

the
**GIVING
GROVE**

CLASSROOM LEARNING ACTIVITIES FOR SECONDARY STUDENTS

NUTRITION FROM TREES

ENVIRONMENTAL BENEFITS OF TREES

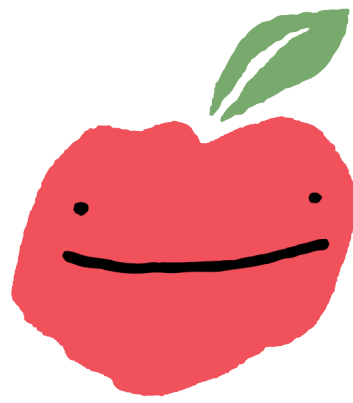
SOIL BIOLOGY FOR GROWING HEALTHY TREES

TREE BIOLOGY FOR MAINTAINING HEALTHY TREES

Curriculum provided by Kansas City Community Gardens
and sponsored by EPA Region 7

300 WEST 39TH STREET, KANSAS CITY, MISSOURI 64111

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LET'S GO NUTS

Lesson Objective: The Learner will explore different types of nuts/how they grow, and investigate the many benefits of including nuts in a healthy diet.

Key Questions: What is a nut? How are nuts grown? What are the health benefits of eating nuts? How do you know if you are allergic to nuts?

Background Information:

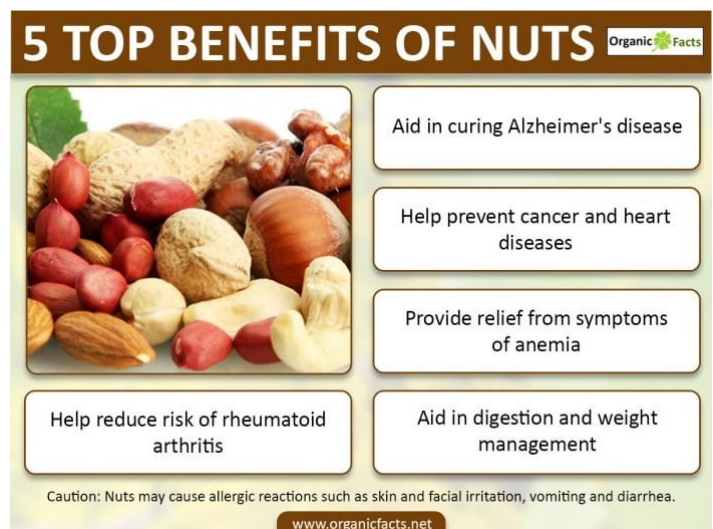
Nuts are extremely beneficial parts of any diet, and they contain a wide variety of health benefits that include their ability to balance cholesterol levels, increase heart health, reduce blood pressure and clots, boost the immune system, aid in weight loss, help manage diabetes, improve digestive function, optimize the body's metabolism, increase skin health, reduce the risk of cancer, increase cognitive function, protect against viral and fungal infections, and increase red blood cell count.

The term "nut" is used quite broadly in culinary applications, but in terms of botany and science, nuts are actually fruits that contain shells and seed, but technically, nuts do not naturally expel their seeds. Hazelnuts, chestnuts, and acorns do not separate their shells and seeds, and they are scientifically classified as nuts. The rest are seeds, but they are frequently called nuts. In terms of nutritious value and impact, the two types of seeds and nuts are very similar, so for our purposes, we'll be discussing all of them as nuts.

Nuts have been included in the human diet for at least 750,000 years, according to anthropological records from dig sites. The nutritional value and accessibility of nuts around the world made it an important part of hunter/gatherer culture for thousands of years, so culturally, they have continued to play a major role in cuisine. They are eaten in almost every country in some variety. The most common types of nuts are almonds, Brazil nuts, pistachios, cashews, chestnuts, flax seeds, macadamia nuts, peanuts, pecans, pine nuts, poppy seeds, sesame seeds, walnuts, and sunflower seeds. Another unexpected type of nut is a coconut, which has some unique health benefits as well.

Healthy Benefits of Nuts are as follows:

- **Anticancer Potential:** According to the National Institutes of Health, one of the best aspects of nuts is their high content of healthy fats, which sounds like an oxymoron to some people, but there are beneficial forms of fat that the body requires, and nuts are a wonderful source of these polyunsaturated fats called omega-3 fatty acids. This type of fatty acid has certain anti-inflammatory properties that have been shown to reduce the chances of colon, prostate, and breast cancer in test subjects. Furthermore, the high level of dietary fiber in nuts promotes good bowel movements and digestion, which reduces the chances of certain types of gastrointestinal cancers.



