

Ascorbic Acid (Vitamin C)

MyPlate Food Sources: Vegetables, Fruits

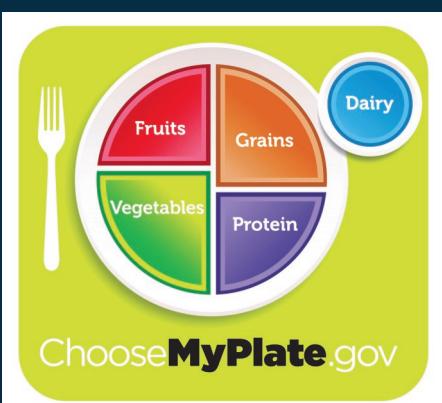
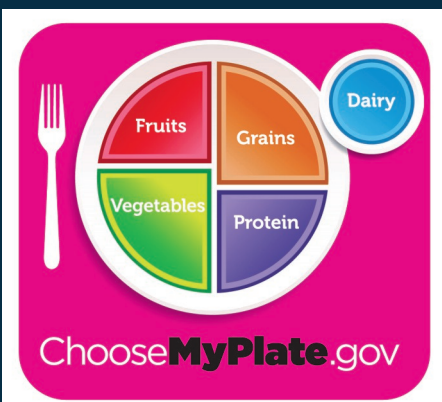
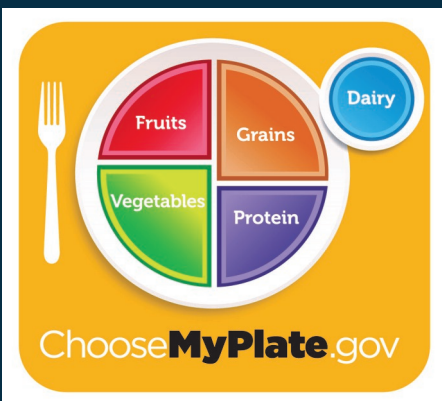
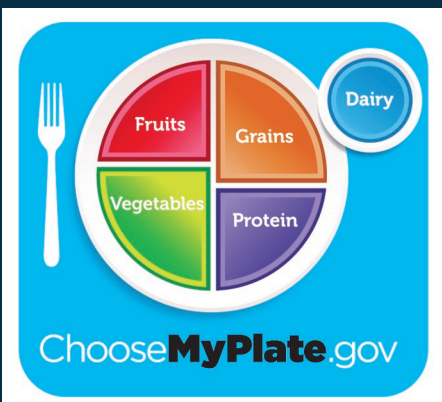
Description: Vitamin C is a water-soluble vitamin commonly associated with citrus fruit. This vitamin can be easily destroyed by oxygen, light, and heat, so is easily lost during cooking and food storage.

Functions:

- Strengthens the walls of blood vessels
- Helps wounds to heal
- Aids in building bones and teeth
- Helps the body absorb iron
- Works as an antioxidant to protect the body from damaging compounds in the environment

Sources: Oranges, grapefruit, lemons, limes, strawberries, cantaloupe, fruit juices, strawberries, broccoli, cauliflower, raw cabbage, spinach, turnip greens, collards, kale, Brussels sprouts, green leafy vegetables, green or red peppers, tomatoes, and potatoes

Deficiency: Scurvy, sore or bleeding gums, poor wound healing, pain in joints, bones, muscles



Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Calcium

MyPlate Food Sources: Dairy, Vegetables

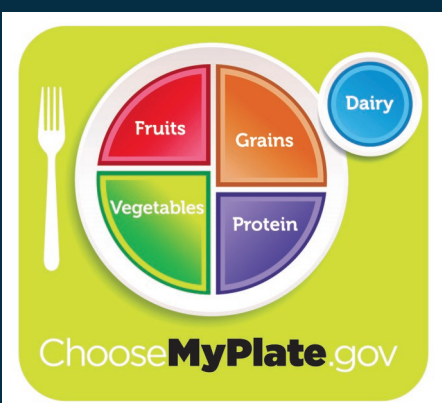
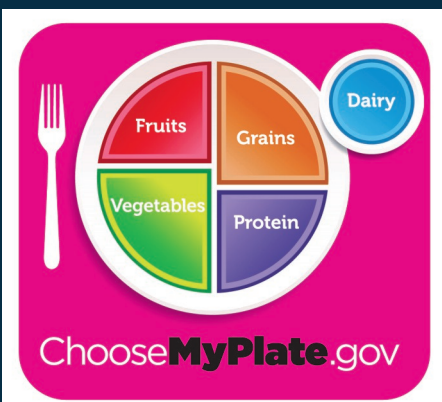
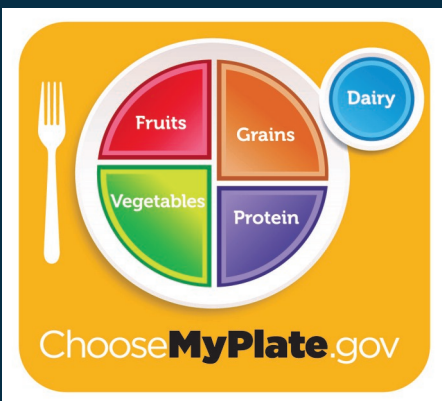
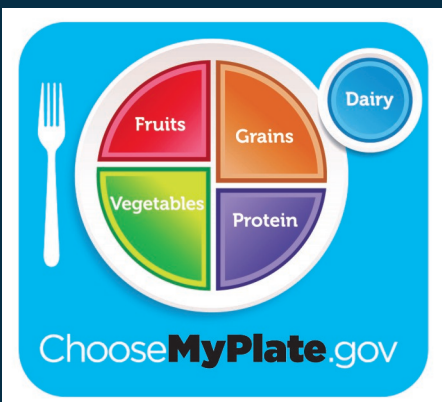
Description: Calcium is the mineral found in the largest amount in our bodies. The majority of calcium is found in bones and teeth. Deficiency of this mineral is often associated with the loss of bone, or osteoporosis.

