

## Unit: CRISIS

### Lesson: Food Shortages

#### Time:

5 hours

#### Objectives & Skills:

Students will do a basic mathematical calculation of their own caloric needs, and create a class average. They will use critical thinking skills to construct a meal plan that will illustrate basic human food/ caloric intake needs. Secondly, students will do electronic and library research to gather, interpret and synthesize information on such subjects as climate, geography, political unrest, infrastructure and the like. Their oral presentations of formal "Risk Analyses" for individual African countries will communicate their understanding of the complex systems that create the threat of famine.

#### Materials:

Butcher paper or chalk board  
Computer with Internet access  
Encyclopedia  
Current magazines/newspapers  
Calculator

#### Preparations:

Print out a [Caloric Calculation Handout](#) with the formula for calculating required calorie intake for each student.

Print out the [Food Exchanges Handout](#), one for each small group.

Print and copy "World Food Supply" from [www.encarta.com](http://www.encarta.com), for each student.

Print and copy the [Multiple Entry Response Handout](#), for each student.

#### Internet Links:

Encarta: <http://www.encarta.com>. Find "World Food Supply" & "Human Nutrition" & "Famine."

USAID, Famine Early Warning System: <http://www.fews.org>

Famine Early Warning System Youth Page: <http://www.fews.org/youthpg/youthpg.html>

UNHCR The World, Africa: <http://www.unhcr.ch/world/afri/afri.htm>

All Africa: <http://allafrica.com>

Although Dan and his friends witnessed parts of Africa that were lush and fertile, many recent images of Africa have been far less beautiful. Because we see photographs of emaciated children or long lines at poorly-stocked feeding centers, Americans often assume that famine is simply a condition of African life.

While it is not true that all, or even most, Africans are unable to get sufficient food and clean water, it IS true that many parts of Africa suffer from conditions that make widespread famine more likely than in the West. Adequate rainfall is the most obvious condition necessary to produce a sufficient food supply, but many other factors contribute to the likelihood of famine, including economic, cultural, and historical influences. As a result, the residents of many African countries are in danger of being without the basic calories needed to survive and remain healthy.

***NOTE to TEACHERS: The exercises that follow deal with issues of caloric consumption and the tragedy of famine in Africa. These issues may be sensitive ones for your students, either because of the impact of starvation or because of personal weight and body image difficulties. We have constructed the lesson in order to make the issues meaningful for students, but you should use your discretion about individual portions of the lessons. Possible places where you might alter a lesson in order to accommodate your students' potential sensitivities are indicated.***

### **Premeditation:**

Ask students to guess at how much food and water would be a basic daily average requirement to maintain not just survival but also adequate health. Write their responses on a piece of butcher paper or the blackboard. Don't worry about a common measurement system; write down all of their answers.

Since "adequate health" has multiple interpretations, ask students to be as specific as they can in defining what they think that means. Ask them to think about what specific vitamins and/or types of foods people need, as well as where they learned this information (food pyramid, most likely). You might also ask them to think about what kinds of activities a body should be able to perform if it is in "adequate health."

### **Activity I:**

Step 1: Toward the end of a class period, give each student a copy of the [Calorie Calculation Handout](#). Ask them to calculate their individual caloric requirements based on the formula presented. Encourage honesty and tell them to turn in their sheet anonymously if they are at all uncomfortable. Collect all sheets before class is over. Before the next time your class meets, figure an average caloric requirement based on the results of the students' calculations. If you think your students answers might be greatly skewed, consider using a USDA average instead.

Step 2: Assign students to work in pairs and supply them with the class average caloric requirement, as well as the [Food Exchanges Handout](#). Half the class should work as though its "average" person is female, and the other half should assume its "average" person to be male. Tell the pairs that they are responsible for creating a "nutritious" set of three meals (breakfast, lunch, dinner) that would approximate the daily required number of calories needed to sustain the "average" student.

*Teaching Tips:*

- You might consider inviting your school nurse or a nutritionist to speak before moving on to the remainder of the steps. If the Premeditation exercise was difficult for your class, in particular, this step might help clarify the concepts students will need in order to proceed.
- Encourage students not to get overly hung up on absolute accuracy; approximation is okay. If a food students would like to use is not on the [Food Exchanges Handout](#), they can assign the food a caloric content that is close to another food on the list, or they may be able to find information by looking on packaging.
- As you walk around the room and observe the creation of these meals, ask students to consider the availability of their choices in places other than America. You can assure students that the foods on the handout ARE all available in Africa, at least for purchase in stores. But as economic and climatic conditions change and worsen, certain foods would become more difficult to obtain. Encourage students to consider which elements of their plan might become difficult to obtain under worsening conditions, such as drought or war. If a group recommends a "peanut butter and jelly sandwich," for example, you might ask them to think about how that meal will be created in rural Africa, especially if access to stores became difficult or if money is scarce. Students may decide to alter their meal plans once they begin to think about the challenges of accessing, paying for, or storing the food selections they initially propose.

Step 3: When they are done with their meal plans, have them share them with the rest of the class by their menus (complete with amounts and calories) on large pieces of paper around the room. You might also have them explain the process they went through to arrive at their plan. What did they eliminate? Why did they choose the particular foods they did? What criteria did they use to determine whether the meals were "nutritious"?