- **Prevent Digestive Issues:** Every single variety of nut has a high content of fiber, which is one of the more beneficial and versatile elements found in food. First of all, fiber is important to the digestive process, because it adds bulk to the stool. This means that bowel movements move through the digestive tract smoothly because the fiber stimulates peristaltic motion in the smooth muscle of the intestine. When stool moves freely through the system, constipation is reduced, and regular bowel movements can begin. This reduces the chances of developing various digestive conditions like hemorrhoids or polyps. Furthermore, fiber acts to scrub out excess cholesterol from the body.
- **Weight Loss:** Fiber present in nuts makes the body feel full and inhibits the release of ghrelin, the hunger hormone, which keeps obese people from overeating. This makes nuts a valuable part of weight loss regimens. Along with fiber in the battle against the bulge, nuts contain a powerhouse of nutrients and beneficial vitamins, without adding too many calories to the diet.
- **Improve Heart Health:** Perhaps the most important attribute of nuts in terms of overall health is its impact of the cardiovascular system. This happens in a number of ways. First of all, nuts contain a large amount of “good cholesterol”, also known as HDL cholesterol, so while many people think of cholesterol as bad no matter what, let this be a lesson to you. This beneficial type of cholesterol actually reduces the presence of dangerous cholesterol (LDL cholesterol) in the blood. It ensures that they do not bind on the walls of arteries and blood vessels. In this way, nuts reduce the chance of blood clots and atherosclerosis from seriously harming your cardiovascular system. Overall, nuts are some of the best things you can eat to help your heart health and prevent cardiovascular issues from arising. Eating a lot of nuts is often called being on a Mediterranean diet, and the cultures surrounding the Mediterranean have a notoriously low level of cardiovascular disease.
- **Rich Source of Vitamin-E:** The vitamin found in the highest concentrations in nuts is Vitamin E, which is a powerful antioxidant. Antioxidants combat the effects of free radicals in the body, which are byproducts of cellular metabolism that can cause a wide range of diseases and dangerous health conditions. Furthermore, the health benefits of vitamin E include its ability to boost skin health and fight the harmful effects of free radicals that lead to wrinkles and premature aging. This vitamin also boosts immune function, increases the metabolic functions of the body, and promotes cellular repair.
- **Treat Mental Disorders:** Nuts also combat the debilitating effects of mental disorders, including Alzheimer’s disease, schizophrenia, and depression due to its omega-3 fatty acid content. This is confirmed by a research headed by Martha Clare Morris and funded by the National Institute on Aging, Bethesda. These compounds are also good at reducing rheumatoid arthritis, since it is anti-inflammatory in nature, which increases the flow of blood to the brain, further increasing healthy cognitive function.
- **Prevent Dehydration:** The high levels of potassium found in certain nuts are very beneficial to cellular fluid and water balance in the cells. This can help keep the body hydrated and functioning properly, as hydration is very important. Potassium also works as a vasodilator to further reduce blood pressure and protect the heart from various conditions.
- **Prevent Anemia:** These two essential minerals are needed for the proper functioning and creation of red blood cells. Iron and copper are both active components in red blood cells, so they work to alleviate symptoms of anemia, also known as iron deficiency, which can result in fatigue, lightheadedness, stomach issues, and sleep disorders. Pumpkin seeds (and pistachios!) are great, iron-rich options.

Word of Caution

- Unfortunately, despite all of the health benefits of nuts, there is a downside. Nuts tend to be a highly allergenic substance, and it can manifest in a variety of ways. Being allergic to one nut is not the same as another, so you must be careful whenever you eat a new type of nut. If you are allergic the reactions can range from mild to extremely severe and include skin and facial irritation, swelling of the throat, respiratory malfunctions, anaphylactic shock, heart arrhythmia, vomiting, diarrhea, and gastric discomfort. As long as you are aware of what your body can and can’t handle, nuts are an extremely valuable boost to your overall health!

The oldest Walnut remains were discovered in Iraq and they are believed to be from 50,000 B.C.



The Romans considered Walnuts as the royal nut because the whole kernel resembles the brain. The slang word of 'nut' for the head came into being about 1820, but gradually it acquired the meaning of 'something wrong in the head'. Now a person who is mentally ill may be referred to as 'nuts' or 'nutty'. And all of this is because the walnut meat resembles the brain! Walnuts were introduced in California by the Franciscan Fathers of Spain in the 18th century, and today California produces much of the world's supply. We have native Black Walnuts!



The Pecan nut is native only to North America, and remains of Pecans were found in excavations in Texas with other artifacts that date back to 6100 B.C. The United States produces about 80% of the world supply of Pecans, with Georgia and Texas leading in production.



Historians say that Almonds were among the earliest cultivated foods. The pharaohs of Egypt were served breads containing Almonds, and Almonds were found in King Tut's tomb. South Africa, Australia, Spain, Greece, Portugal, Morocco, Turkey and Italy produce Almonds, but the United States leads in their production.



The Hazelnut, or Filbert was first known in Asia where it has been known to have been cultivated for 5,000 years. Some think the Hazelnut and Filbert are the same, while others think they are cousins. The Hazelnut was introduced to America by a shipment of seeds in 1629, and today it is grown mostly in Oregon and Washington. We have native Hazelnuts, too!



The Brazil nut is native to South America, growing well in the Amazon basin. Brazil nuts are actually large seeds with 15 to 24 arranged in a pod much like the sections of an orange. This pod weighs 4 to 6 pounds and hits the ground with such force that a man could be killed if hit. Natives gather the pods when they fall and open them with machetes to remove the seeds.





We associate the Macadamia nut with Hawaii, but it is native to the rain forests of Queensland, Australia. It is a beautiful tree and was originally grown for ornamental purposes. The Macadamia nuts were introduced to Hawaii in 1882, and today Hawaii produces 95% of the world's supply.



Peanuts? While many people include the peanut when speaking of nuts, it is really not a nut, but a legume, growing not on a tree, but underground.



Cashews are a tropical plant that produces an apple-like fruit and a nut that grows out of each fruit. The apple, which starts out yellow and becomes red when ripe, is edible and high in vitamin C, but it's reportedly not that tasty. Each fruit produces only one nut. If you've noticed that you can't buy cashews in the shell, there's a reason: the shells are toxic — they contain the same chemical as poison ivy and can cause rashes.



Chestnuts grow on trees in prickly green husks that eventually dry out and split open. It takes a seedling about five years to start producing fruit.



Pine nuts are edible seeds that grow in pine cones. Each cone contains about 50 seeds, but they're hard to harvest, which partially explains why pine nuts are soooo expensive (about \$25 a pound!).



The pistachio tree is a desert plant that grows fruit in clusters. When the shells are ripe, they change from green to yellow and split open, revealing the nut. The coolest part? That split often happens with an audible pop.



WHAT OTHER TYPES OF NUTS DO YOU KNOW ABOUT?