Functions:

- Helps maintain bones and teeth
- Helps regulate blood pressure
- Helps blood form clots
- Works as a messenger for nerves, muscles, and the heart to function properly

Sources: Milk, yogurt, cheese, dark green leafy vegetables, soy products with added calcium, fish eaten with bones, fortified juice, soy milk

Deficiency: Retarded bone mineralization, fragile bones, rickets, osteomalacia, osteoporosis



Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Carbohydrate

MyPlate Food Sources: Grains, Vegetables, Fruits, Dairy

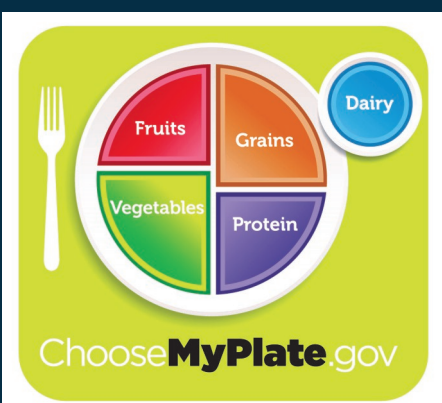
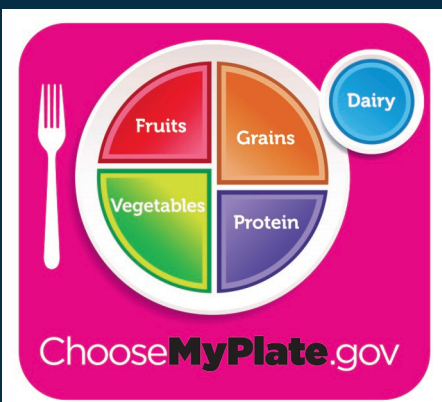
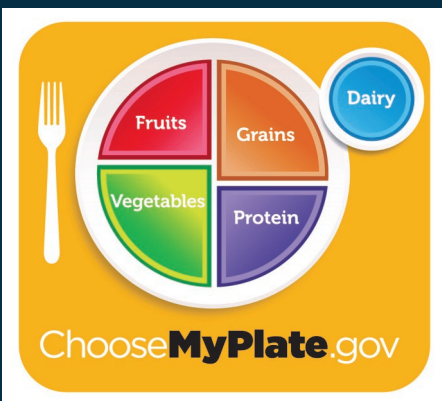
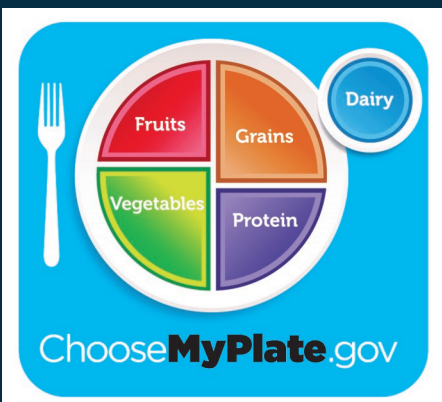
Description: Carbohydrate provides over half of the energy in our diet. Carbohydrates with a smaller number of glucose units are considered 'sugars' whereas those with larger number of glucose units are referred to as 'starch' or complex carbohydrate.

Functions:

- Supplies energy
- Helps the body use other nutrients
- Spares protein from being used for energy so it can build and repair the body

Sources: Carbohydrate is found in the MyPlate grain, fruit, and vegetable groups and in foods such as: breads, cereals, flours, cornmeal, rice, macaroni, noodles, spaghetti, sweet potatoes, corn, dried fruit, bananas, syrup, jam, jellies, preserves, honey, and

Deficiency: Loss of energy, fatigue



Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Dietary Fiber

MyPlate Food Sources: Grains, Vegetables, Fruits, Protein

Description: Dietary fiber is the part of plant foods that cannot be digested by humans; it is considered a complex carbohydrate.

Functions:

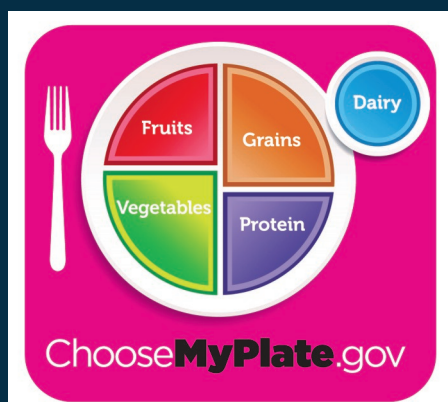
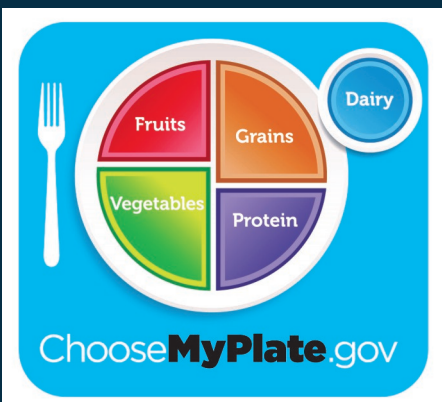
- Provides a feeling of fullness
- Increases movement of intestinal contents, which may reduce constipation, diverticulosis and other intestinal diseases
- Helps remove cholesterol from the intestine, which reduces risk of coronary heart disease

Sources: Fiber is found in the MyPlate grain, vegetable, fruit and protein groups including whole grain breads and cereals, dried beans (such as kidney and black beans), noodles, tortillas, brown rice, oatmeal and whole fruits/vegetables including broccoli, corn, spinach, carrots, and peas.

Deficiency: Diarrhea; excess fiber makes bulk, which may prevent eating enough food energy or nutrients; high-fiber diets for elderly, very young or those on low-calorie diets may cause other nutrient deficiencies.

Sources

Iowa State University Extension: Key Nutrients
Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance



Fat

MyPlate Food Sources: Dairy, Protein, Oil

Description: There are two types of fats, oils and solid fats. Oils are usually liquid at room temperature, and solid fats are usually solid at room temperature. Fat provides calories to our diet and adds texture, flavor and aroma to food. Some fats also provide Vitamin E and essential fats to our diet. Fat is made up of different kinds of fatty acids — saturated, mono-unsaturated and polyunsaturated, which have different effects on our health. Solid fats often have large amounts of saturated fats and trans fats. These fats should be eaten in minimal amounts.

