequency beyond human hearing, and existing ultrasonic toothbrushes use operating frequencies from 20 kHz up to 10 MHz, according to Dentistry Journal. Though ultrasonic brushes can break up plaque without movement, most models also provide a sonic vibration to remove plaque and food debris remnants further.

Things to Consider Before Purchasing:

1 Cost

Electric toothbrushes are more expensive than manual ones and range in price from \$25 for a model with replaceable batteries to more than \$250 for a model with rechargeable lithium-ion batteries, multiple brushing modes, Bluetooth connectivity, and other features. In addition to the initial expense of an electric toothbrush, you will need to replace the removable toothbrush head as often as you replace your manual toothbrush.

Toothbrush heads range in price from \$5 to \$30, depending on the brand and number in the pack. Not all stores carry the same brand, so you might have issues finding the head to match your toothbrush, especially when you travel.

2 Bristle Stiffness

When a toothbrush is labeled "extra soft," "soft," "medium," or "hard," this relates to bristle stiffness. The ADA advises brushing with soft bristles because stiff bristles can damage and remove enamel and root surfaces.

3 Timer

If you're thinking about an electric toothbrush, one feature to consider is a 2-minute timer. According to the ADA, most people brush for an average of only 45 seconds, so a timer may encourage you to brush longer. Many newer toothbrushes include a timer to help you make sure that you are brushing your teeth as long as you should be.

You probably know that you should brush your teeth for at least 2 minutes, but did you know that the average time most people brush their teeth is less than a minute? This could be a massive advantage if you are one of those people. Some brushes will buzz and beep every 30 seconds to remind you to spend equal time brushing all quadrants of your mouth.

4 Cleaning Modes

Toothbrushes are equipped with a variety of modes that meet every need. Modes will vary per toothbrush, with the default mode being Clean. Other brushing modes that may be found on electric toothbrushes are:

- **Deep Clean:** allows extra time to work on trouble spots
- **Whitening:** works to remove surface stains
- **Polish:** smooths the surface layer of your teeth
- **Gum Care:** Cleans and massages your gums. Best for those with sore, inflamed, or bleeding gums.
- **Sensitive:** gentle vibrations perfect for sensitive teeth
- **Tongue Care:** cleans the tongue

The extra modes allow for customization of your brushing experience to best suit your needs. It is better to have a toothbrush with one cleaning mode that you use regularly and correctly than to have a brush with multiple modes you may not use. The evidence that extra modes significantly benefit dental health care is limited.



5 Pressure Sensor

Placing too much pressure on your teeth doesn't help remove more plaque; instead, you are probably harming your teeth and irritating your gums. A pressure sensor will let you know you are using too much pressure and will use a light indicator, buzzer, or beeper as an indicator. Some models will even slow the rotating speed if you brush too hard.

6 Range of Motion

Older adults, especially those with arthritis, might not have the dexterity to maneuver a manual toothbrush, but an electric toothbrush will do the work for them and have a more oversized handle, making them much easier to hold.

Kids often have an easier time using an electric toothbrush as well. Some toothbrushes, designed explicitly for kids, will play music or connect to timer apps to encourage longer brushing sessions.

An electric toothbrush can also be a plus for anyone with braces. Since the brush head moves faster, it's easier to dislodge any trapped food or bacteria without any complicated maneuvers. Brush heads may be purchased that are designed specifically for people with braces.

7 Battery Life

The life of an electric toothbrush depends on how often it's used and the type of battery in the toothbrush.

- **Alkaline Batteries:** Depending on the battery, these should last 4-6 weeks.
- **NiMH Rechargeable Batteries:** Can last up to two weeks on a full charge.
- **Lithium-Ion Batteries:** Full charge can last more than two weeks.

Using your electric toothbrush twice a day for 2 minutes each, the rechargeable battery will last about three years before it will need replacing. If you use it once daily for the same amount of time, the battery should last about five years before needing replacement. So, the average life span is between three to five years before they stop working or require a replacement.

Some brushes will last longer, depending on the care and use of the toothbrush. Keeping the toothbrush off the charging stand at night and only charging when the battery light indicates will save electricity and maximize operational life.

Most electric toothbrushes offer a one to a two-year warranty. In most cases, the battery

is covered as part of the warranty, but check the specific terms for your toothbrush.

Choosing an electric toothbrush comes down to one factor: likability. The best toothbrush for you is the one you're most likely to use. If you like your toothbrush, you're more likely to brush for two minutes and clean all the tooth surfaces, as dental professionals recommend. Before purchasing an electric toothbrush, factor in your oral health, lifestyle, and budget, and if you're still unsure, consult your dental professional for recommendations.

Manual Toothbrush



A manual toothbrush is a hand-held brush made of hard plastic with bristles for cleaning the gums and between teeth. A manual toothbrush has no moving parts and is not powered by anything. When purchasing a manual toothbrush, there are two factors to consider. The first is a personal preference. The best manual toothbrush is the one you will regularly use that does not harm your teeth or gums. The second factor to consider is which toothbrush removes germs and bacteria effectively. If the toothbrush is the wrong size or has damaging bristles, it will do more harm to your teeth than good. Not all manual brushes are created the same. Ensure that the brand and type you buy will help your oral health.

Some Things To Look For Are:

Cost

Manual toothbrushes are less expensive than electric ones and more portable. It is easy to bring a manual toothbrush to the office, carry one in your purse, or for traveling. The average manual toothbrush costs less than \$10 and is widely available at most pharmacies or grocery stores. A manual toothbrush should be replaced every three months, when the bristles show wear, or when you have been ill.

Size

A toothbrush with a smaller head will help clean hard-to-reach back teeth. A standard-size toothbrush with a 1/2 to a 1-inch head works best for most people, but those with a larger mouth might prefer a larger head for a better fit.

The toothbrush should have an ergonomic handle long enough to hold it comfortably in your hand. If you have dexterity issues, a thicker handle will make brushing your teeth easier.