Materials:

Science journal Chart paper Access to Internet for research
Materials for students to create media presentations

Learning Activity:

- Where does the term “going nuts” come from? Maybe “nuts” is only a term you use to describe a certain friend of yours, but you may be surprised how big the nut industry truly reaches. Whether it is because they are a popular trail mix ingredient, a source of biodiesel oil or because they can be a deadly allergen, nuts are a common product that can be processed and used in numerous ways that have made them well known. It is easy to think of nuts being used only in their whole, edible form, but the reality is that nuts can be a very versatile product.
- Have students brainstorm a list of any nut they can think of. Engage in a discuss to determine what students already know about nuts.
 - ⇒ Do you know how these nuts are grown?
 - ⇒ Are there any nuts on your list that aren't really nuts?
 - ⇒ Which of these nuts have you actually tasted before?
 - ⇒ Do you know someone who allergic to nuts?
 - ⇒ Why are certain people allergic to nuts?
 - ⇒ What do we use nuts for in our daily lives?
 - ⇒ Can you think of ways that nuts are used besides for food?
- Access the commodities and products tab on the AgMRC website (<http://www.agmrc.org>) and find the link to Nuts. Here are some types of research questions you can have the students investigate from this information:
 - ⇒ What is the only state that produces almonds in the US? What are the recent market trends for almonds?
 - ⇒ Using the FOODMARKETMAKER.COM tab, find a nut producer in your state. If no producers are listed for your state, choose a different state. What kind(s) of nuts do they grow?
 - ⇒ Pine nuts have many different uses. What are the different forms of pine nut uses (ex. shelled, oil) and what are they used for?
 - ⇒ How do the nutritional traits of a pistachio nut compare to halibut, broccoli, and bananas?
 - ⇒ What are 4 value-added products that are made from peanuts?
 - ⇒ Choose one of the nut types (other than pine nuts and pistachio) from the AgMRC list and give some reported health benefits from eating them. How could this be used in marketing? Who would you market them to?

- Have students create an “Are You Nuts?” media campaign. For this activity you will need to select one of the types of nuts listed in the AgMRC website, or have students find their own sources of information about nuts.
- For the selected nut type, students will need to research (as a small group or individually) what the process is for growing that type of nut. Students will then put together a report type (informational poster or brochure, formal presentation, etc.) to use to present their information to the rest of the class.
- Provide the students with Essential Questions to lead their investigation:

How is the nut grown?

Where is it grown?

What climate/soil is necessary for growth?

What are the health benefits of this nut?

How is this nut used in daily life?

Can people be allergic to this nut? What are the signs of nut allergy?

What would be a good “tag line” or “slogan” for this nut?

Can you create a mascot character for this nut?

Can you write a “theme song” for this nut?

Can you include a favorite recipe for this nut?

Are You Nuts?

You are nuts if you don't eat these nutritious powerfoods!



Additional Resources

http://www.kidslovenutcrackers.com/All_About_Nuts.htm

<https://www.organicfacts.net/health-benefits/seed-and-nut/nuts.html>

<https://www.agmrc.org/commodities-products/nuts>

IS IT A FRUIT?

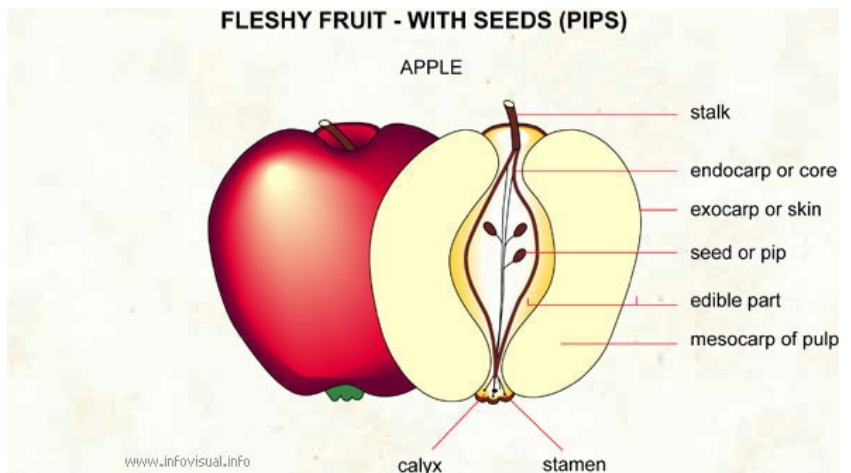
Lesson Objective: The Learner will categorize different types of fruit.

Key Questions: What is a fruit? How is it formed? What are some common foods that are botanically fruits, but are usually labeled as another food group?

Background Information:

Seeds develop from flowers once the egg cell in the ovary of a flower is fertilized. Generally, the ovary ripens into the fruit and provides a protective structure around the seed. Sometimes, the ripened fruit comes from another part of the flower such as the ovary wall, receptacle of the flower, or the fleshy tissue of the ovary. Fruit is the ripened ovary and the other structures that surround it at maturity. As the ovary develops into a fruit, its wall often thickens and becomes differentiated into three, more or less distinct layers. These three layers together form the pericarp, which surrounds the seed or seeds. The three layers are:

- ⇒ Exocarp – The outer layer consisting of the epidermis (skin)
- ⇒ Mesocarp – The middle layer consisting of the fleshy portion that we often eat
- ⇒ Endocarp – The inside layer varies greatly from one species to another

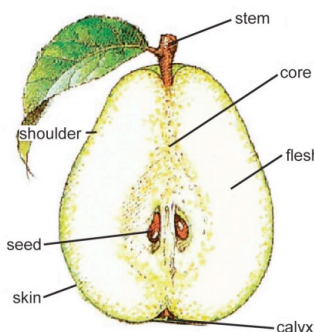
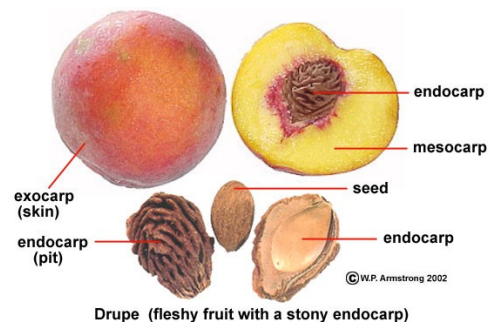


