

Nutrition's Seven Basics: The Good, The Bad, and The Costly

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Overview: The United States Food and Drug Administration (FDA) recommend that the average adult or child over the age of four consume the following dietary amounts per day: under 2,000 calories, under 65 grams (g) of fat, under 44 milligrams (mg) of cholesterol, under 2,400 mg of sodium, under 300 g of carbohydrates, at least 50 g of protein, and at least 25 g of dietary fiber. In this exercise, students will attempt to devise a one-day food plan which meets all of the dietary requirements listed above using an imaginary budget of \$10. Students will research the nutritional content of their food choices either at the grocery store or using a computer/smart phone, followed by an analysis of their food plan for both nutritional value and cost effectiveness. To simplify this exercise, we will be considering macronutrients only. It becomes much more complicated to consider micronutrients, such as vitamins.

Lesson Concepts:

- A healthy diet is crucial for the proper growth and development of students.
- Appropriate nutrition (e.g., balancing the amount of calories and nutrients consumed) is essential for health and wellness.
- Budgeting for the expenses of one person or an entire family can be a challenging task; therefore, learning how to spend wisely while also purchasing food/drink items with the most overall nutritional value is imperative.

Objectives:

- Students will be able to create a food plan that is nutritional and cost effective.

Grade Span: Middle and High School students

Materials:

- "Nutritional Predictions" handout
- "Student Food Plan" handouts: includes two pages, directions (pg. 4) and Excel spreadsheet
- Nutrition labels from food packages (actual or viewed online)
- Computer with projector (if possible)
- Calculators

Advance Preparation:

- Read Teacher Background and Procedure (see below)
- Make copies of "Nutritional Predictions" and "Student Food Plan" handouts

Time: Two class periods (~56 minutes each)

Grouping: Individual data collection; calculations with a partner; whole-group discussion

Teacher Background: [According to the USDA](#), the average weekly cost for a 12-13 year old male on a low-cost plan is \$55.20; therefore, a budget of \$10 a day is a realistic amount for students.

[\[http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm064928.htm\]](http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm064928.htm)

Cost for foods/drinks vary widely depending on store where items are purchased as well as the location in the United States. For the purposes of this exercise, either exact cost or estimates of cost were made.

Vocabulary: nutrition, nutrients, calories, fat, carbohydrates, protein, dietary fiber, sodium, cholesterol, budget

Procedure:

Part 1:

1. Predict: Provide students with [Nutritional Predictions handout](#)

[\[http://idea.ucr.edu/documents/flash/nutrition/Nutrition_Student_Handout_Predictions_v1.pdf\]](http://idea.ucr.edu/documents/flash/nutrition/Nutrition_Student_Handout_Predictions_v1.pdf) which includes a list of 10 foods/drinks found in the Student Food Plan handout, without dietary information. Students will predict whether the foods are “good” (e.g., contains high amount of dietary fiber and protein), “bad” (e.g., contains too many calories, fats, sodium, and/or cholesterol), or “costly” (e.g. too expensive for little nutritional value). Students will rank the foods/drinks based on what they believe to be the best nutritionally. **[think-pair-share]**

2. Discussion:

a. Provide students with the [Student Food Plan handout](#)

[\[http://idea.ucr.edu/documents/flash/nutrition/Diet_Exercise_Nutritional_Values_Handout_7.pdf\]](http://idea.ucr.edu/documents/flash/nutrition/Diet_Exercise_Nutritional_Values_Handout_7.pdf) to share the actual dietary information for the 10 foods with students. Ask students to see if their predictions were correct. If not, where and why were they incorrect?

b. Missing information on the **Student Food Plan handout** to be completed for **homework**. Explain directions for completion of the exercise. Students will need to fill in about 50 numbers. Show students an example of a nutrition label and explain how to read it as well as fill out their handout with the information found on the nutrition label. Be clear that students will complete the calculations section in class **the following day**.

3. Brainstorm: If time allows, students may start brainstorming their potential food plan choices.

Part 2:

1. Analyze: With a partner, students will calculate the cost of each serving, their overall total cost, and the total amount of each of the following: calories, fat,

cholesterol, sodium, carbohydrates, protein, and dietary fiber on the **Student Food Plan handout**.

2. **Reflect and Discuss:** Provide students with an opportunity, either in class or as homework, to reflect on the following questions on white line paper:
 - a. Were you successful in meeting your food plan and monetary budget? Why or why not?
 - b. Were you surprised by anything in your data collection? Explain your answer.
 - c. How did you like this nutrition exercise? What did you learn that you did not know previously? What would you like to see added or modified?

Assessment:

- Observations of students during participation in-class, such as during nutritional prediction discussion
- Completed Nutritional Predictions
- Completed Food Plan
- Reflection and Discussion

Technology Alternatives:

- Use this activity with Google Forms: students enter data via the form, one example of which can be [found here](https://docs.google.com/forms/d/1iHb3EIAEL8JeVUX536pbGNCfy5SH8fLinvi0v7sWnrA/edit):
<https://docs.google.com/forms/d/1iHb3EIAEL8JeVUX536pbGNCfy5SH8fLinvi0v7sWnrA/edit>
- Data will automatically be transferred to a Google Sheet
- Perform calculations with Google Sheets (similar to Excel)

Extensions:

- Students compare food prices for several items at two different food stores (convenience store and large chain grocery store).
 - Also, compare prices for large quantities of items versus single servings of items.
- Students can record what they eat for school lunch for a week and use the internet to find nutritional information and answer the following question: What percentage of your daily values are met at lunch time?

Name: _____ Class Period: _____ Date: _____

Student Food Plan

Directions: You will be creating a one-day food plan using an imaginary \$10. In this food plan you must meet the following criteria: cost is less than \$10; under 2,000 calories; under 65 g of fat; under 44 mg of cholesterol; under 2,400 mg of sodium; under 300 g of carbohydrates; at least 50 g of protein; and at least 25 g of dietary fiber. You must choose food/drink products wisely in order to meet these criteria.

You will do the following for homework:

- a) Find **five** foods/drinks other than those provided for you on the handout and fill in the cost and missing nutritional information in the top portion of the data table. Keep your criteria in mind!

You will do the following in class:

- b) Create your food plan choosing from the 15 foods/drinks now found in your data table. You do not have to use all of the foods/drinks in your food plan. Remember to reference your "Budget and Targets" listed at the bottom of the data table.
- c) For each item you choose to include calculate the cost of each serving, the overall total cost, and the total amount of each of the following: calories, fat, cholesterol, sodium, carbohydrates, protein, and dietary fiber.

Resources:

<http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm064928.htm>

<http://www.cnpp.usda.gov/sites/default/files/CostofFoodMay2015.pdf>

<https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=nutrition%20facts%20for%20a%20slice%20of%20pepperoni%20pizza>

[https://www.commack.k12.ny.us/lunch/nutritioninfo/Suncup%20Orange%20blend%203182\[1\].pdf](https://www.commack.k12.ny.us/lunch/nutritioninfo/Suncup%20Orange%20blend%203182[1].pdf)

http://www.mcdonalds.com/us/en/food/product_nutrition.burgerssandwiches.5.big-mac.html

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