Bristles

The American Dental Association (ADA) recommends soft-bristle toothbrushes with angled or multi-layer bristles, allowing the toothbrush to lift plaque and bacteria off the tooth without harming your teeth. Medium and hard bristles can damage your teeth and gums while brushing, and this is especially true if you brush too hard, leading to abrasion, loss of enamel, and gum irritation.

Once you figure out the type of bristles you are working with, there are a few other questions you want to answer before making a decision:

- Are you focusing on polishing and whitening the teeth?
- Do you have sensitive teeth and gums?
- Are you looking for an eco-friendly option?
- Do you wear braces or other orthodontic appliances?
- Do you need a Tongue and Cheek Cleaner on the toothbrush?
- Do you want a bristle indicator to know when the toothbrush should be replaced?

Flossing

Dental floss is a cord of thin filaments that removes food and plaque between teeth or places a toothbrush cannot reach. The American Dental Association recommends flossing daily to prevent cavities, tooth decay, and gum disease.

How often should you floss? Taking your time and flossing correctly is more important than flossing often. Dentists recommend flossing at least once a day. Flossing after every meal removes any debris stuck between your teeth and prevents plaque buildup. There is no such thing as too much flossing - unless you do it incorrectly and apply too much pressure, which can damage your gums.

There are many types of dental floss, and there is no one right floss that will suit everyone. Some people have more than one type of dental floss for different scenarios. Let's explore some common types of dental floss to enable you to choose the right kind.



Types of Dental Floss

- **Unwaxed floss** is one of the most common floss types used. It's constructed of a nylon material crafted by twisting multiple strands together. Unwaxed floss comes with no artificial flavoring, which means that this type of floss is free from chemicals. This floss is perfect for those with small gaps between their teeth, as unwaxed floss is much thinner
- **Waxed floss** is constructed similarly to unwaxed floss, with a waxed layer applied. This waxed layer strengthens the floss, so it doesn't shred or break on the user. In addition, it allows the floss to glide better between teeth than unwaxed floss. Due to the added layer of wax to this type of dental floss, it's thicker than unwaxed floss. This makes it more challenging to get into small gaps. The waxy nature of the floss also makes it harder to grip for the average user.
- **Flavored and Unflavored:** Any floss may be flavored. Flavored floss can make the process of cleaning between your teeth more enjoyable. With flavors ranging from cinnamon, mint, and peppermint to coconut and strawberry, it can make your breath smell fresher and cleaner and incentivize kids to floss their teeth. Choosing a flavored or unflavored floss is a personal preference based on an individual needs.
- **PTFE Floss (Polytetrafluorethylene Floss):** PTFE floss is made from the same material as Gore-Tech fabric. The floss is very strong, slippery, and will not shred. People with very tight spaces between their teeth prefer this floss. This floss does have Teflon in it and has caused health concerns, so dentists do not recommend extended use of this product.
- **Dental Tape:** Similar to regular dental floss but thicker. Dental tape is perfect for people with wide gaps between teeth, requiring thicker floss. This floss is not ideal for most people because it can be challenging to get between teeth.
- **Biodegradable and natural floss:** Patients can opt for locally manufactured all-natural flosses made from biodegradable silk or other raw materials. Products with threads infused in tea tree oil or other natural antimicrobial oils exist.
- **Superfloss:** The floss is used by patients with traditional braces, bonded wire retainers, and bridges. Each piece of Superfloss has three different parts—a stiff end for easy threading, a thicker spongy section, and a "regular" floss section. The threader allows the user to easily maneuver the floss under bridges and other dental fixtures to remove debris.

- **Disposable Flossers:** Floss picks hold the floss for you, so you only have to use one hand. Most also have a dental pick at the opposite end. Floss picks are convenient and comfortable but are not as effective as regular floss because they do not allow you to reach all angles and clean your teeth effectively. Disposable flossers are ideal for people with limited dexterity who have difficulty manipulating the floss around the teeth.
- **Water Flossers** - Water flossers are hand-held cleaning devices that shoot thin streams of water between your teeth or gums. The water is pressurized, making removing plaque and food buildup easy. A water flosser is easy to use and does not have any waste. It works well for individuals with dental work in the mouth and those with difficulty flossing. According to research published by Dentistry Journal, a water flosser's pulsation motion can reduce gum inflammation and bleeding while cleaning this area gently. A water flosser is challenging outside the home because it relies on electricity and water.

American Dental Association (ADA)

Whichever dental products you purchase, look for the ADA seal. The American Dental Association Seal of Acceptance, has been the leading mark of dental product safety and efficacy for 90 years. A dental product earns the ADA Seal when the manufacturer provides scientific evidence demonstrating safety and effectiveness in removing plaque and reducing gingivitis.

Ultimately, the best dental products are the ones you'll use regularly and adequately. All dental products are useless if you don't use them, so pick the ones that work best for you. Contact a professional with any questions or concerns about dental products or your dental health.



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Event Venues



Selecting an Event Venue

When planning an in-person event, one of the most important decisions you'll make is where to host it. There are many factors to consider when choosing a venue, from the size of the space and the event date to the cost.

This guide covers the essentials that should be considered when choosing the perfect venue to host your special occasion. Whether you are planning a party, prom, club or business conference, festival, or anything in between, use this helpful advice to find the perfect venue for your next event.

Location

There are a few factors to consider when narrowing down your choices, but choosing the right location is key to a successful event.

Before you start reaching out to venues, take some time to figure out what's important to you and your guests. If proximity to major transportation hubs is a priority, then you'll want to look for venues in or near city centers. If easy parking is a must-have, then suburban areas might be a better fit for you.

When deciding which type of venue will work best for your event, there are a few questions you need to ask yourself, such as:

- What is the purpose of the event?
- What type of event is it?
- What type of atmosphere am I trying to create? Can I create the theme, ambiance or mood that I want in this venue?

- How many attendees am I expecting?
- Do I need a seated or a standing venue?
- What is the layout of the venue? Will it work for your event?
- What are the technology needs for the event?