Most angiosperms (flowering plants) have simple fruits, which can be categorized as follows:

Fleshy Fruits

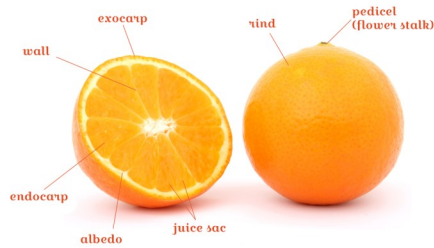
These fruits have a pericarp that is soft and fleshy at maturity. Common fleshy fruits can be divided into groups as follows:

- **Drupe:** a fruit from a single carpel, in which the outer wall of the ovary has become fleshy and the inner part stony at maturity. Often termed a "stone fruit." Examples include peach, plum, apricot, cherry, and almond.



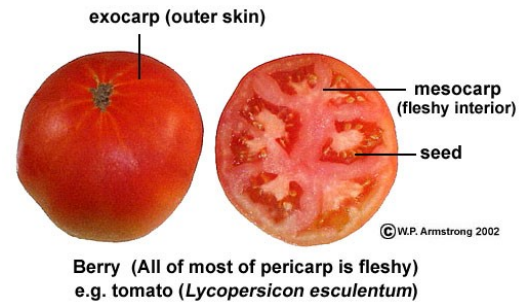
- **Pome:** Endocarp is papery, forming a core with several seeds, compound pistil; Examples include apple, pear and quince.

- **Pepo:** an accessory berry, with a relatively hard rind; Examples include watermelon, cucumber, pumpkin, squash, and cantaloupe.



- **Hesperidium:** a modified berry, in which the outer part of the ovary wall becomes leathery. Examples include orange, tangerine, lemon, lime, grapefruit.

- **Berry:** Ovary wall becomes fleshy throughout, one to many seeds. Examples: grape, eggplant, tomato, kiwifruit, and persimmon.



Dry Fruits

These fruits have a pericarp that becomes dry and hard at maturity.

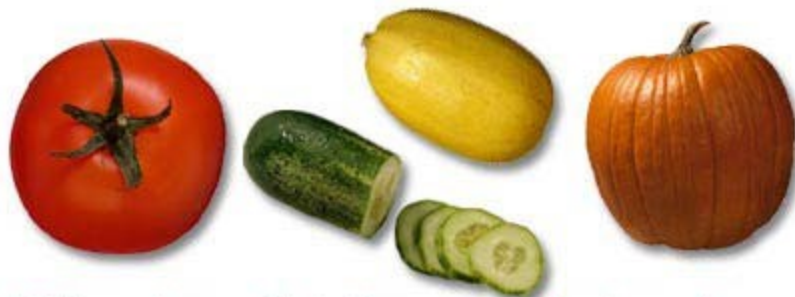
- ⇒ **Legume (pod):** Splits open along two seams. Examples include pea, green bean, and peanut.
- ⇒ **Capsule:** Two or more fused carpels, the fruit splits open at maturity. Examples includes lily.
- ⇒ **Indehiscent dry fruit:** Does not split open at maturity. Examples include grains and nuts.

Aggregate Fruits

Clusters of several ripened ovaries produced by a single flower and produced on the same receptacle of a single flower. Examples include raspberry, blackberry, and boysenberry.

Multiple or Compound Fruits

Clusters of several ripened ovaries produced by several flowers in the same inflorescence. Examples include pineapple.



Did you know that these are all ripened ovaries and are really fruits - the products of fertilization?

Materials:

For each student group—An assortment of three different fruits, such as: seeded orange, apple, bell pepper, and a peanut (or adjust to what type of fruits are available)

Examples of different categories of fruit—Apple, Peach, Lemon, Bell pepper, Pea pod, Tomato, Cucumber, Berries, Peanut (or adjust to what type of fruits are available)

One paper plate for each piece of fruit

Paper Towels

Sharp plastic knife

Scales for weighing fruit

Activity Sheet “A Seedy Fruit Challenge”

Learning Activity:

- Facilitate a discussion with students about different fresh foods they eat that have seeds. Make a list of these foods on the board. Ask them if the foods are fruits or vegetables (botanically, fruits have seeds; vegetables come from another part of the plant and don't contain seeds).
- What are some common misconceptions that people have when categorizing food into fruits or vegetables?
- Tell students that they will dissect fruits to observe and record where the seeds are located, how many seeds they have, and the size, color, texture, and shape of the seeds in each fruit.
- Distribute Activity Sheet, “A Seedy Fruit Challenge”, to each student. Explain what is expected of the students with the lab worksheet. Demonstrate how to make a bar graph.
- Divide students into groups of three or four. Distribute newspaper, paper plates, plastic knife, paper towels, and three to five pieces of fruit to each group.
- Instruct students to weigh each piece of fruit before cutting into it.
- Instruct students to place each piece of fruit on a paper plate and carefully dissect it with a plastic knife being careful to keep the fruit's juices on the plate.
- Upon completion, discuss the results as a class.

Lesson Extension:

Have some fun by researching these “vegetables” to find out if they are really a “fruit”!

Tomato, pepper, cucumber, pumpkin, pea, string bean, eggplant, okra, olive, avocado, corn, zucchini, beans, chickpeas

Additional Resources

Lesson adapted from:

https://naitc-api.usu.edu/media/uploads/2015/10/05/Seedy_Fruit_Challenge.pdf

<https://www.agclassroom.org/teacher/matrix/resources.cfm?rid=267>

<https://www.businessinsider.com/fruits-and-vegetables-difference-2018-6#pumpkins-3>

A SEEDY FRUIT CHALLENGE



Dissect and record the following information for each of your fruits.