Functions:

- Supplies energy in a compact form
- Stores energy for future use, which also serves as an insulator and cushions organs
- Supplies essential fatty acids (those our bodies cannot make)
- Helps body absorb and use some nutrients such as fat-soluble vitamins
- Provides structure and function to cells as a component of the cell walls

Sources:

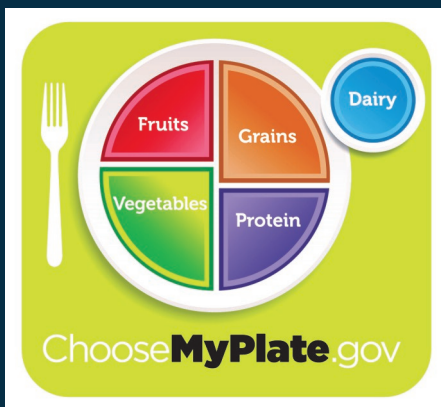
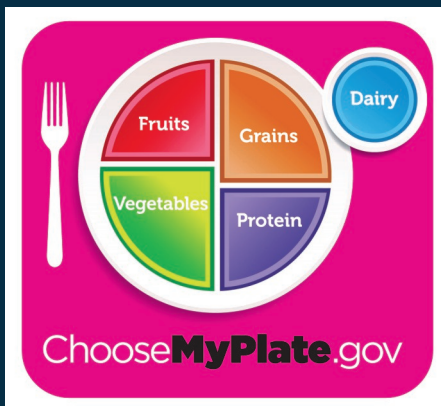
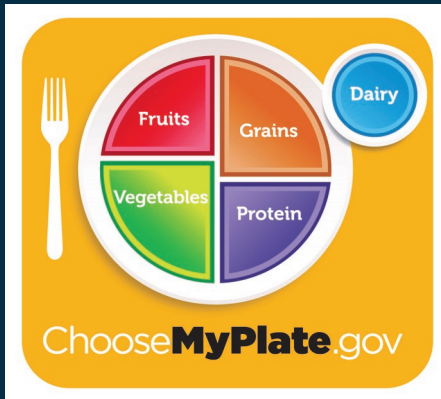
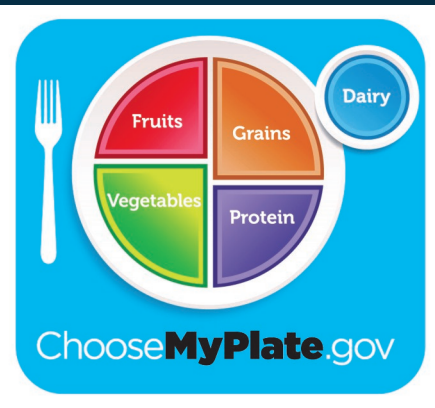
Oils: canola oil, olive oil, nuts, fish, olives, avocados, tub margarine, salad dressing

Solid Fats: Stick margarine, butter, shortening, lard, beef fat, chicken fat

Deficiency: Eczema, retarded growth, diarrhea, loss of hair

Sources

Iowa State University Extension: Key Nutrients
Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance



Folic Acid

MyPlate Food Sources: Grains, Vegetables, Protein

Description: Folic Acid is a B vitamin that is also known as folate. It is especially important for women who are pregnant or who may become pregnant to help prevent neural tube birth defects including spina bifida.

Functions:

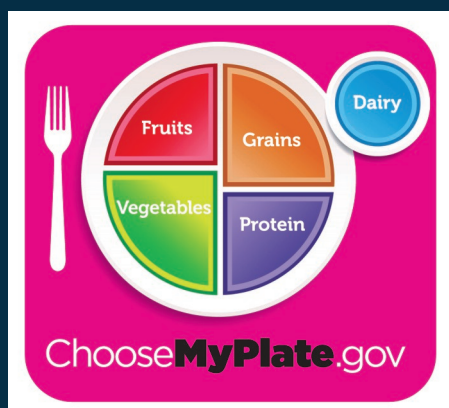
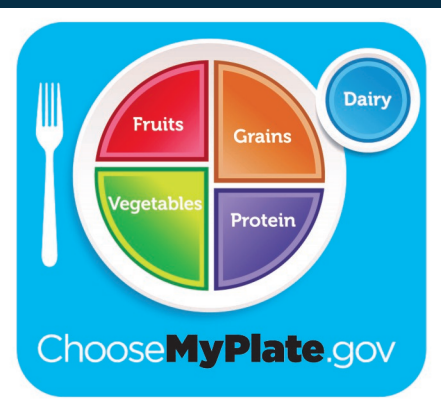
- Used in the synthesis of DNA and RNA in growing cells
- Helps the body use some of the amino acids found in protein
- Helps red blood cells mature
- Interrelated with Vitamin B₁₂ utilization

Sources: Folic Acid fortified and whole grain foods, leafy greens (especially spinach), broccoli, asparagus, corn, oranges, liver, kidney, dry beans, and nuts, organ meats, poultry, fish, eggs

Deficiency: Anemia, fatigue, gastrointestinal disturbances, inadequate intake before and during pregnancy is related to neural tube birth defects

Sources

Iowa State University Extension: Key Nutrients
Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance



Iron

MyPlate Food Sources: Grains, Vegetables, Protein

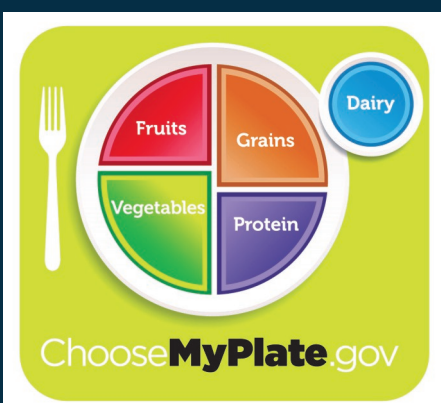
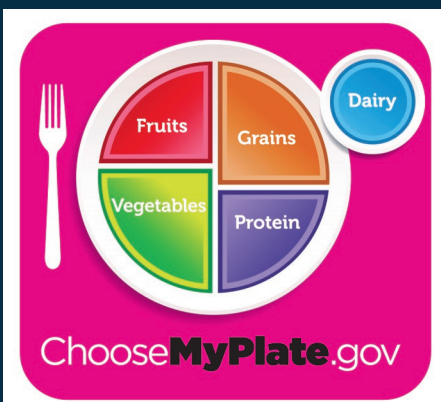
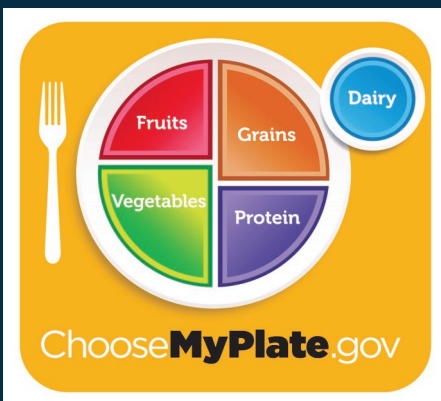
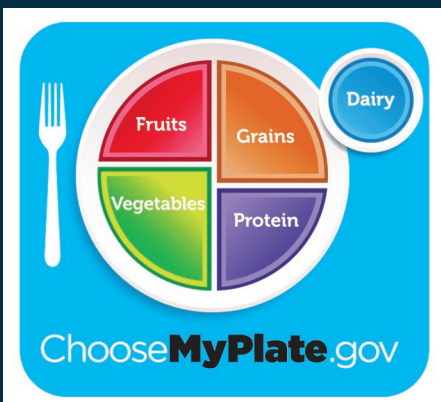
Description: Iron is a mineral that is found mainly in hemoglobin, the oxygen carrying component of the blood. Deficiency of iron is common and is called anemia.