Accessibility

A great venue must be accessible to your attendees. If they're not easily able to find it and enter, you could end up with an empty room or space. First, make sure you make it clear on when and how to attend. Second, you may want to consider your transportation options if your guests are coming from far away. Good public transportation will make it easier for them to get there, which means they are more likely to attend. Next, have clear signage to and at your location. Consider if the location/setting is indoor/outdoor, formal/casual, closer or further to a specific location.

Also consider if the location is easy to find and accessible for your guests. (For example, some outdoor locations may require a short walk).

Capacity

When choosing an ideal place or spot for an event, you should consider how many attendees the venue can accommodate. There should be adequate space for open mingling. Technically, it should have enough space for attendees and all the equipment you will be using. Attendees include the guests, speakers, caterers, performers, support personnel, volunteers, and anyone who will have a part in your event.

If you have more attendees than the venue can accommodate, things could get chaotic. If the venue is too small, you will not be able to accommodate everyone who wants to participate. On the other hand, you can pay for extra space to fit more people but this will equal extra costs. The maximum occupancy is usually set based on fire and safety codes, so it is important not to exceed this amount.

A larger space is ideal, but if it is too big, it may seem impersonal. It is also more expensive. At the same time, a space that's too small can make attendees feel cramped or restricted and less comfortable or safe. An ideal venue should be large enough to accommodate everyone, but not so big that it fails to create the atmosphere you're hoping to achieve.

Also, consider any special equipment you might need in the space, such as a stage, speakers, or special lighting. The venue should accommodate anything you require to carry out your event successfully.

Be certain to make note of where guests will register or check-in and where the emergency exits are located.

Parking

Choose a venue with ample parking and make sure the attendees can access the space easily and safely. There is nothing worse than when guests arrive at a venue only to find that there is no parking or the parking is full.

The last thing you want is attendees having to look for parking elsewhere, which can take time and increase the chances of them arriving late or forgoing the event entirely. Therefore, make sure there are more parking spaces than you expect you will need, as it is better to have too many than too few.

Budget

It's no secret that planning an event can be expensive. Between catering, decorations, and renting a venue, costs can add up quickly. That's why it's important to choose a venue you can afford.

Here are some tips for finding an affordable venue for an event:

- Consider hosting your event within your organization. For example, are you part of a school district where a school would be a good option to host your event?
- Check out local community centers or church halls. Often, these facilities offer lower rental rates than a full-service venue.
- Consider sharing your venue with another group. If there are two events being held at the same time, your rental rates will go down. Plus, if you are hosting an event for a charitable cause, sharing the space with another group can help raise awareness.
- Ask about discounts. If you are renting the venue during off-hours, inquire about a possible discount.

Function Spaces and Services Offered

It is important to find out what services a venue can offer. These can include catering, live entertainment, room set-up, high-speed internet, clean-up, and more. If you need a service that the venue does not provide, it is important to find out if the venue will charge for the service if you hire it separately. Also, check to see what function spaces are available, whether it be outdoor space, indoor space, or both, and if the venue provides tables, chairs, or any other items you might need for your event.

Questions you should ask include:

- Does this venue have good acoustics and sound?
- What type of insurance is necessary and who is expected to provide it?
- Do you offer any additional services that might interest me? (such as a conference center with added technology, etc.)
- If the venue is providing food and beverages, what is the minimum number of guests for which you will be charged?
- Can you give us sample menus and a quotation?
- Can we experience a food tasting?
- Can you accommodate vegetarians or other special dietary requirements?
- Do you offer menus according to themes?
- Does the venue have a wedding or alcohol license?
- If the venue is not providing food and beverages, is there a kitchen used by you and your team?
- Does the venue have any partnerships with food vendors?
- Are the restrooms easily accessible?
- Is security offered and/or necessary?
- Will a cleaning crew make sure the venue is clean before the event and clean up afterwards?
- Does the have adequate tables, chairs, linens, silverware, etc.?
- Are there sufficient audio and video capabilities?
- Is there a stage available?
- Are there restrictions in place regarding noise or photography?
- Is there a music curfew around the venue?
- Are there any extra fees such as corkage fee, overtime fee or cancellation fee?

- If the event is planned outdoors, what is the rain plan in case of inclement weather?

Event Date and Time

Before you rush to book a venue, check availability. You may find a perfect event space, but it may be reserved on the date you need it. It is best to check availability months before the actual date of the event, just in case the date is already booked.

If you are keen about a particular place or space and it's available on the date of your event, make sure to book it as far in advance as possible. This way, you don't have to worry about the venue and you can focus your attention on other things.

Venue Experience

It's important to look at references for prospective venues before making a final decision. You can get references from past clients or even ask your friends, family, and co-workers if they have ever attended any events there.

You could also check out their website, if they have one, to see pictures or attendee reviews and ratings of any recent events that have been hosted there. This can give you a good idea of what the venue has to offer and what you can expect from it.

If the place has a restaurant, for example, you'll know if their food is well received or if they are known for being overpriced. If the venue is outside, you'll know what amenities it has and if its facilities are well maintained.

By seeing what other events have been hosted there, you can see if the venue's description matches what they actually have to offer.

Furthermore, you might want to ask if they have hosted events similar to what you are planning on hosting. Event venues often hold different types of events and you want to make sure that it has experience with hosting your type of event.

Tips for Booking an Event Venue

Are you still unsure how to choose the best venue for your event? You'll find a couple of useful tips below:

- Outdoors or indoors? If you are looking for a place that will hold at least 100 people, then it is best to stick with an indoor venue. It has better amenities and is more secure. However, outdoor venues are cheaper and offer better scenery for your photos.
- Book early. In-person events are usually planned way in advance, so be sure to book a spot at least six months ahead of your event. This will give you ample time to set up for it.
- Do your research on the venue's policies beforehand. While some venues are flexible with their rules, others are strict. Be sure to read over the contract and ask for a few changes if you are not comfortable accepting all their terms.
- Practice your negotiating skills. If you don't like the venue's terms, then negotiate. Add specifics to why you are not comfortable with their terms and ask them if they can change them for you. Remember that this is all about getting the best deal for yourself too.
- Book according to your needs. If you are hosting a small event of 20-30 people, then it's more efficient to book a small space than a large space. If you are hosting an event of more than 100 people, then it's best to book a large space.
- Alternative options. If you cannot find a suitable venue that agrees with your terms and conditions, then get creative. Loop in your networks to see what options you have available to you.