Name of Fruit _____

Draw dissected half and label the **Exocarp**, **Mesocarp** and **Endocarp**.

Number of seeds _____

Color of seeds _____

Shape of seeds _____

Texture of seeds _____

Mass of fruit _____

Mass of seeds _____

Check type of fruit:

- ◇ Fleshy
- ◇ Dry
- ◇ Aggregate
- ◇ Compound

Name of Fruit _____

Draw dissected half and label the **Exocarp**, **Mesocarp** and **Endocarp**.

Number of seeds _____

Color of seeds _____

Shape of seeds _____

Texture of seeds _____

Mass of fruit _____

Mass of seeds _____

Check type of fruit:

- ◇ Fleshy
- ◇ Dry
- ◇ Aggregate
- ◇ Compound

A SEEDY FRUIT CHALLENGE

Name of Fruit _____	
Draw dissected half and label the Exocarp , Mesocarp and Endocarp .	Number of seeds _____ Color of seeds _____ Shape of seeds _____ Texture of seeds _____ Mass of fruit _____ Mass of seeds _____ Check type of fruit: ◇ Fleshy ◇ Dry ◇ Aggregate ◇ Compound

How are seeds protected?

In what part of the flower do seeds come from:

What is the seed's function?

Name 3 ways seeds are transported in nature:

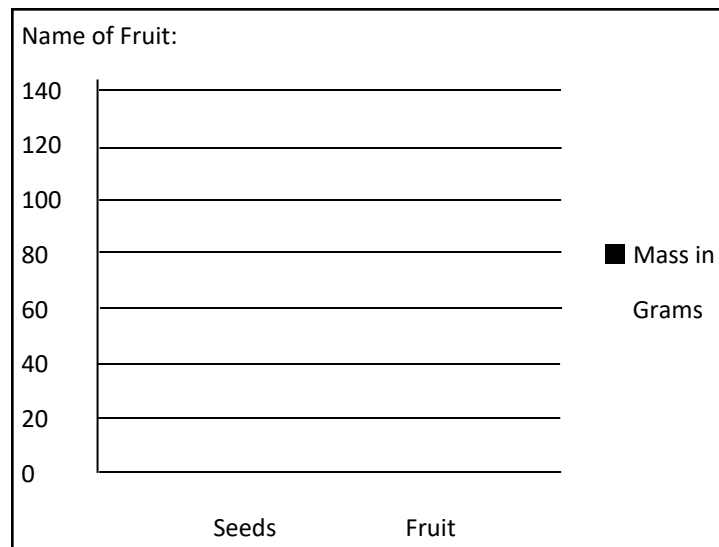
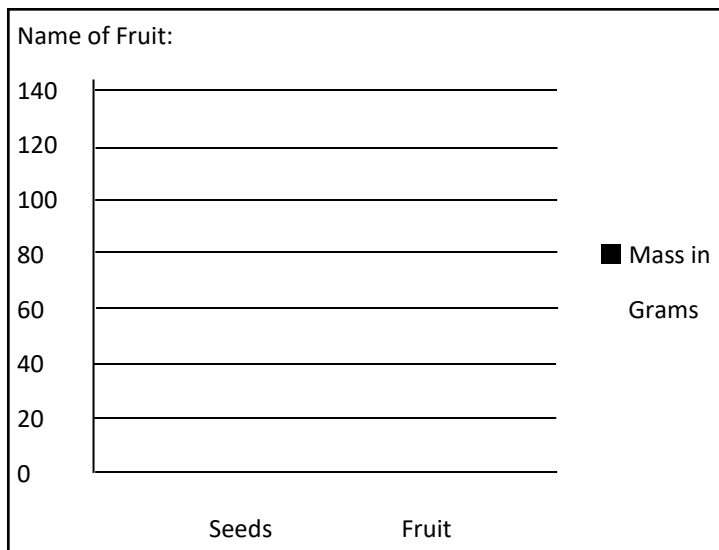
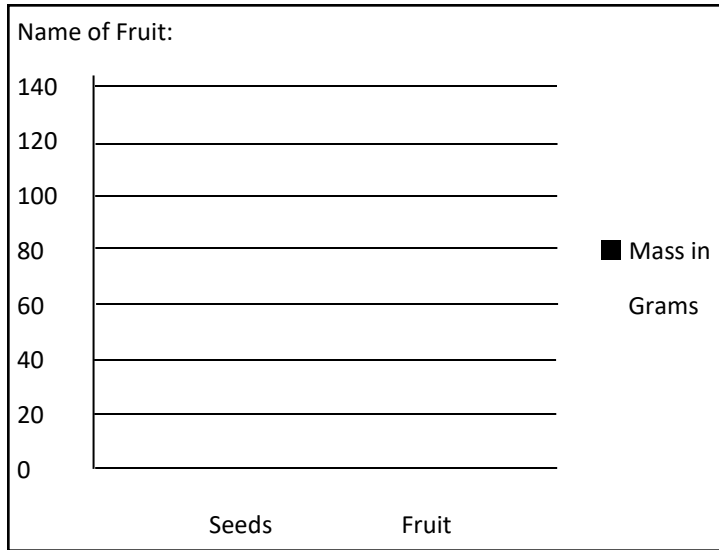
What is the difference between a fruit and a vegetable?

What are some common foods that are botanically fruits, but are usually labeled as another food group?

What are some health benefits of eating fruit?

A SEEDY FRUIT CHALLENGE

Use a bar graph to compare the mass of each fruit and the mass of its seeds.



HEALTHY PLATE

Lesson Objective: The Learner will explain the dietary guidelines of a healthy eating style, categorize food into its proper food group, and create a plan to shift to a healthier eating style.