Functions:

- As part of hemoglobin, iron carries oxygen from the lungs to the muscles, the brain, and other parts of the body

Sources: Iron is found mainly in the MyPlate protein food group, but it is also found in the vegetable and grain groups. Iron is also found in beef, poultry, egg yolk, enriched and whole-grain breads and cereals, legumes, dark green vegetables, black strap molasses, peaches, apricots, raisins, prunes, oysters

Deficiency: Anemia (common in infants, preschool children, teenage girls and pregnant women)



Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Magnesium

MyPlate Food Sources: Vegetables, Grains, Protein

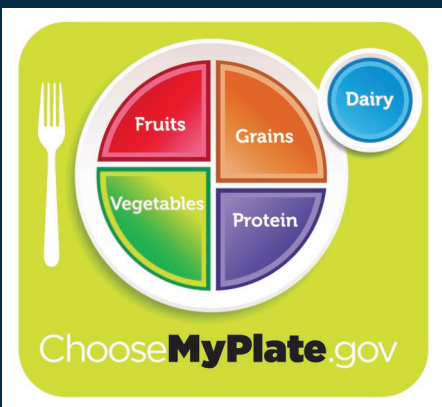
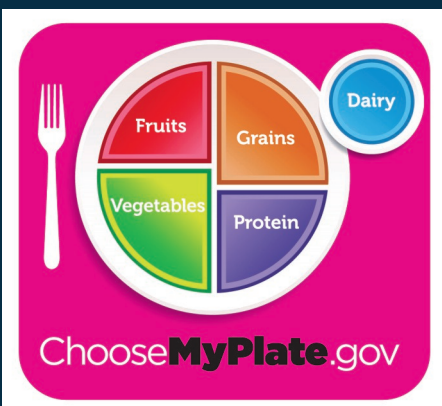
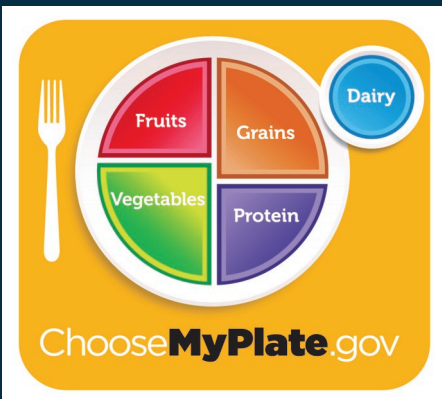
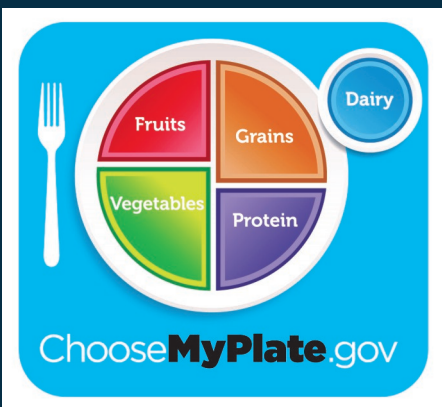
Description: Magnesium is a mineral that is found in very small amounts in the body. However, it is very important in a number of body functions.

Functions:

- Helps the body maintain normal levels of calcium, sodium, and potassium
- Maintains bones structure
- Helps release energy from carbohydrate, protein, and fat in the body
- Helps nerves and muscles function normally

Sources: Leafy greens, whole grains, nuts, legumes, dried peas and beans, milk

Deficiency: Tremors, growth failure



Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Niacin (Vitamin B₃)

MyPlate Food Sources: Dairy, Grains, Protein

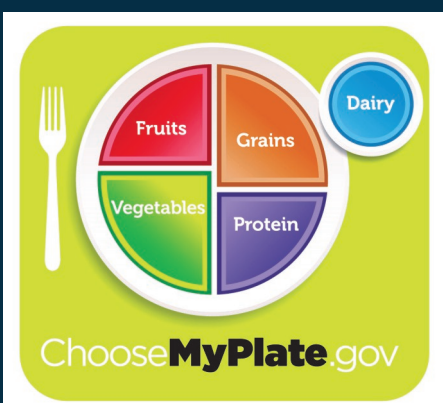
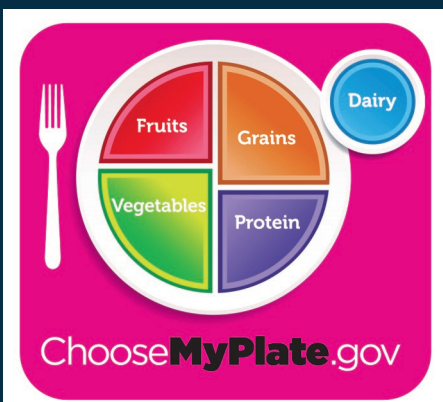
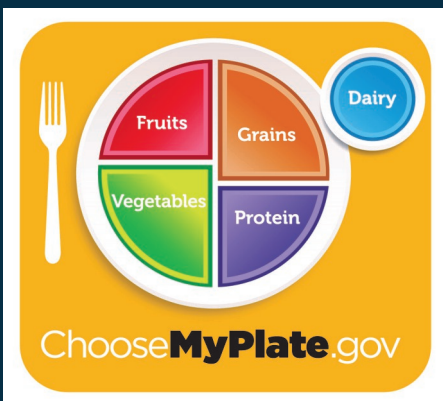
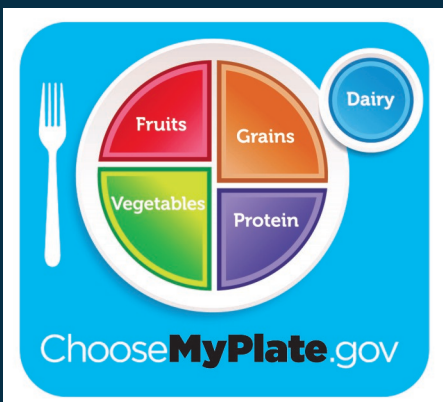
Description: Niacin is a water-soluble B vitamin found easily in food but also made in the human body.