Event App or Website

It is also helpful if you can provide attendees with an event app or website. Today, it is more common than ever for events to have a website or an event app. These are used more frequently for large events because they enhance event experiences. Using one or both can help your attendees save time when searching for event information, such as schedules and maps.

Wrapping Up

Choosing the right venue for an event can be a lot of work, but it's well worth it to pick the right spot. Plan ahead and plan well, and do your research thoroughly. Don't hesitate to think outside the box when it comes to finding a place to hold your next event, big or small. Compare different venues to get the best possible deal, but make sure the place you choose is flexible and suitable for your event needs.

Sources: Whova; Event Solutions; J. Shay; Tagvenue; Sched; Superevent

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Fast Food

Fast Food



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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.

Instead of...	Try...
Danish	Small bagel
Jumbo cheeseburger	Grilled chicken, sliced meats or even a regular 2 oz. hamburger on a bun with lettuce, tomato and onion
Fried chicken or tacos	Grilled chicken or salad bar (but watch out for the high-calorie dressing and ingredients)
French fries	Baked potato with vegetables or low-fat or fat-free sour cream topping

Potato chips	Pretzels, baked potato chips
Milkshake	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.)

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- Make Half Your Grains Whole
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- Make Better Beverage choices
- Enjoy Your Food, But Eat Less

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Fast Food Mobile Apps

Cost is a consideration when buying fast food and many these restaurants frequently offer specials, combos, or reduced price menus. Many fast food restaurants have mobile apps and offer deals exclusively through these apps. By consumers simply downloading an app to their devices, they can easily save money at their favorite restaurants. Consumers should be alert though of tactics that create target coupons for their favorite menu items to entice them to order more often and that apps collect user data. Be aware of the privacy policies of each app. Increasingly, loyalty programs and reward points are being used by more fast food mobile apps. These programs often offer exclusive discounts or even free menu items. These fast food deals may last for a limited time, so make sure you check the app's current promotions before you order. Here are some examples of offers that may be available to consumers through apps:

Restaurant	Sample Offer
Burger King	\$2 Whopper Wednesdays
Chick-fil-A	Chick-fil-A One members earn points for purchases.
Domino's Pizza	Any large specialty pizza for \$12.99
McDonald's	Free breakfast biscuit with minimum purchase of \$1
Popeye's	Free regular side, small drink or apple pie with email sign-up
Sonic	Half-off drinks and Slushies for app orders
Wendy's	\$2 off any Premium Combo

These apps often allow consumers to place orders ahead of time and can reduce the amount of time that people have to wait on their food. Consumers must be aware of additional fees that can be added to their meal cost by opting for delivery verses in-person pick-up. Fast food apps can offer their own delivery service in select markets, and many restaurants work with third-party food delivery apps like Postmates, UberEats, DoorDash, and Grubhub. When ordering fast food for delivery through third-party apps, consumers must also be aware of delays that may occur during delivery that could have impacts on the taste and quality of their meals as well as food safety if the food is not transported in a method that keeps it at the ideal temperature.

Lighting



Lighting

Consumer decisions about lighting have become more complicated in recent years. There are many things to consider when choosing lighting options for the home or workplace including the type of fixture available, the type of lighting needed, the amount of light needed, and the degree to which the choice is energy efficient.

Types of Fixtures

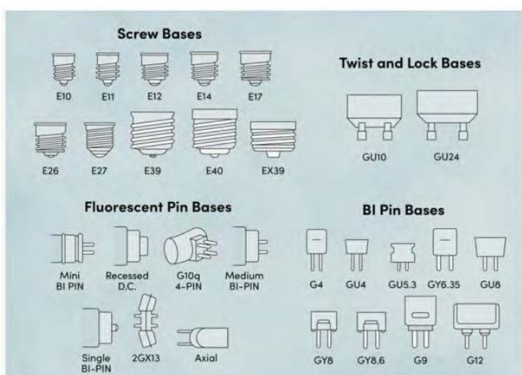
A *lighting fixture* is the part of a light that is attached to the wall, ceiling, or lamp (which is a portable fixture) that receives the light bulb or other lighting element. Light bulbs rely on fixtures to provide the necessary electricity to operate. The type of fixture available will dictate the choice of light bulb. There are a large variety of fixtures, and each accepts a different type of light bulb. It is important to know what the fixture accepts before purchasing a bulb for it.

A few of the many fixture types include ceiling fixtures, recessed fixtures, pendant lights, chandeliers, track lights, sconce fixtures, and floor and table lamps. Each of these fixture types will have different bulb requirements that include such things as base type and base size. The base of the bulb is the portion that fits into the fixture. The type of fitting and size of the bulb must match that of the fixture's receptacle.

Light Bulb Bases

Some of the many base types include screw base, pin base, twist and lock base, and bayonet base. The most common base for general use bulbs is the screw type base. There are three common base sizes in screw type bases. The most common being the medium base E26 (Edison 26mm) followed by the candelabra base E12 (Edison 12mm) and the least common being the intermediate base E17 (Edison 17mm).

Other base types may be specific to the fixture. For example, fluorescent tubes often have pin type bases, and the bayonet base is often used for landscape and automotive lighting.



Light Bulb Types

There are many types of light bulbs including:

Incandescent— a light bulb whose light is produced by the glow of a wire heated by an electric current.

Fluorescent— a tubular electric light having a coating of fluorescent material on its inner surface and containing mercury vapor. Bombardment of electrons from the cathode provide ultraviolet light which causes the material to emit visible light.