Key Questions: What are the 5 food groups that I should include in my eating habits? What quantity should I be eating from each group? Why should half my plate be fruits & vegetables? What are some ways that I can shift my eating habits to a healthier eating style?

Background Information:

This lesson focuses on concepts from the US Department of Agriculture program **MyPlate**.
<https://www.choosemyplate.gov/>

MyPlate was developed by the United States Department of Agriculture and provides a visual cue that reminds consumers how to make healthy food choices; **MyPlate** replaced **MyPyramid** in 2011.

The 2015-2020 Dietary Guidelines for Americans promotes the importance of a healthy eating pattern to maintain health and reduce the risk of disease. Everything you eat and drink — the food and beverage choices we make day to day and over our lifetime — matters. By eating a variety of foods from each food group, we give our bodies what they need to be and stay healthy. Start with small changes to make healthier choices you can enjoy.

The **MyPlate** logo serves as a colorful visual that a person should eat foods from the five food groups each day. It is important to eat a variety of healthy foods. Find your healthy eating style and maintain it for a lifetime. Try to:

- ⇒ Make half your plate fruits and vegetables.
- ⇒ Focus on whole fruits.
- ⇒ Vary your veggies.
- ⇒ Make half your grains whole grains.
- ⇒ Move to low-fat and fat-free milk or yogurt.
- ⇒ Vary your protein choices.
- ⇒ Drink and eat less sodium, saturated fat, and added sugars.
- ⇒ Children 6-17 years old should move at least 60 minutes each day.



This lesson will focus on encouraging students to choose foods based on the 2015-2020 Dietary Guidelines for Americans and **MyPlate** recommendations, with special attention to the goal:

Make half your plate fruits and vegetables!

Why should you make half your plate fruits and vegetables daily?

- ⇒ Fruits and vegetables are the only source of vitamin C in the diet. Vitamin C helps the body heal wounds and lowers the risk of infection. It also helps keep the body from bruising and builds the tissue that holds muscles and bones together. Vitamin C is also known as ascorbic acid and helps the body absorb the iron found in foods and strengthens the immune system.
- ⇒ Vitamin A serves several functions in the body. It helps maintain good vision, fight infection, support cell growth, and keep skin healthy. Leafy greens, carrots, sweet potatoes, squash, spinach, apricots, and green peppers are all excellent sources of vitamin A.
- ⇒ Fruits and vegetables are a good source of complex carbohydrates, whose energy release is slow, gradual, and long lasting. Sugar provides quick energy, but its effects are short lived. This knowledge is important when choosing foods to eat before an athletic event.
- ⇒ Fruits and vegetables contain fiber. Fiber helps move food through the body to prevent constipation and provide a sense of fullness.
- ⇒ Fruits and vegetables are quick, often ready to eat, easy to carry, and tasty foods to have as snacks. They provide the energy needed to function throughout the day.
- ⇒ Eating a variety of fruits and vegetables provides health benefits— people who eat more fruits and vegetables as part of a healthy eating style are likely to have a reduced risk of some chronic diseases.
- ⇒ Fruits and vegetables provide nutrients that help us grow and stay healthy.
- ⇒ They are naturally low in fat and calories. None have cholesterol.

Fruit Group:

- Any fruit or 100% fruit juice counts as part of the Fruit Group. Fruits may be fresh, canned, frozen, or dried, and may be whole, cut-up, or pureed. Focus on whole fruits. Choose whole or cut up fruits more often than 100% juice. Snack on fresh, frozen, canned, or dried fruits instead of cookies, brownies, or other sugar-sweetened treats.

Vegetable Group:

- Any vegetable or 100% vegetable juice counts as a member of the Vegetable Group. Vegetables may be raw or cooked; fresh, frozen, canned, or dried/dehydrated; and may be whole, cut-up, or mashed. Vegetables are organized into 5 subgroups based on their nutrient content:
 - ◇ Dark-Green Vegetables (e.g., broccoli, spinach, romaine lettuce, bok choy, collard greens)
 - ◇ Red and Orange Vegetables (e.g., acorn or butternut squash, carrots, pumpkin, red peppers, sweet potatoes, tomatoes)
 - ◇ Beans and Peas Vegetables (e.g., chickpeas/garbanzo beans; lentils; black, kidney, navy, or pinto beans)
 - ◇ Starchy Vegetables (e.g., corn, green peas, green lima beans, plantains, potatoes)
 - ◇ Other Vegetables (e.g., celery, cucumbers, green beans, green peppers, iceberg lettuce, zucchini)

Materials:

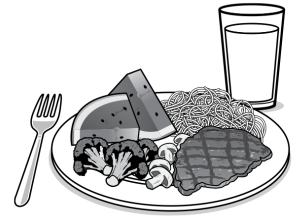
Science journal

Chart paper

Blindfolds

Food Samples (from various food groups; try to include some unusual items that might be new for students; check for student allergies)

Activity Sheet “Healthy Plate”



Learning Activity:

Why is a healthy diet important?

- Ask students why they think it is important to have a healthy diet. Discuss all reasonable answers.
 - ⇒ A healthy diet can help to manage weight and reduce the risk of overweight and obesity.
 - ⇒ Overweight and obesity along with unhealthy food and beverage choices can increase your risk for chronic diseases such as Type 2 diabetes, heart disease, and high blood pressure.
 - ⇒ A healthy eating style is important to establish now because the earlier in life you begin to make healthier food choices, the lower your risk for obesity, chronic disease, and early mortality which could lead to an overall better quality of life.

What are the new dietary guidelines?

- The 2015-2020 Dietary Guidelines focus on five key areas to help improve our food and drink choices and shape a healthier eating pattern. Have students discuss these guidelines and why they are important to our overall health.
- You can place chart paper around the room with each guideline written at the top. Have students circulate to each chart and write down eating choices that FOLLOW THIS GUIDELINE and DON'T FOLLOW THIS GUIDELINE.