Functions:

- Helps body release energy from food
- Helps the body make cholesterol and fatty acids
- Keeps the skin, tongue, digestive tract, and nervous system healthy
- Aids in carbohydrate metabolism
- Promotes normal appetite

Sources: Whole grain and enriched breads and cereals, milk, cheese, yogurt, tuna, poultry, beef, dried beans and peas, nuts, and seeds

Deficiency: Anorexia, diarrhea, dermatitis, confusion, anxiety



Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Potassium

MyPlate Food Sources: Vegetables, Fruits

Description: Potassium is a mineral that is part of the fluid inside our cells. Our bodies closely monitor the amount of potassium present in the cells because any deficiency or excess of potassium can cause an irregular heartbeat.

Functions:

- Helps transmit nerves signals throughout the body
- Helps regulate blood pressure

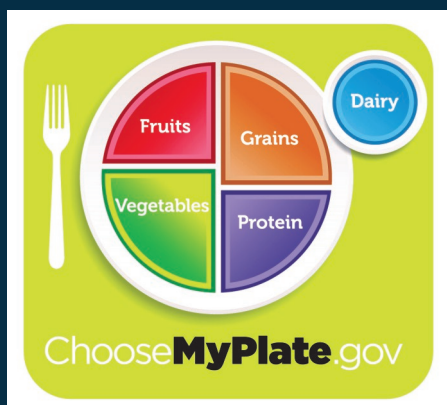
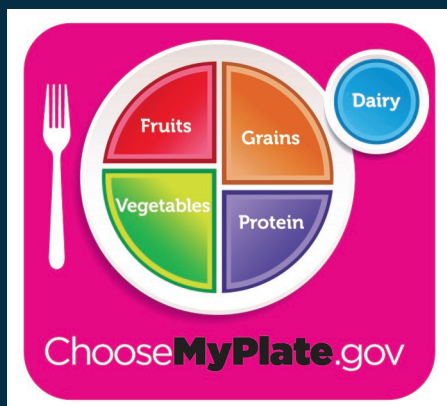
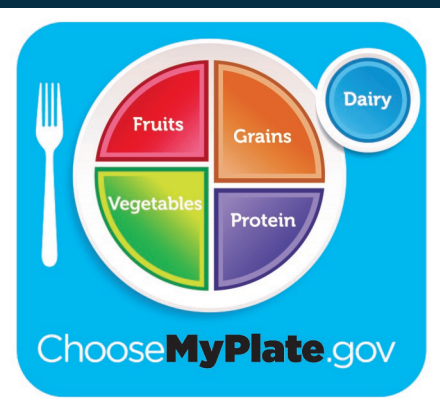
Sources: Bananas, oranges, potatoes, orange juice, potatoes, dried peas, peanuts, nuts, dairy products, and meats

Deficiency: Weakness, poor muscle tone, heart abnormalities, apathy (lack of energy)

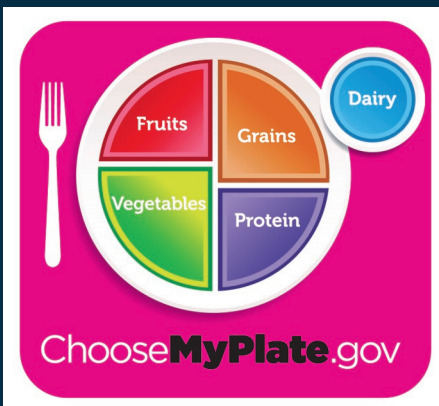
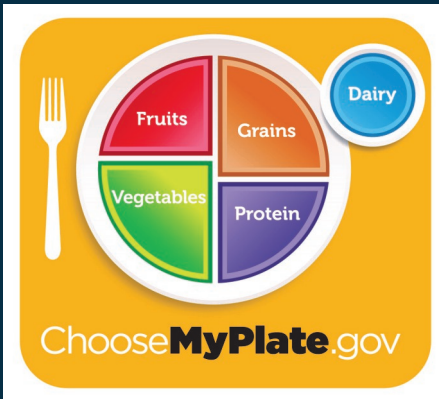
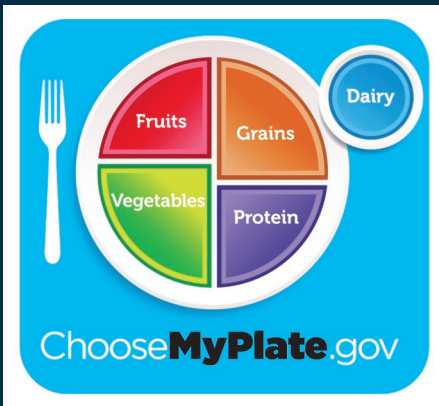
Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance



Protein



MyPlate Food Sources: Dairy, Protein

Description: Protein is made up of tiny units called amino acids. Protein is found in both animal and plant foods, but the amino acids within each varies, which affects the protein quality.

Functions:

- Forms building blocks for bones, muscles, cartilage, skin, blood, enzymes, hormones, and antibodies
 - Enzymes help normal processes occur in our bodies
 - Hormones send messages through our bodies
 - Antibodies fight infection
- Supplies energy from food
- Helps build blood

Sources: Protein is found in the MyPlate protein and dairy groups.

Animal Protein — meat, fish, poultry, eggs, milk, cheese, yogurt

Vegetable Protein — legumes (peas, beans) whole grain breads and cereals, nuts, peanut butter, soy

Deficiency: Fatigue, loss of appetite, edema, poor growth

Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Riboflavin (Vitamin B₂)

MyPlate Food Sources: Grains, Protein, Dairy

Description: Riboflavin is a water-soluble B vitamin found in many foods; it is easily destroyed by heat or light.