CFL (Compact Fluorescent Light Bulb)— a tightly coiled fluorescent bulb designed to fit into a standard household light fixture rather than a typical fluorescent fixture.

Halogen lamps— This bulb type has a tungsten filament sealed in a compact space that is filled with an inert gas and a small amount of halogen gas.

LED (Light emitting diode)— This bulb contains a semiconductor diode that emits light when voltage is applied to it.



How much energy does the light bulb use versus how much light energy it produces?

Lumens vs. Wattage

Wattage refers to the amount of energy used or required by the light bulb to produce light. Traditionally, as in the case of incandescent bulbs, a higher wattage indicates the production of more or brighter light. Light bulbs with a higher wattage are typically brighter than bulbs with a lower one. However, many LED bulbs have lower wattage than an incandescent bulb but produce more or brighter light.

Lumens refer to the amount of light energy produced or radiated. Similar to watts, the higher the lumen, the brighter the light. Using lumens to measure light output is much more accurate than wattage because of the difference in bulb types.





Be aware some light bulb types may be less available in the future.

Recent legislation

Legislation and concerns about energy and the environment from the Department of Energy (DOE) have led to manufacturing restrictions that have affected the availability of certain types of light bulbs.

This legislation is a move toward more energy-efficient light bulbs. The current legislation requires general use light bulbs to produce more light energy than they use. The current standard states that a general use bulb must produce 45 lumens per watt which exceeds the amount most incandescent bulbs can produce. Incandescent bulbs and halogens consume more energy than they produce and will eventually be phased out as they will no longer be manufactured. These bulbs are being replaced by LED light bulbs which easily meet the new DOE criterion.

Even more recent legislation is being proposed that will require general use bulbs to produce at least 120 lumens per watt and, if enacted, will phase out the manufacturing of CFLs (Compact Fluorescent Light bulbs) as those bulbs are unable to achieve that level of efficiency.

Efficiency	Least Most			
Bulb Type	 Standard	 Halogen	 CFL	 LED
450 Lumens	40W	29W	9W	6W
800 Lumens	60W	42W	14W	9W
1100 Lumens	75W	53W	18W	11W
1600 Lumens	100W	72W	23W	14W

Efficiency

The efficiency of a light bulb is determined by the ratio of lumens to wattage. Lower wattage and higher lumens indicate a more efficient bulb. To determine the specific efficiency of a light bulb, divide the number of lumens (light output) by the wattage required to power it.

Example: How efficient is a 60-watt standard incandescent bulb?

In order to find out, see the chart above.

Divide 800 lumens by 60 watts.

$800 \div 60 = 13.3\%$ efficient.

Next compare the 60W standard incandescent bulb to the 9-watt LED bulb.

Divide 800 lumens by 9 watts.

$800 \div 9 = 88.8\%$ efficient

The more efficient light bulbs save money in electricity and typically last longer.



ENERGY STAR Energy Star Certification

Energy Star is a designation and label given to consumer products when they meet energy efficiency standards set by the U.S. Environmental Protection Agency (EPA). ENERGY STAR is a voluntary program established in 1992 with the aim of helping businesses and individuals save money and protect our climate through superior energy efficiency.

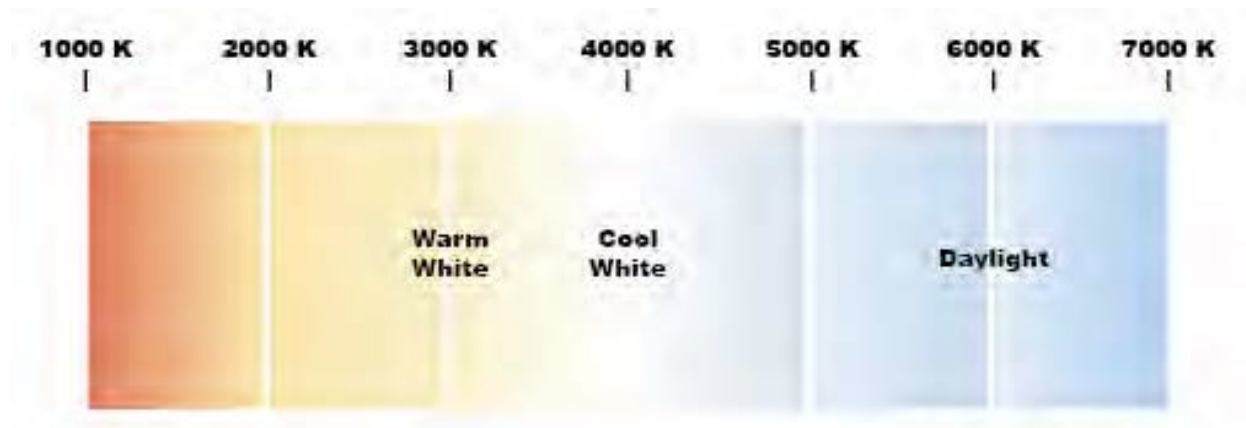
The ENERGY STAR label was established to:

- Reduce greenhouse gas emissions and other pollutants caused by the inefficient use of energy.
- Make it easy for consumers to identify and purchase energy-efficient products that offer savings on energy bills without sacrificing performance, features, and comfort.

Light bulbs that have this certification will have the Energy Star logo on the packaging to be easily identified as an energy efficient choice.

Color Temperature

Color temperature is a way to describe the light appearance provided by a light bulb and is not related to either lumens or wattage. The Kelvin color temperature scale is used to describe the way various light temperatures appear visually. Each bulb has a color temperature which is usually described on the packaging as anything from warm white to daylight. It is measured in degrees of Kelvin (K) on a scale from 1,000 to 10,000. Typically, Kelvin temperatures for commercial and residential lighting applications fall somewhere on a scale from 2000K (warm) to 6500K (daylight). The lower Kelvin temperature, the warmer the white light appears, while a higher Kelvin will appear cooler.



How much, how bright, how to determine what is needed for a room.

