Title: How Much is Too Much?

Objectives		Time frame to Complete
Students will be able to solve equations involving decimals and percentages. Students will gain awareness of recommended daily allowances of nutrients.		30 minutes
		NRS EFL 4

Stackable Cert. Documentation	Technology	Study / Life skills	EL-Civics	Career Pathways	Police	Paramedic	Fire Rescue	Medical Asst.	EKG / Cardio	Phlebotomy	Practical Nursing	Healthcare Admin	Pharmacy Tech	IMT	AMT	HVAC	Welding	Other:	Nutrition and Dietetics			
		X						X		X	X								X			

Standard(s) Addressed in Lesson
Use Math to Solve Problems and Communicate

Benchmark(s) Addressed in Lesson
M.4.1 Connect a wide range of number words and numerals, including fractions, decimals and whole numbers, to the quantities they represent.

M.4.2 Solve, with a high degree of accuracy, multi-digit addition, subtraction, multiplication and division problems in horizontal and vertical notation with regrouping, using whole numbers, fractions, decimals and positive/negative integers.

M.4.25 Solve multi-step problems.

Materials
How Much is Too Much? worksheet
Pencil
Calculator (optional)
Nutrition labels from food packages (optional)
Computer with internet access (optional)

Learner Prior Knowledge
Addition, subtraction, multiplication, division, a general understanding of decimals and percents

Activities

Step 1   Ask students if they are aware of recommended daily allowances of different nutrients. Do any students track nutrients? Ask students where they could find information about what nutrients are necessary, how much they should eat each day, and which nutrients the foods they eat contain.

Step 2   Distribute *How Much is Too Much?* worksheet. Read the introduction, discuss if necessary, and review how to calculate percentages.

Step 3   Students complete the worksheet.

Step 4   Check answers using answer key (or calculators)

Assessment/Evidence   Completed worksheet
Adaptations for Beginning Students   Beginning students can work with a partner and/or use calculators.
Adaptations for Advanced Students   Advanced students can use sample food labels or nutrition facts found online to calculate the amount of sodium, protein, and potassium they eat on a typical day and compare this information to the recommended quantities.
Teacher Reflection/Lesson Evaluation
This lesson was created by Middletown ABLE.

How Much is too Much?

One of the most significant factors affecting a person's health is his or her diet. Labels on food packages provide nutritional content and dietary guidelines. Using this information, calculate to solve the problems below and consider how the examples affect health. To solve the problems, you will need to use addition, subtraction, multiplication, and division. You will also need to calculate percentages.

Percentage means "parts per hundred". There are several common ways to determine percents and their equivalents.

To convert a percentage to a decimal, divide by 100.

$$79\% = 79/100 = 0.79$$

To convert a fraction to a decimal, divide the top number (numerator) by the bottom number (denominator).

$$1/5 = 0.20 = 20\%$$

To find a specific percentage of a number, convert the percentage into a decimal. Then multiply the number for which you are finding the percentage by the decimal.

Find 15% of 88.
88 x 0.15 = 13.2

Remember that decimals are tenths, hundredths, thousandths and so forth. For percentages, round to the nearest hundredth.

What percentage of 250 is 13?
13/250 = 0.052 Round to 5%

Show all work.

1. The average American eats enough salt to fill 57 shakers which equals 1.2 million mg.

Approximately how many mg are in each salt shaker?

2. USDA recently reduced its recommendation for the daily allowance of sodium. They used to recommend 2300 mg per day. Now, they recommend adults should consume no more than 1,500 mg of sodium a day (2/3 of a teaspoon). What percentage reduction is this recommendation?

3. The average American is consuming more than 3,400 mg of salt a day. How much greater is this than the recommended intake?

4. Jared ate lunch at Subway. He ate a turkey sub (910 mg sodium), a bag of potato chips (180 mg sodium), and a diet cola (40 mg sodium).
    a. How much sodium did he eat in one meal?
    b. What percentage of his daily recommended allowance is this?
    c. How much sodium can he eat in the rest of the day to stay within the recommended limit?

5. The recommended daily intake of protein for an adult female is approximately 46g and 56g for an adult male. What is the average recommended daily intake of protein for adults?

6. The government has not issued a required allowance of potassium because so many other functions of a body influence how much is needed. However, a general guideline is that people should consume 4.7 grams of potassium per day. How much greater is the recommended intake of protein?

Answer Key

One of the most significant factors affecting a person's health is his or her diet. Labels on food packages provide nutritional content and dietary guidelines. Using this information, calculate to solve the problems below and consider how the examples affect health. To solve the problems, you will need to use addition, subtraction, multiplication, and division. You will also need to calculate percentages.

Percentage means "parts per hundred". There are several common ways to determine percents and their equivalents.

> To convert a percentage to a decimal, divide by 100.

$$79\% = 79/100 = 0.79$$

> To convert a fraction to a decimal, divide the top number (numerator) by the bottom number (denominator).

$$1/5 = 0.20 = 20\%$$

> To find a specific percentage of a number, convert the percentage into a decimal. Then multiply the number for which you are finding the percentage by the decimal.

$$\text{Find } 15\% \text{ of } 88.$$
$$88 \times 0.15 = 13.2$$

> Remember that decimals are tenths, hundredths, thousandths and so forth. For percentages, round to the nearest hundredth.

$$\text{What percentage of } 250 \text{ is } 13?$$
$$13/250 = 0.052 \text{ Round to } 5\%$$

Show all work.

1. The average American eats enough salt to fill 57 shakers which equals 1.2 million mg.

Approximately how many mg are in each salt shaker?

1,200,000mg/57 = 21,052.63mg per salt shaker

2. USDA recently reduced its recommendation for the daily allowance of sodium. They used to recommend 2300 mg per day. Now, they recommend adults should consume no more than 1,500 mg of sodium a day (2/3 of a teaspoon). What percentage reduction is this recommendation?

2300-1500 = 800   800/2300 = 0.346 or approximately 35%

3. The average American is consuming more than 3,400 mg of salt a day. How much greater is this than the recommended intake?

    3400-1500   900mg greater than the recommended intake.

4. Jared ate lunch at Subway. He ate a turkey sub (910 mg sodium), a bag of potato chips (180 mg sodium), and a diet cola (40 mg sodium).
   a. How much sodium did he eat in one meal?
   b. What percentage of his daily recommended allowance is this?
   c. How much sodium can he eat in the rest of the day to stay within the recommended limit?

    910+180+40 = 1130mg in one meal

    1130/1500 = 0.7533 or approximately 75% of his RDA

    1500-1130   70 mg remaining

5. The recommended daily intake of protein for an adult female is approximately 46g and 56g for an adult male. What is the average recommended daily intake of protein for adults?
    (46+56)/2 = 61

6. The government has not issued a required allowance of potassium because so many other functions of a body influence how much is needed. However, a general guideline is that people should consume 4.7 grams of potassium per day. How much greater is the recommended intake of protein?
    61-4.7 = 56.3