Functions:

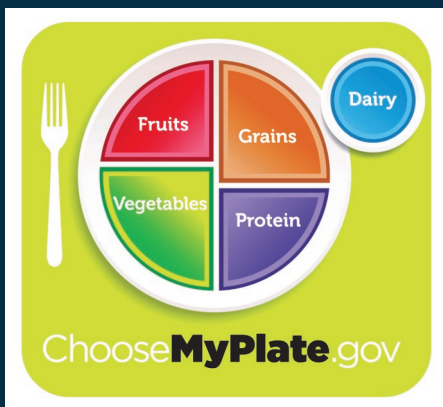
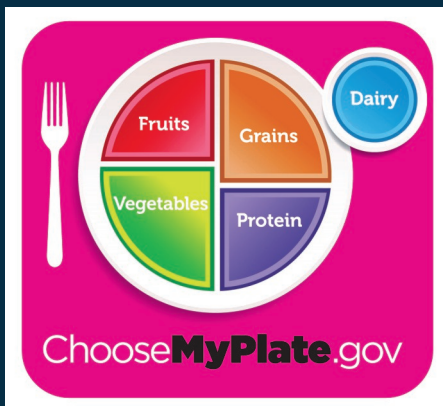
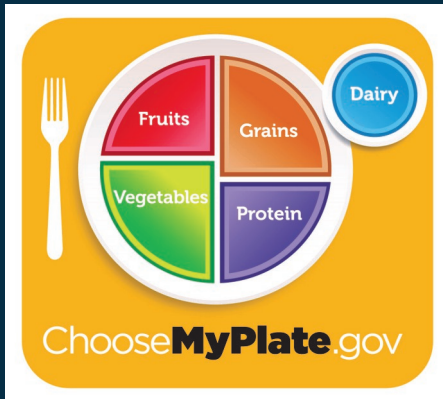
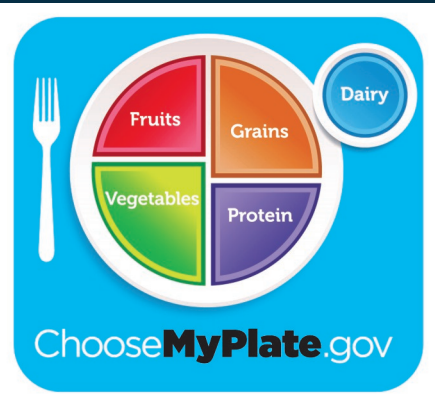
- Helps release energy from protein, carbohydrate, and fat
- Helps activate other vitamins
- Helps in metabolism of amino acids

Sources: Whole grain and enriched breads and cereals, leafy green vegetables, milk, cheese, liver, beef, poultry, fish, dry beans, and eggs

Deficiency: Cheilosis, scaly desquamation around nose and ears, sore tongue and mouth, burning and itching eyes, photophobia

Sources

Iowa State University Extension: Key Nutrients
Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance



Thiamin (Vitamin B₁)

MyPlate Food Sources: Grains, Protein

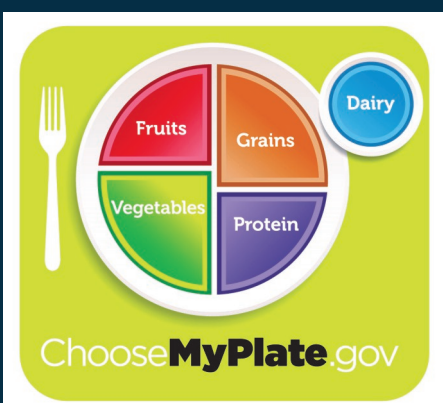
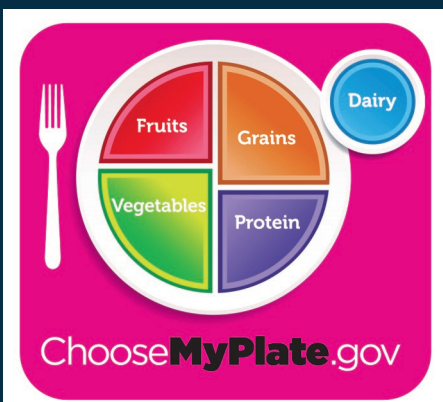
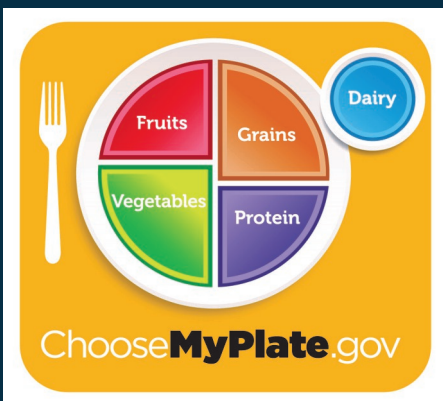
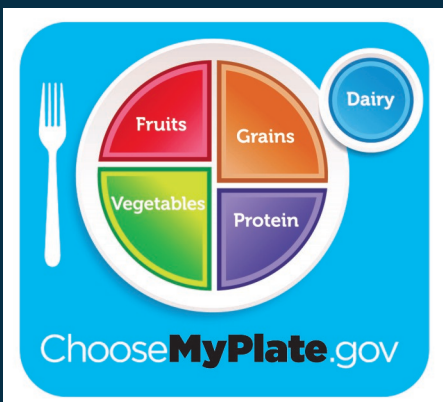
Description: Thiamin is a water-soluble B vitamin found in many foods. However, it is sensitive to heat and oxygen and can be destroyed during cooking or storage. Because it is water-soluble it is easily lost when food is cooked with water.

Functions:

- Helps body cells release energy from food
- Helps synthesize some other compounds needed in the body

Sources: Whole grain and enriched breads and cereals, pork, kidney, liver, dry beans, poultry, eggs, milk, dried peas, and nuts

Deficiency: Poor appetite, constipation, depression, apathy, cachexia, edema, cardiac failure, cheilosis



Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Vitamin A

MyPlate Food Sources: Vegetables, Dairy, Oil

Description: Vitamin A is a fat-soluble vitamin found easily in the American diet due to fortification, but may not be available to many people in other countries around the world. Beta carotene, a compound found in dark green and orange vegetables, is converted to Vitamin A by our body and also contributes to overall intake.

Functions:

