

Activity 4

Meal Manager

Concepts/Skills

- ◆ Percents
- ◆ Proportional reasoning
- ◆ Problem solving

Materials

- ◆ TI-15
- ◆ Student activity pages (pp. 27 - 29)
- ◆ Nutrition fact labels from a variety of food items that could be used for lunch
- ◆ Chart paper
- ◆ Markers
- ◆ Using the TI-15 (p. 30)

Overview

Students will use percentages and proportional reasoning skills to create three nutritious lunch menus.

Focus

- ◆ Write the nutritional information on the board or overhead projector from the label of a gourmet popcorn and nut snack or any packaged snack food. List the serving size, calories of fat, calories of carbohydrates, and calories of protein. For example, a single serving of a gourmet popcorn and nut snack is $\frac{1}{2}$ cup serving (31 grams), and that serving contains 72 calories of fat, 80 calories of carbohydrates, 8 calories of protein.

Note: Any packaged snack will work for this activity. Seeing the actual package and reading the label is a valuable part of the activity.

- ◆ Ask students to calculate how many calories are in the serving. Then ask students to calculate the percentage of fat, carbohydrates, and protein in the serving.
- ◆ Nutritionists generally agree on the following percentages for a healthy diet: 20% – 30% fat, 50% – 60% carbohydrates, and 20% – 30% protein. Have the students discuss whether the snack is nutritious.

First Things First

For students not ready for the open-ended problem, start with the *First Things First* activity page.

Presenting the Problem

Present the problem from the *Meal Manager* activity page. Make sure the students understand the facts given. If the students only use labels from actual products, they will limit their choices for each lunch menu. Consider bringing to class other resources that list the nutritional information for various foods. One Internet source that might prove helpful is *Mike's Calorie And Fat Gram Chart For 1000 Foods* <http://www.caloriecountercharts.com>. Other Internet sites provide similar information.

Evaluating the Results

Students should present their completed charts to the class.

After the presentations, have the class evaluate the charts for similarities and differences in the lunch menus.

Discuss how students used the TI-15 to help them solve the problem.



Name _____
Date _____

Activity 4

Meal Manager: First Things First

The Problem

The sixth grade class at Booker T. Washington elementary school is planning a flower garden for the entrance of the school. The garden will contain the favorite colors of the students. After the class surveyed the students, they found out that 38% of the students like red, 14% love blue, 29% favor yellow, and 19% prefer pink. They have room for 15 rows with 24 plants in each row. How many flowers of each color should they plant?

Working the Problem

1. Calculate the total number of plants. Enter 15×24 . Record your result. Does it make sense?
2. Calculate how many flowers of each color are needed. Enter the total number of plants $\times 38\%$ to get the number of red flowers. How many red flower plants do they need?
3. Calculate how many flowers of each color they need. Always start with the total number of plants. Record your answers.
4. Do the answers make sense? Did some of the answers come back as decimals? Why do you think that happened?
5. Can you purchase 12.5 plants? What should you do with the decimals?
6. Create a drawing of the garden. Use colored dots to show the placement of the flower colors. You may use graph paper for this drawing.
7. Does the garden drawing make sense? Does it have the correct number of rows and the correct number of plants in each row? How do you know?
8. Does your drawing show the correct percentages? How do you know?



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Meal Manager

The Problem

Your team is going to plan lunch for the first, second, and third grade students attending the Super Summer Math Camp. The lunch must be nutritious and fit the guidelines for the correct percentage of protein, carbohydrate and fat.

The Facts

- ◆ Children ages 7 to 10 should consume about 2,000 calories per day.
- ◆ Calories can be divided into three meals and two snacks. Between 80% and 90% of the calories should be consumed as meals.
- ◆ Experts suggest different amounts of fat, protein, and carbohydrates. For these meals, 20% - 40% of the calories should come from protein, 20% - 40% from fat, and 50% - 70% from carbohydrates.
- ◆ Each gram of protein contains 4 calories. Each gram of carbohydrate contains 4 calories. Each gram of fat contains 9 calories.
- ◆ Some foods contain all three: protein, carbohydrate, and fat. Other foods may contain only one or two of these nutrients.
- ◆ Nutrition labels on food list serving size, calories per serving, total fat, total carbohydrate, and protein.

The Task

1. Your team will create a chart with the following information:
 - Menu for the lunch, including portion (serving) size, for example, one cup of milk.
 - Grams of protein, carbohydrate, and fat for each menu item.
 - Total calories for each menu item.
 - Total grams of protein, carbohydrate, and fat for each lunch.
 - Percentage of calories from protein, carbohydrate, and fat for the lunch.

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2. Each person on the team will write an explanation of the chart. The explanation will answer these questions:
 - How did your team decide on the menu?
 - How did your team calculate the grams of carbohydrate, protein, and fat for each menu item?
 - How did your team calculate the percentage of carbohydrate, protein, and fat for the lunch menu? Do all of the calculations make sense? How do you know?
 3. Your team will present your chart to the class. Be prepared to explain your menu and the nutritional analysis of the menu.



Using the TI-15

Activity 4

Meal Manager

15 \times 24 Enter

15 \times 24 = 360

360 \times 38 $\%$ Enter

360 \times 38% = 136.8