Lighting choices are highly dependent on the purpose of the lighting. Is the lighting for a work or study area? Or is it intended for a quieter area that is used for relaxation?

Determining the type, color, and amount or brightness of the lighting needed is an important part of the decision-making process.

Types of Lighting

Both the fixture and the bulb contribute to the type of lighting in the home or office. Purchasing decisions regarding lighting need to take purpose into account. Why and where is the light needed? There are four main types of lighting: ambient lighting, task lighting, accent lighting, and decorative lighting.

Ambient lighting is the general lighting that's used to evenly light up a room. This could be natural light from windows, or overhead lighting like chandeliers or track lighting. Providing a space with overall illumination and allowing you to see and move around safely, it's the foundation for any interior lighting scheme.

Placement options for ambient lighting:

- Every room in your home
- Towards the center of the room.
- Closer to the ceiling to diffuse light more effectively.

Task lighting is used to help with specific activities, like reading, cooking or studying. It's usually brighter than ambient lighting and directed towards where it's needed most. This type of lighting may come from a variety of sources, including desk or table lamps.

Placement options for task lighting:

- Study or office: Desk lamps
- Kitchen: Under cabinets

- Bedroom: Reading lamps
- Bathroom: Vanity lighting

Accent lighting is used to highlight specific features in a room, like entrances, plants, artworks or fireplaces. It can play an integral part in adding drama and character to a room.

Placement options for accent lighting:

- Highlight and draw attention to a feature such as artwork or plants.
- Highlight architectural elements.
- As decorative lighting.

Decorative lighting is used purely for aesthetic purposes, to add an extra touch of style. It can include lighting fixtures like wall sconces, chandeliers, or pendant lights.

Placement options for decorative lighting:

- In an entrance
- Over a dining room table
- In a living room

What color temperature?

Aside from the type of the light bulb itself, using Kelvin temperature can also help guide you in determining which fixture is right for each room. Different color temperatures are good for different types of lighting situations. After choosing the type of lighting needed, see the chart below to choose the color temperature appropriate to the space.

Color temperature	Description
Less than 2000K	A dim glow similar to candlelight; best for ambient illumination
2000K-3000K	A soft white glow, often a little yellow; best for living rooms, dining rooms, bedrooms, and outdoor spaces
3100K-4500K	A bright white light, best for kitchens, offices, workspaces, vanities, and other task-focused areas
4600K-6500K	A bright blue-white light, similar to daylight; best for display and work areas
6500K +	A bright bluish light often found in commercial settings; best for task lighting

How bright or how many lumens?

To understand how many lumens are needed for the room, first find the square footage of the room that needs lighting. To find the square footage, multiply the room's length by the width.

It is recommended that the light provides 20 lumens per square foot for most rooms. However, if you have dark rooms or dark wall paneling, the room may require 30 lumens per square foot. Remember, that the total number of lumens can be spread across a few different light fixtures throughout the room. One light fixture doesn't have to handle all the lumens required to light the space.

Example: How to determine the number of lumens needed for a room.

The room is a kitchen that measures 15 feet long by 15 feet wide.

Multiply 15ft x 15ft = 225 square feet.

This kitchen needs to be well-lit so from the chart below the choice would be 40 lumens per square foot.

40 lumens x 225 square feet = 9,000 lumens

Looking back to the efficiency chart, the 9-watt LED produces 1600 lumens.

If that bulb is chosen, 5-6 bulbs would be needed to provide the amount of light necessary for the kitchen. (Lumens needed 9,000 ÷ 1600 lumens provided by each bulb = 5.6)

Room	Lumens Recommended Per Square Foot
Living Rooms and Bedrooms	20
Hallways	10
Kitchens and Dining	30-40
Bathrooms	70-80

Conclusion

There are five main things to consider when choosing lighting:

- The fixture that is available.
- The energy efficiency of the light bulb.
- The type of lighting needed for the space.
- The number of lumens needed for the type of lighting and the size of the space.
- The color temperature of the light that works with the setting or the room.

Price is always a consideration for consumers as prices may vary considerably across manufacturers and merchandisers. Be sure to consider the various choices and purchasing options carefully before making a decision.

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Wearable Technology

Wearable Technology



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WHAT IS WEARABLE TECHNOLOGY?



Wearable technology describes any electronic device that consumers can wear on their body. “Wearables” have currently grown to include items ranging from smart watches to medical technology to jewelry to clothing.

Wearables can meet a variety of needs for consumers today and represent one of the largest growth areas for consumer electronics.

HOW DOES WEARABLE TECHNOLOGY WORK?

Wearable gear integrates the form and functions of multiple devices. Most of these work in a similar manner but some in a variety of options. Multiple sensors capture changes the wearer's position, temperature, etc. and translate them into data. Then, microprocessors extract, transform, and load data to a transmittable format. Finally, transmitters wirelessly send data to a local device or cloud storage for further processing and reporting.



GENERAL FACTORS TO CONSIDER BEFORE PURCHASING WEARABLE TECHNOLOGY

With so many brands offerings comparable wearable devices, choosing the right one takes careful research and planning. There are features to compare, different prices to consider, and product reviews to check. Before purchasing, you should consider the following factors:

PURPOSE

Before you purchase any wearable tech, it's important to consider why you want it. Do you want an easier way to track your health, fitness or sleep habits? Do you want a device that can help you stay safe or keep you in touch with others? Knowing the qualities that you must have from your purchase will help you narrow down the number of choices.

BUDGET

With more companies offering smart wearables, there are affordable and low-cost devices as well as new and innovative products available. Carefully compare the features you need in relation to the product price in order to get the best product that is within your budget.

CAPABILITIES

Most smart wearable devices come with basic activity and biometric tracking capabilities. However, other capabilities, such as heart rate tracking, movement sensing, GPS tracking, and blood pressure monitoring, are less universal. Some devices offer both Wi-Fi® and Bluetooth® connectivity, while some only offer one or the other. Wearable devices can be water-resistant, waterproof, or swim proof. The list of capabilities varies by device type. Knowing which ones are ideal for your activities and needs is critical to your purchase decision.