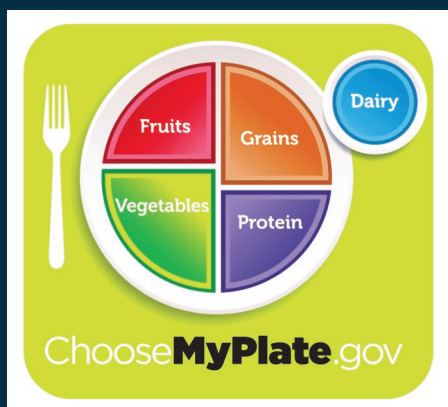
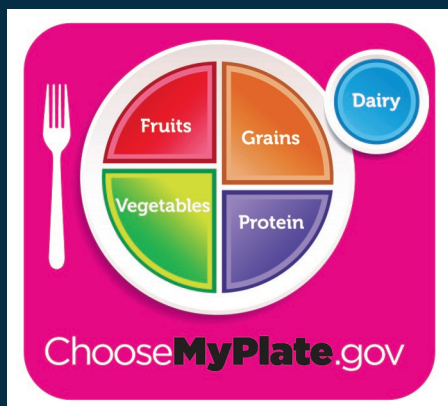
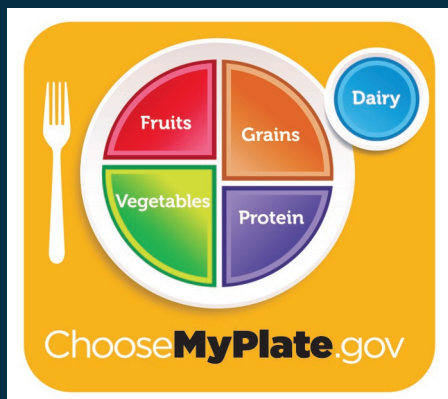
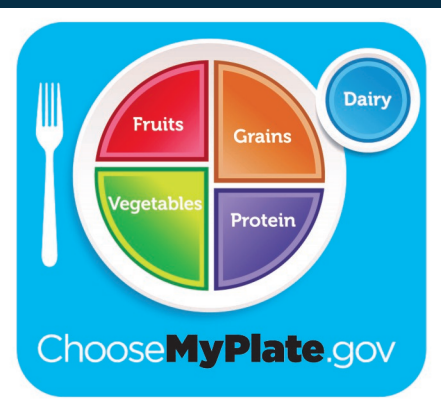
- Helps the eyes adjust to dim light and protects against night blindness
- Helps young cells in the body develop into mature cells
- Keeps the skin, and the lining of the mouth, nose, throat, and digestive tract healthy and resistant to infection
- Aids in growth, reproduction, and immune function
- Serves as an antioxidant to protect the body's cells from damage

Sources: Liver, fish liver oils, egg yolks, margarine, peaches, cantaloupe, apricots, dark leafy greens, deep yellow vegetables (carrots, winter squash, chard, pumpkin sweet potatoes), broccoli, and vitamin A-fortified milk

Deficiency: Faulty bone and tooth development in infants, poor growth, xerophthalmia, night blindness

Sources

Iowa State University Extension: Key Nutrients
Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance



Vitamin B₁₂

MyPlate Food Sources: Dairy, Protein

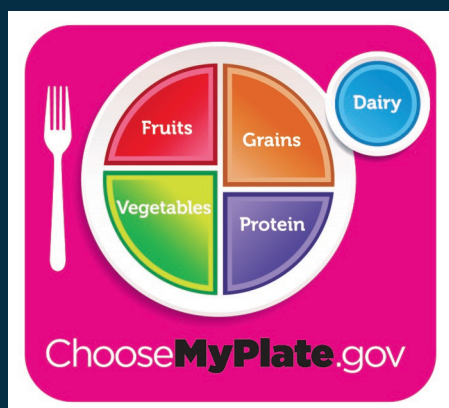
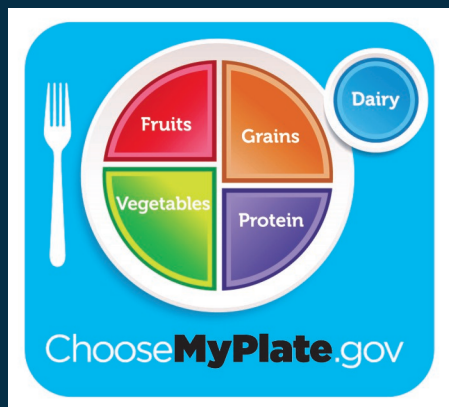
Description: Vitamin B₁₂ is made by bacteria that live in our large intestine. Some humans cannot absorb Vitamin B₁₂ very well and develop a type of anemia, a condition of the red blood cells.

Functions:

- Helps maintain myelin, a substance insulating nerves and helping nerves send messages through the body
- Helps release energy from fatty acids
- Maintains folic acid activity that is involved in DNA synthesis
- Helps prevent the risk of cardiovascular disease

Sources: Milk, beef, poultry, fish, eggs, fortified cereals

Deficiency: Anemia, neurologic disorders



Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Vitamin D

MyPlate Food Sources: Dairy, Protein

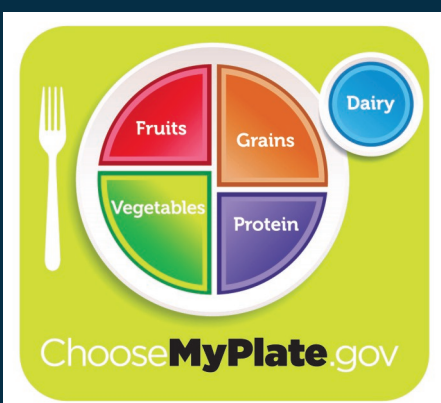
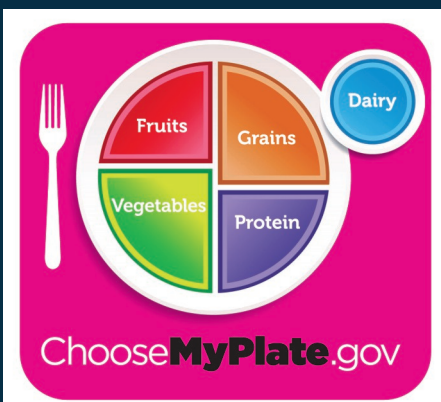
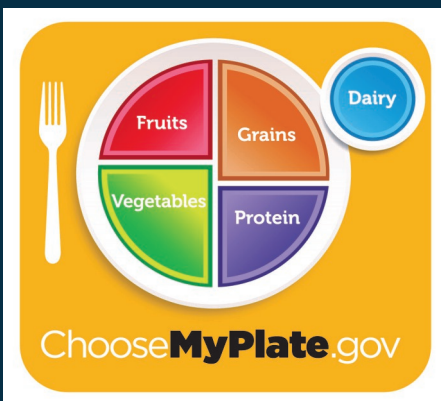
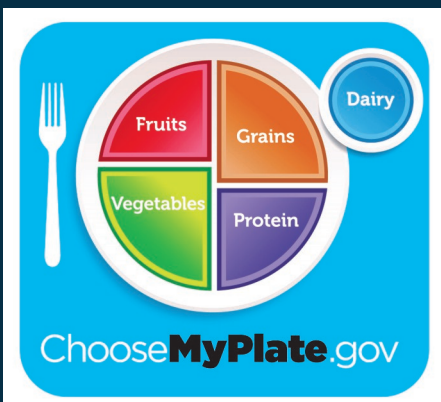
Description: Vitamin D is sometimes called the sunshine vitamin because it is produced in the skin when it is exposed to sunlight. This vitamin is also found in Vitamin D fortified milk.

