

## NUTRIENTS AND HOW THEY AFFECT THE BODY

### Performance Standard 23A.G

Analyze what happens to the foods/nutrients once they have been digested and what foods are good sources for getting various nutrients into the body accordingly:

- *Knowledge:* Identify functions of nutrients and food sources.
- *Application:* Analyze the effects of nutrients on the body.
- *Communication:* Explain food sources, functions, effects of deficiencies and over consumption of nutrients completely and clearly.

### Procedures

1. ***In order to describe and explain the structure and function of the human body systems and how they interrelate (23A)***, students should experience sufficient learning opportunities to develop the following:
  - Analyze what happens to foods/nutrients once they have been digested.
  - Discover what foods are good sources for major nutrients.
2. Explain the process of digestion, including the process of assimilation.
3. Place students in groups of 3 – 5.
4. Have each group complete a Nutrient Worksheet.
5. Assign each group a ‘major’ nutrient (water, carbohydrates, fats, vitamins, minerals, proteins).
6. Have each group design and produce a chart/poster containing pertinent information about their assigned nutrient.
7. Evaluate each student’s performance using the “Nutrients and How They Affect the Body” Rubric as follows:
  - *Knowledge:* Identified functions of nutrients and food sources correctly.
  - *Application:* Analyzed the effects of deficiencies and over consumption of nutrients.
  - *Communication:* Communicated clearly and completely, using a chart, the sources, functions and effects of an assigned nutrient.

### Examples of Student Work

- [Meets](#)
- [Exceeds](#)

### Time Requirements

- Two to three class periods

### Resources

- Textbook
- Internet Resources
- Other print media
- Magazines that students can use to cut out pictures (if they want for their poster)
- Markers
- Construction paper or poster board
- Copies of Nutrient task sheet
- N.E.T. Resources
- Nutrients and How They Effect the Body Rubric

### NUTRIENT TASK SHEET

NUTRIENT	MAIN FUNCTIONS	EFFECTS IF THE BODY DOES NOT GET ENOUGH OF IT	EFFECTS IF THE BODY GETS TOO MUCH OF IT	'GOOD' FOOD SOURCES
MINERALS				
Calcium				
Sodium				
Iron				
VITAMINS				
A				
D				
C				
B12				
WATER				
CARBOHYDRATES				
Simple				
Complex				
FATS				
Saturated				
Unsaturated				
PROTEINS				

GROUP MEMBERS' NAMES

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## NUTRIENTS AND HOW THEY AFFECT THE BODY

NAME \_\_\_\_\_ DATE \_\_\_\_\_

- Exceeds standard (average of 8)
- Meets standard (average of 6 – 7)
- Approaches standard (average of 4 – 5)
- Begins standard or absent (average of 1 – 3)

	<b>Nutrient Worksheet</b>	<b>Poster/Chart</b>
<b>4</b>	<ul style="list-style-type: none"> <li>• Successfully able to complete the nutrient worksheet without prompting from the teacher</li> <li>• 47 of the 52 areas of the worksheet were completed and information was accurate</li> <li>• Information provided showed extensive research</li> <li>• Understanding of the assignment and information was evident</li> </ul>	The chart poster: <ul style="list-style-type: none"> <li>• Had no inaccurate information</li> <li>• Had information displayed in a clear and orderly fashion</li> <li>• Was easy to read</li> <li>• Contained all of the required information                             <ul style="list-style-type: none"> <li>○ Food sources</li> <li>○ Functions</li> <li>○ Effects of deficiencies</li> <li>○ Effects of getting too much</li> </ul> </li> </ul>
<b>3</b>	<ul style="list-style-type: none"> <li>• Successfully able to complete the nutrient worksheet with a little help from the teacher</li> <li>• 37 to 46 areas of the worksheet were accurately completed</li> <li>• Information provided showed adequate research</li> <li>• Understanding of the assignment and information was evident</li> </ul>	The chart/poster: <ul style="list-style-type: none"> <li>• Had no inaccurate information</li> <li>• Had information displayed in a clear and orderly fashion</li> <li>• Was difficult to read in some areas</li> <li>• Contained most of the required information                             <ul style="list-style-type: none"> <li>○ Food sources</li> <li>○ Functions</li> <li>○ Effects of deficiencies</li> <li>○ Effects of getting too much</li> </ul> </li> </ul>
<b>2</b>	<ul style="list-style-type: none"> <li>• Successfully completed most of the worksheet; but, needed occasional help from the teacher</li> <li>• 26 to 36 areas of the worksheet were accurately completed</li> <li>• Information provided showed a fair amount of research</li> <li>• Understanding of the assignment and information was not always evident</li> </ul>	The chart/poster: <ul style="list-style-type: none"> <li>• Had some inaccurate information</li> <li>• Had areas that lacked clear organization</li> <li>• Was difficult to read in some areas</li> <li>• Contained some of the required information                             <ul style="list-style-type: none"> <li>○ Food sources</li> <li>○ Functions</li> <li>○ Effects of deficiencies</li> <li>○ Effects of getting too much</li> </ul> </li> </ul>
<b>1</b>	<ul style="list-style-type: none"> <li>• Only with prompting from the teacher was the group able to complete some of the areas on the worksheet</li> <li>• Less than 26 areas of the worksheet were accurately completed</li> <li>• Information provided showed a lack of research</li> <li>• Little understanding of the assignment and information was evident</li> </ul>	The chart/poster: <ul style="list-style-type: none"> <li>• Had some inaccurate information</li> <li>• Had areas that lacked clear organization</li> <li>• Was difficult to read</li> <li>• Contained little of the required information                             <ul style="list-style-type: none"> <li>○ Food sources</li> <li>○ Functions</li> <li>○ Effects of deficiencies</li> <li>○ Effects of getting too much</li> </ul> </li> </ul>
<b>Score</b>		