USER EXPERIENCE

If a wearable device is uncomfortable to wear, the potential health benefits you can enjoy are undermined. Likewise, if the wearable device's user interface is frustrating or hard to navigate, you may stop using your device altogether. To find out this information, check out consumer reviews of the product.

BATTERY LIFE

The battery life of wearables varies greatly ranging from days, weeks, or even months on a single charge. In some devices, longer battery life comes with tradeoffs including limited capabilities. Consumers should consider the length of battery life, the type of charger needed, amount of time needed to charge the device and emergency communication capability with minimal or empty charge. Wearables should also be energy-efficient.

PERSONAL STYLE

For some people, clunky devices or headsets are the image that comes to mind when they think about wearable technology. While many brands specialize in offering affordable devices that prioritize practicality over looks, some companies do pay more attention to the style and fashion aspects of wearable technology. Today, wearable consumers have many choices, with tech devices that offer state-of-the-art technology along with fashion.

COMPATIBILITY

Consider if your new wearable will take the place of any of your existing devices and how it integrates and works with other devices you already own. Even if it is lightweight and convenient, another wearable is another device to carry and keep track of. Considering how your new wearable affects your existing network of devices results in better planning and results in a better buying decision.

PRODUCT REVIEWS

Before you make the final decision on any device, reading reviews assures about its reliability and effectiveness, as well as answers any last-minute questions you might have. Product reviews from tech experts are helpful to learn more about the product's capabilities and specifications, while consumer reviews can reveal any potential issues or annoyances with the user experience. Reviews are especially important to consider if you are buying from a less reputable, new, or unknown brand to be certain the advertised experience is delivered.

WHAT ARE EXAMPLES OF WEARABLE TECHNOLOGY?

Here are the most common current types of wearable technology:

- **Fitness trackers:** Smart wearable that can assist in developing healthier habits by giving a pat on your back. Monitors your heart rates and your movements and keeps track of your calorie burns and step counts and more.
- **Smart watches:** Connected watches that let the wearer answer phone calls, track fitness, track sleep, and much more.
- **Smart jewelry:** Tech jewelry including rings, bracelets, pins, charms, and necklaces that offer the functions of a smart watch or various special functions such as monitoring stress levels.
- **Advanced medical tech:** Includes a wide range of devices including wearable electrocardiograms (ECGs) that send your heart rhythm to your cardiologist, glucose monitors, and other lifesaving on-body technology.
- **Head-Mounted Displays (HMDs) and Smart Glasses:** Including VR headsets and other displays that create a more immersive gaming or web-surfing experience and wearable devices that utilize augmented reality to add digital displays and quick actions including video capability to glasses.
- **Action cameras:** Small, rugged, waterproof digital cameras designed for capturing immersive action shots that allow you to jump right in and become part of the adventure.
- **Wireless Headphones or Earbuds:** High-tech over-the-ear or in-ear devices that do more than transmit audio and sync up with your phone, tablet, computer, tv or other Bluetooth-enabled devices.

While there are similar criteria to consider across all types of wearable technology, each category has its own set of features and functionalities for consumers to know about.

WHAT SHOULD YOU LOOK FOR WHEN PURCHASING WEARABLE TECHNOLOGY?

FITNESS TRACKERS

Fitness trackers are some of the original technology in the industry. The earliest trackers were pedometers which had the main feature of only tracking movements and steps. Pedometers have historically been the most widely available and mass-produced type of wearable technology.

Fitness tracking wristbands are a more modern and complex device that built upon the success of pedometers. They measure and record data related to the wearer's physical state and performance, such as heart rate, speed and distance traveled, sleep patterns, and more. Consider any extra costs for internet, location, etc., and ease of use of a mobile app and syncing.

Features: detailed understanding of workout sessions; tracks heart rate, sleep cycle, blood oxygen saturation, and calories burned; detailed reviews of particular exercises or sports; hydration monitor; steps; distance traveled; GPS; compass; accelerometer; temperature; media player; and more.

Consider:

- o Uses
- o How to access/share data
- o Durability
- o Accessories
- o Your lifestyle
- o Cost
- o Charging method
- o Water resistance



WHAT SHOULD YOU LOOK FOR WHEN PURCHASING WEARABLE TECHNOLOGY?

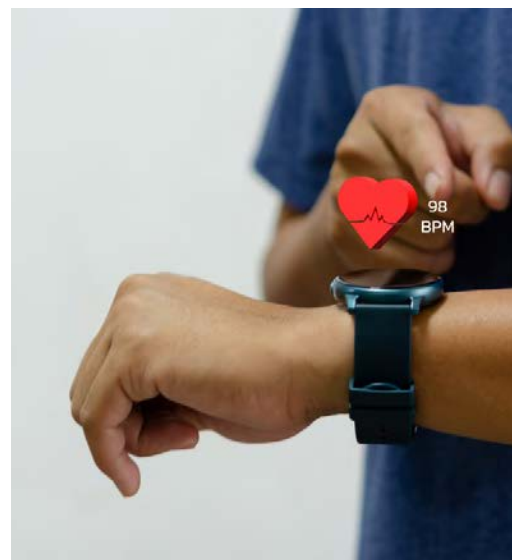
SMART WATCHES

Smart watches primarily tell time while also displaying information supplied by the wearer's smartphone, such as email, social media notifications, SMS/MMS, call info, and media controls. Some smart watches also make and receive calls, take pictures, include games, allow for contactless payments, and provide some of the features of a fitness tracker. More advanced smart watches pair with other wearables (like wireless headphones) without even requiring the use of a smartphone or other primary device.

Features: Showing time, tracking weather data, fitness tracking, games, media player, compass, GPS, speaker, camera, phone, altimeter, accelerometer, barometer, and endless apps to make this a true mini-phone or computer (with proper connectivity).