Functions:

- Maintains normal levels of calcium and phosphorus in the blood
- Helps keep bones healthy
- Needed to fight off bacteria and viruses

Sources: Sunlight, milk fortified with Vitamin D, liver, salmon, and eggs, fish liver oils

Deficiency: Rickets (soft, fragile bones, enlarged joints, bowed legs); chest, spinal and pelvic bone deformities; convulsions



Sources

Iowa State University Extension: Key Nutrients

Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Vitamin E

MyPlate Food Sources: Vegetables, Protein, Oil

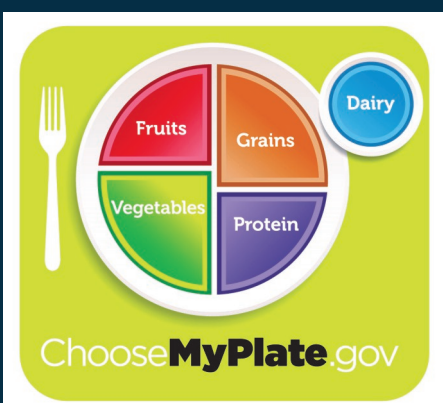
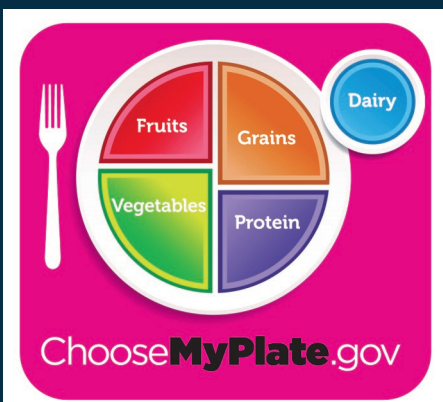
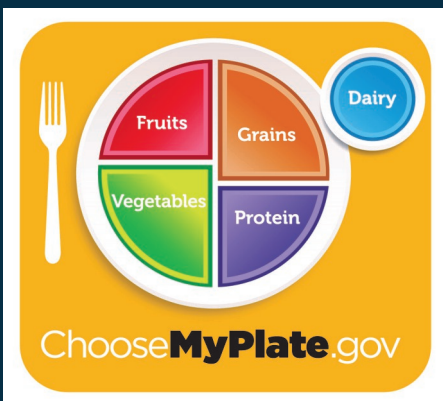
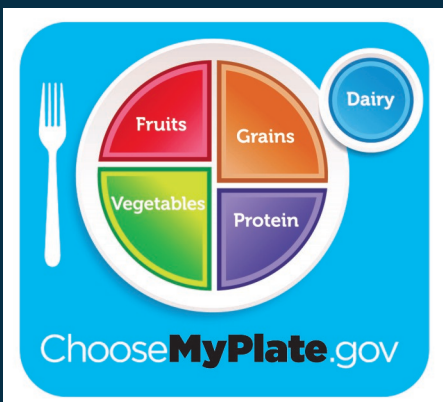
Description: Vitamin E functions as an antioxidant to protect our body from the dangers of our environment. This vitamin is found throughout our food supply, so a deficiency is rare.

Functions:

- Works as an antioxidant to protect cell membranes from damaging compounds in the environment
- Helps maintain red blood cells, nerve cells and immune cells

Sources: Vegetable oils, leafy greens, nuts, legumes, wheat and rice germ, and meats

Deficiency: Anemia in premature infants, problems of the nervous system



Sources

Iowa State University Extension: Key Nutrients
Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance

Water

MyPlate Food Sources: Vegetables, Fruits, Protein, Dairy

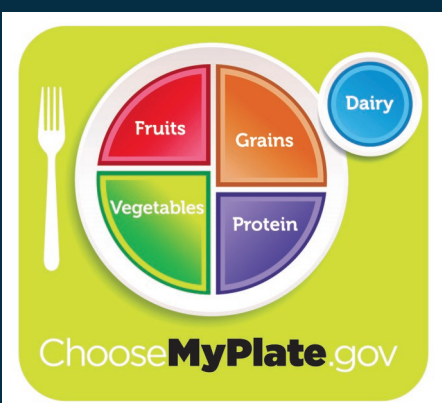
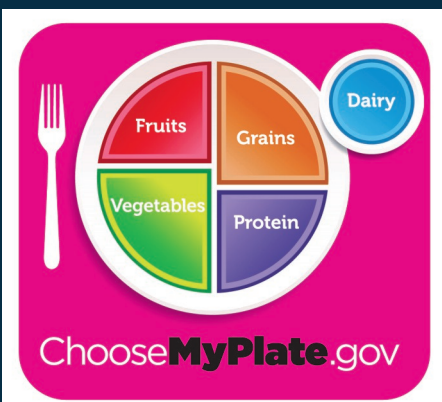
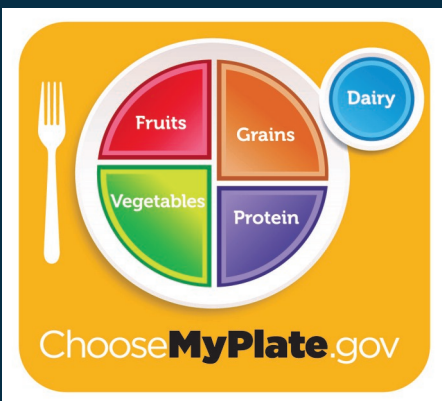
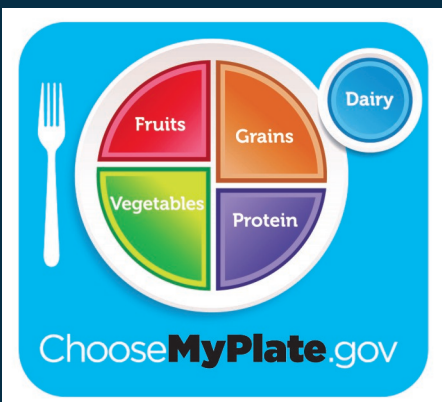
Description: Water is the most essential nutrient that keeps our bodies healthy.

Functions:

- Functions as an important part of all cells and fluids in the body
- Carries nutrients to cells and waste away from cells
- Helps digest and absorbs food we eat
- Helps keep body temperature constant
- Lubricates joints
- Aids in cell hydration

Sources: Water, beverages, soup, fruits, vegetables, juices, meats

Deficiency: Constipation, dehydration



Sources

Iowa State University Extension: Key Nutrients
Texas A&M AgriLife Extension Service: Nutrient Needs at a Glance