1. **Find your healthy eating style for a lifetime.**

- ◇ The first focus of the updated Dietary Guidelines encourages us to adopt a healthy eating style that accounts for all foods and beverages consumed within an appropriate calorie level. Everything you eat or drink matters over time and can impact your health either negatively or positively. The right mix of food groups can help you be healthier now and in the future.

What is my <u>Eating Style</u> ?
<u>NOT HEALTHY</u> <u>HEALTHY</u>

2. **Focus on variety, amount, and nutrition.**

- ◇ Variety – Strive to make healthy choices from all five food groups. By eating a variety of foods, you will get a good balance of all of the different nutrients the body needs.
- ◇ Amount– Eat the right amount of calories for you based on your age, gender, height, weight, and physical activity level.
- ◇ Nutrition – Building a healthy eating style can help to get the nutrients your body needs, help to maintain a healthy body weight, and help to reduce the risk of diseases such as heart disease, diabetes, and cancer.

What is the <u>Amount</u> and <u>Variety</u> of the foods I eat?
<u>NOT HEALTHY</u> <u>HEALTHY</u>

3. Limit calories from saturated fat, sodium, and added sugars.

- ◇ MyPlate shows us the components of a healthy eating style including appropriate food and drink choices. The MyPlate guidelines suggest:
 - ⇒ Make half your plate fruits and vegetables with focus on whole fruits and a variety of vegetables
 - ⇒ Make half your grains whole grains
 - ⇒ Vary your protein intake
 - ⇒ Shift to low-fat and fat-free dairy products
- ◇ Foods high in solid fat or added sugar (SoFAS) are high in calories but low in nutrients.
- ◇ Solid fats: Ask students to list examples of foods with solid fats.
 - ⇒ Examples include red meat, whole milk, cream and butter. Solid fats are fats that are solid at room temperature.
 - ⇒ We need some fat in our diet to transport important vitamins, protect our vital organs and keep our body insulated. However, too much solid fat (saturated and trans fat), can increase risk for heart disease.
 - ⇒ Unsaturated fats are found in oils and include monounsaturated and polyunsaturated fats. This fat protects our heart against heart disease. Examples of foods high in unsaturated fats include olive and vegetable oils along with nuts, seeds, fish, and avocados.
- ◇ Added sugars: Ask students to list examples of foods with added sugars.
 - ⇒ Examples include soda, fruit blend drinks, candy, cakes, cookies, and ice cream.
 - ⇒ Added sugar can increase the amount of calories in our diet without adding other beneficial nutrients. Over time, these extra calories may contribute to excess weight gain.
 - ⇒ Choose water or 100% juice instead of sweetened beverages and replace sugary desserts with naturally sweet fruit.
- ◇ Sodium: Ask students to list examples of foods high in sodium.
 - ⇒ Examples include processed foods, packaged and prepared foods such as ready-to-eat products, pre-packaged rice or pasta dishes, soups, seasonings, sauces and gravies), fast food and frozen meals.
 - ⇒ Salt, or sodium, can contribute to a disease called hypertension.
 - ⇒ Season your food with spices and herbs instead of table salt.

What foods/amounts do I eat that contain salt, fat, & added sugars?

NOT HEALTHY **HEALTHY**

- ◇ Always check the nutrition label to find the amounts of saturated fat, sodium, and added sugars that are found in your food and drinks. Do students understand how to read a nutrition label?

Nutrition Facts		Amount/serving	% DV*	Amount/serving	% DV*
Serving Size 1 Bar (40g)		Total Fat 11g	17%	Total Carb. 25g	8%
Servings 1		Sat. Fat 8g	40%	Fiber 13g	52%
Calories 150		Trans Fat 0g		Sugars 1g	
Fat Cal. 100		Cholest. 0mg	0%	Sugar Alcohol 10g	
		Sodium 50mg	2%	Protein 1g	
*Percent Daily Values (DV) are based on a 2,000 calorie diet.		Vitamin A 0%	•	Vitamin C 0%	•
		Calcium 0%	•	Iron 6%	

Ingredients: Sugar free dark chocolate flavored coating (unsweetened chocolate, erythritol, inulin, cocoa butter, lecithin [soy] [an emulsifier], vanilla, reb A [stevia extract]), isomalto-oligosaccharides (prebiotic fiber), coconut, maltitol syrup, erythritol, digestion-resistant fiber (Fibersol®-2), fructooligosaccharides, coconut oil, sea salt, natural flavor, stevia extract, mixed tocopherols, rosemary extract.

Allergen Information: Contains coconut and soy.

4. Shift to healthier food and beverage choices.

- ◇ Small, simple shifts in your food and drink choices can make a big impact on improving your overall eating style. The Dietary Guidelines and MyPlate focus on shifting to whole grains, a variety of protein, low-fat or fat-free dairy, use of oils instead of solid fats, reducing added sugar intake and lowering your intake of salt. The guidelines also recommend continuing to make half your plate be fruits and vegetables with specific emphasis on consuming whole fruits and a variety of vegetables. Following these guidelines will make it easier to eat and drink the right amount of calories for you.

What is a small way I can shift my food/drink choices?

NOT HEALTHY → HEALTHY

5. Support healthy eating styles for everyone.

- ◇ The fifth and final update to the Dietary Guidelines encourages everyone to help support and create settings where healthy choices are available and affordable throughout the community. Ask students what are ways they can get involved in making a difference in the community.
- Have students complete the Activity Sheet “Healthy Plate”. Give students some time to research a food and describe the health benefits.

What are the food choices available in my community?