Consider:

- o Uses
- o How to access/share data
- o Durability and Water resistance
- o Accessories
- o Your lifestyle
- o Cost
- o Need for separate cellular plan?
- o Ability to customize interface
- o Charging method



WHAT SHOULD YOU LOOK FOR WHEN PURCHASING WEARABLE TECHNOLOGY?

SMART JEWELRY

Features: safety signals and alerts, calorie burn, distance traveled, active minutes, sleep duration and quality, guided meditation, stress resistance monitoring, medical monitoring, location sharing and more.

Consider:

- o Cost
- o Does the jewelry item need to be "smart"?
- o Eco-friendly and recyclable product material
- o Non-corrosive material
- o Easy to sync app
- o Easily operable app
- o Comfortable to wear
- o Personal style of wearer
- o Water resistance



WHAT SHOULD YOU LOOK FOR WHEN PURCHASING WEARABLE TECHNOLOGY?



ADVANCED MEDICAL TECHNOLOGY

Features: wearable electrocardiograms (ECGs) that send your heart rhythm to your cardiologist; temperature sensors; blood pressure monitors; biosensors; physical movement tracking; glucose level monitoring; Ultraviolet (UV) light exposure, and much more.

Consider:

- o Cost
- o Health and medical needs in consultation with your physician/specialist
- o Health and medical history
- o How to access/share data
- o Easily operable app?
- o Comfortable to wear
- o Size/weight
- o Water resistance
- o Durability
- o Need for additional accessories?

WHAT SHOULD YOU LOOK FOR WHEN PURCHASING WEARABLE TECHNOLOGY?



HEAD-MOUNTED DISPLAYS (HMDS) AND SMART GLASSES

Features: Equipped with a small display or projection technology embedded into eyeglasses or sunglasses or mounted on a hat or helmet; superimposes images on a real-world view without blocking the user's vision; can view output of devices like drones in real-time; include cameras and headphones; can project a computer screen into the corner of your eye; can be prescription glasses; other AR features

Consider:

- o Cost
- o Uses and practicality
- o Comfortable to wear
- o Size/weight
- o Water resistance
- o Durability
- o Charging method
- o Portability
- o Need for a subscription to access features?

WHAT SHOULD YOU LOOK FOR WHEN PURCHASING WEARABLE TECHNOLOGY?

ACTION CAMERAS

Rugged action cameras can mount to a helmet, chest harness, tripod, or sporting equipment, and capture video under conditions that most electronic devices are not designed to handle. As technologies continue to develop, some of the features originally designed for action cameras (water resistance, added accessories to enhance the user experience, etc.) are becoming standard for other wearables and smart devices. Action cameras can be used to record video on family vacations, hikes with friends, or underwater wildlife in their natural environment.

Features: Ability to wear and/or mount

Consider:

- o Uses
- o Internal or external memory
- o How to access/share footage
- o Durability
- o Video quality and frame rates
- o Accessories
- o Editing tools and connectivity
- o Your lifestyle
- o Camera features
- o Cost
- o Water resistance



WHAT SHOULD YOU LOOK FOR WHEN PURCHASING WEARABLE TECHNOLOGY?

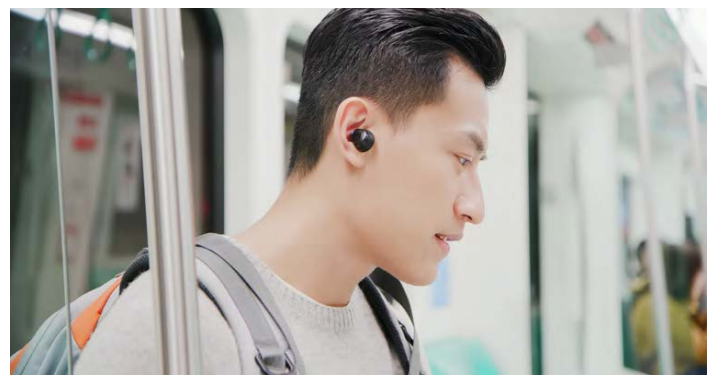
WIRELESS HEADPHONES OR EARBUDS

Wireless headphones were already on the market before the term “wearables” became popular; however, they are still a large part of the wearables industry, sometimes referred to as “hearables.” Wearable headphones rely on Bluetooth technology to connect to consumer’s devices and are commonly available in two styles: in-ear (canalphones, canalbuds, and earbuds) or over-the-ear. Some wireless headphones also include internal microphones. The microphones allow consumers to use the wearables to communicate with others. By using wearable headphones with an internal microphone, consumers can conveniently control voice-activated devices and meet with others on professional video conferences on compatible devices.

Features: Use Bluetooth technology to connect to consumer’s devices; commonly available in two styles: in-ear (canalphones, canalbuds, and earbuds) or over-the-ear; some include internal microphones; sound quality; long battery life; noise cancellation; etc.

Consider:

- o Design
- o Comfort
- o Uses / needs
- o Sound quality
- o Cost
- o Durability
- o Water resistance



WHAT ARE RISKS OF WEARABLES?

Consumers under eighteen (18) years old should use wearables under adult supervision. There are three main categories of risks that wearable tech companies and consumers face:

- **Cyber security:** The data transmitted via wearables must be properly secured; otherwise, companies are at risk of class action lawsuits, costly fines, and injury to their reputation. Consumers should make a point to review company privacy policies and stay educated about how their data could be used. Consumers who want to upgrade their wearables should first be certain to remove all personal information from their existing device. Consider recycling these items to prevent e-waste, donating them or reselling them.
- **Bodily injury risks:** Malfunctioning devices can cause injuries, illnesses, and even death to wearers or patients. Manufacturers of defective devices may even face product liability lawsuits.
- **Technology errors and omissions risks:** Companies can be held liable for economic losses from the failure of their devices to work as intended. Some wearable technology may require continual software updates to work at optimal levels.

THE FUTURE FOR WEARABLES

The future for wearables is very bright. Every day brings new advances in technology resulting in exciting, new wearables in the marketplace.

Use these tips to help you make the best consumer decision when purchasing wearable technology that is currently on the market and to think critically about future products.