NUTRIENT	MAIN FUNCTIONS	EFFECTS IF THE BODY DOES NOT GET ENOUGH OF IT	EFFECTS IF THE BODY GETS TOO MUCH OF IT	'GOOD' FOOD SOURCES
MINERALS Calcium	Acts in bone and tooth formation.	You will not have strong <del>muscles</del> <b>bones</b>	You will look real tired and you will get exploded.	Dairy Products, Dark Green vegetables, <b>calcium</b> .
Sodium	Helps regulate the movement of body fluids in and out of your body cells.	It will cause kidney problems <b>Weak, nausea</b>	It causes fluid retention and swelling.	Milk, whole-grain, whole-wheat bread.
Iron	Serves as an essential part of hemoglobin, which carries oxygen.	Iron deficiency can lead to anemia along with fatigue and <del>the</del>	It would cause a hemochromatosis with genetic problems.	Leanest of low fat milk, vegetables, <b>organ meats</b>
VITAMINS A	Maintains healthy eyes, skin, bones and teeth.	Problems w/ night vision, muscular membranes with bones growth.	Problems with vision, appetite, skin, joints, bones, <b>PSD</b>	meats, whole milk, cheese, egg, yolk, yellow fruits, green vegetables.
D	Absorbs phosphorus, builds + maintains bones + teeth.	Rickets	Calcium deposits lead to <del>de</del> kidney stone, blood temperature	milk, eggs, exposure to v.v rays
C	Keeps firm, helps healing wounds	Scurvy	Kidney stones, urinary tract infection	orange juice, <b>Citrus fruits</b>
B12	metabolism, healthy red blood cell.	anemia.	N/A.	organ, milk, cheese, eggs, fish.
WATER	Digesting food, remaining healthy, regulating your temp	dehydration	N/A.	water <b>fruits juice soup veggies</b>
CARBOHYDRATES Simple	Gives sugar, quick energy	Deprived of energy.	Provides quick energy, repairs tissue. <b>Tooth decay</b>	Fruit, vegetables, milk.
Complex	A long chain of glucose. <b>longer energy</b>	deprived of starch <b>tired</b>	Body gets a lot of starch <b>Obesity</b>	Starches, bread, cereal, potato.
FATS Saturated	Give concentrated forms of energy	Latches vitamins and minerals. <b>Tired, low energy</b>	Gets a lot of nutrients and <del>and</del> <b>Heart disease, Cancer</b>	Butter, lard, other animal fats.
Unsaturated	Gives concentrated form of energy	Latches vitamins and minerals. <b>Dry skin</b>	Gets a lot of nutrients and vitamins <b>Obesity</b>	Fish oils, vegetables, corn oil, soybean oil.
PROTEINS	Builds and repairs all body tissue.	The body uses it's own protein and can't maintain body tissue.	It's stored in the body as fat or passes through <del>the</del>	poultry, fish, eggs, meat, milk.

NUTRIENT WORKSHEET

NUTRIENT	MAIN FUNCTIONS	EFFECTS IF THE BODY DOES NOT GET ENOUGH OF IT	EFFECTS IF THE BODY GETS TOO MUCH OF IT	'GOOD' FOOD SOURCES
<b>MINERALS</b> Calcium	aids in bone formation a blood clotting needed for muscle	slow blood clotting, soft bones, osteoporosis rickets	extreme fatigue	dairy products dark green vegetables sardines
Sodium	helps maintain water balance aids in nerve muscle transmission	nausea, dizziness muscle cramps	some kidney disease, sensitive people high blood pressure retention	table salt, shellfish, carrots, beets
Iron	prevents anemia, forms part of hemoglobin	anemia, fatigue, infections, menstrual loss	hemochromatosis	liver, red meat, eggs, green leafy vegetables
<b>VITAMINS</b> A	maintain healthy eyes, skin, bones teeth	night blindness, eye problems, dry, scaly skin, problems w/ reproduction & birth problems	headaches, dry/scaly skin, liver damage, bone/joint pain	Organ meats, whole milk, cheese, egg, yolk, yellow fruits & vegetables
D	absorbs phosphorus builds and maintains bones and teeth	osteoporosis, osteomalacia, rickets, defective bone growth	kidney stones or damage, weak muscles, weak bones, excess bleeding	milk, eggs
C	keeps teeth firm in gums, healing wounds, iron absorption	scurvy, wounds not heal properly	kidney stones, diarrhea	Citrus fruits, melons, green vegetables, potatoes
B12	metabolism, healthy blood cells	anemia, fatigue, nerve damage, smooth tongue, sensitive skin	no symptoms	organ and muscle meats, milk, cheese, egg, fish
<b>WATER</b>	digesting foods removing wastes regulating temp.	thirst, dehydration	kidney eliminates excess	milk, juice, fruits, veggies, soup
<b>CARBOHYDRATES</b> Simple	provide quick energy used as fuel and to repair body tissues	feel drowsy	produces insulin for diabetes, rotten teeth	fruit, vegetables, milk
Complex	provide energy over a long period of time	no energy	diabetes	bread, cereal, pasta, potatoes
<b>FATS</b> Saturated	provides energy	body uses own protein <del>protein</del> tired low energy	risk of heart disease	butter, hard animal fats
Unsaturated	lowers cholesterol	causes body to use own protein <del>protein</del> dry skin	risk of heart disease	fish oils, most vegetable oils
<b>PROTEINS</b>	build and repair all body tissues	in causes body to use own protein	too much protein passes thru body as waste or stored as fat	meat, fish, poultry, dairy