NOT HEALTHY HEALTHY

Answer Key:

Grains (Brown rice, Oatmeal, Potato Bread, Granola, Blueberry Bagel)

Vegetables (Collard Greens, Asparagus, Kale, Cauliflower, Sweet Potato, Tomato—fruit or vegetable?)

Fruits (Avocado, Banana, 100% Juice, Prunes, Nectarine,)

Dairy (Frozen Yogurt, Strawberry Milk, Almond Milk, Swiss Cheese)

Protein (Peanut Butter, Black Beans, Ribs, Eggs, Canned Salmon, Sausage)

Sugars/Fats (Soda, Cupcake, Candy Bar, Ranch Dressing, Cream Cheese, Poptart, Onion Rings)

1. Which of the foods listed in the Grains group would be considered Whole Grains? Brown Rice, Oatmeal, Granola
 2. Which of the foods listed in the Vegetable group are dark green, leafy vegetables? Collard Greens, Kale
Which nutrient do these contain? Calcium
 3. Name at least three foods listed in the chart that contain healthy oils. Avocado, Peanut Butter, Canned Salmon
 4. List the Protein foods that would be considered “lean” or low in saturated fat. Peanut Butter, Black Beans, Eggs, Canned Salmon (Note that Peanut Butter and Salmon are high in healthy, “unsaturated fat”)
 5. Which foods on the chart contain fiber? Brown Rice, Oatmeal, Granola, ALL Fruits and Vegetables, Peanut Butter, Black Beans
- Play a game with students called “Food Fear Factor”. Have a variety of food samples that include food from the various food groups. Try to pick unusual selections that you think students may not have tasted before. Break the class into teams. Have one person from each team come up to be blindfolded and have them taste the selected food and try to guess what food it is. Students can smell, taste, touch, etc. Be sure to check for student allergies.



Lesson Extension:

- Have students compare fast food menus and identify choices that are more healthful.
- Have a “Chopped” competition where students are given certain ingredients and must create a tasty dish using only those ingredients.
- Have students research what the recommended daily calorie intake and activity level should be for their age. Create a week’s worth of meal ideas and physical activities that will meet the standard.

Lesson Extension Focus on Berries:

- Have students investigate the various benefits of eating berries. Berries are among the healthiest foods you can eat. They’re delicious, nutritious, and provide a number of impressive health benefits.
- Compare the levels of vitamins, minerals, sugar, and antioxidants in different types of berries. Ask students to create Nutrition Labels or Nutrition posters for various berries.
- Ask students to create a “Berry Sweet” Nutrition Campaign centered around berries. Students should conduct research on the health benefits of a selected berry and write a persuasive “Campaign Speech”. They can choose to focus on one or more of these “berry healthy” benefits of eating berries:



- ⇒ Berries are high in antioxidants like anthocyanins, which may protect your cells from free radical damage.
- ⇒ Berries may improve blood sugar and insulin response when consumed with high-carb foods or included in smoothies.
- ⇒ Berries contain fiber, which may increase feelings of fullness, as well as reduce appetite and the number of calories your body absorbs from mixed meals.
- ⇒ Berries are low in calories yet rich in several vitamins and minerals, especially vitamin C and manganese.
- ⇒ Berries may help reduce inflammation and decrease your risk of heart disease and other health problems.
- ⇒ Berries have been shown to lower LDL (bad) cholesterol levels and help protect it from becoming oxidized, which may reduce your risk of heart disease.
- ⇒ Berries contain the antioxidant ellagic acid, which may help decrease wrinkling and other signs of skin aging related to sun exposure.
- ⇒ Berries have been shown to reduce markers associated with tumor growth in animals and people with several types of cancer.
- ⇒ Berries can be enjoyed on most diets, as they’re low in calories and carbs and widely available fresh or frozen. Berries are delicious when served alone, with cream, or in healthy recipes.
- ⇒ Berries have been found to improve arterial function in several studies in healthy people, those with metabolic syndrome, and people who smoke.

Additional Resources:

Lesson adapted from https://deptapp08.drexel.edu/nutritioneducation/hs_lesson_plans.html

<https://sfusdhealtheducation.org/download/HS/nutrition/SuperTrackerHSLessonPlans1.pdf>

<https://www.choosemyplate.gov/>

<https://www.healthline.com/nutrition/11-reasons-to-eat-berries>

HEALTHY PLATE

Place these foods in the correct food group:

Avocado	Soda	Cupcake	100% Juice	Granola	Blueberry Bagel
Peanut Butter	Sausage	Asparagus	Candy Bar	Prunes	Strawberry Milk
Banana	Almond Milk	Cauliflower	Frozen Yogurt	Eggs	Sweet Potato
Oatmeal	Brown Rice	Cupcake	Swiss Cheese	Black Beans	Ranch Dressing
Ribs	Kale	Nectarine	Collard Greens	Potato Bread	Cream Cheese
Granola	Prunes	Tomato	Canned Salmon	Onion Rings	Poptart

GRAINS	VEGETABLES	FRUIT	DAIRY	PROTEIN	ADDED SUGARS/ SATURATED

1. Which of the foods listed in the Grains group would be considered Whole Grains? What is meant by the term "Whole Grain"?

2. Which of the foods listed in the Vegetable group are dark green, leafy vegetables?. Which nutrient do these contain? (**Hint: Same nutrient found in Dairy foods)

3. Name at least three foods listed in the chart that contain healthy oils. What is meant by the term "Healthy Oil"?

4. List the Protein foods that would be considered "lean" or low in saturated fat. What is the difference between saturated and unsaturated fat?

5. Which foods on the chart contain fiber? Why does your body need fiber?

6. Choose a food from 3 different food groups and find a nutrition label for each one (nutrition labels can easily be found on-line). Create a graph that compares the carbohydrate, fat, sugar, and protein content from each nutrition label. Which food is the most nutritious based on your findings? Why?

7. Choose a food and research the health benefits. What did you find out?