*Teaching Tip:*

You might use "Human Nutrition" from [www.encyclopedia.com](http://www.encyclopedia.com) here as a resource for facilitating this discussion.

Step 4: As a class or in assigned journal or essays, have students discuss how the meal plans compares to their own daily intake. Are they surprised at how much food/energy it takes to sustain a "normal" weight? Prompt students to continue to think about this as they consider the difficulties of finding this number of calories in conditions of drought or political turmoil. **Activity II: Dramatizing an Epidemic**

Step 1: Go to Encarta (<http://www.encarta.com>) and type in "World Food Supply." Print out copies of the article for students and/or assign them to read this overnight. Also distribute copies of the [Multiple Entry Response Handout](#). Have students read the article and write the major factors influencing the threat of famine in the far left column of the Handout.

Step 2: Discuss the items students identified on the Handout. Use the Answer Key to add to check students' answers and to add unidentified factors to the discussion. Students should add any factors they hadn't identified to their Handout, as this sheet will guide their note-taking in the next step.

Step 3: Evenly assign the following countries to students for "Risk Analysis" research: Kenya, Tanzania, Malawi, and Mozambique. Students should use online encyclopedias and other Internet and text resources to determine their country's condition for each of the famine risk factors. They should use the Handout to make notes about each factor, citing the source where they found the information.

Step 4: Have students who researched the same country meet to compare notes. Prepare a single sheet that neatly summarizes their findings to share with the rest of the class. This should be in the same form as the Handout, but should summarize the group findings and be easy to read.

Step 5: Have the groups present their findings. Discuss the conditions existing in the four countries and talk about similarities and differences. How might these be explained? What are possible ramifications of their findings?

### **Extending the Activity:**

Research how organizations are predicting and responding to famine situations throughout the world. You might look at articles in the Internet Journal of African Studies special issue <http://www.brad.ac.uk/research/ijas/ijasno2/ijasno2.html> for ideas.

Participate in the Thirty-Hour Famine (<http://www.30hourfamine.org>) to raise awareness and money.

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#### Calorie Calculation Handout

formula taken from Close to You Family Resource Network

(<http://closetoyou.org/eatingdisorders/nutrition.htm>)

To calculate an ESTIMATE of your needed calories to maintain your current weight, do the following:

**(your current weight, in pounds) x (A) = Daily Caloric Requirements**

"A" in the above equation is a function of your normal physical activity. Plug in one of the following values:

- Not very active
- Moderately active
- Very active
- Extremely active
- 12
- 15
- 20
- 25

*EXAMPLE: A 125 lb. person who is moderately active would need 1,875 calories per day.  
 $125 \times 15 = 1,875$*

Keeping in mind the premeditation activity in which you and your classmates discussed what an "adequately" healthy body should be able to do, use the following definitions as a loose guideline for factoring "A".

**Not very active:** This person sits all day, except when walking from room to room at school or at home. Not only is exercise not a priority for this person, he or she doesn't even like to break a sweat. Exercises up to once a week.

**Moderately active:** This person likes to walk and occasionally participates in recreational sports, but doesn't have a regular outlet for exercise. He or she might do yard work or walk from home to school. Exercises once or twice a week.

**Very active:** This person has some regular form of exercise, either in an organized sport or in a work situation. He or she likes to exercise and misses it when he or she doesn't move around enough. Exercises about three times a week.

**Extremely active:** This person is always doing something. His or her schedule is very busy, and many of his or her work/school/recreational activities include physical activity. Exercises three to five times a week.

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**Food Exchanges Handout**

(exchanges taken from [www.ghc.org/health\\_info/self/diet/exchange.html](http://www.ghc.org/health_info/self/diet/exchange.html))

Use the following food information to calculate a three meal diet for an average man or woman. The food choices listed here are types of foods that are generally available in Africa. Some of them would become less available as a drought or famine situation worsened, however.

### **BREAD & CEREAL**

**Each bread/cereal exchange supplies approximate 80 calories of energy. Eat at least five servings of whole grain or enriched breads each day.**

EXCHANGE	AMOUNT
<b>Breads and Rolls:</b>	
Bread dressing or stuffing	2 Tbl.
Hamburger, hot dog bun	1/2 bun
Whole grain, white, rye	1 slice
English muffin	1/2
<b>Crackers:</b>	
Graham	3 crackers (2-1/2 inch)
Oyster	1/2 cup
Round	5 crackers
Rye	4 double crackers
Saltines	6 crackers (2-inch)
Soda crackers	6 crackers (2-inch)
<b>Cereals:</b>	
Cooked (grits, oatmeal, rice, wheat)	1/2 cup
Ready to eat (flake)	3/4 cup
Ready to eat (puffed)	1-1/4 cup
Pasta (cooked)	1/2 cup
Flour	2-1/2 Tbl.
<b>Quick Breads (higher in fat):</b>	
Biscuit, roll, muffin	1 (2-inch)
Corn bread	1 piece (small)
Doughnut (plain)	1 small
Pancakes, waffles	1 (4-inch)
Scone	1 small
<b>Vegetables, soups, other:</b>	
Beans, lentils (cooked)	1/2 cup
Corn	1/2 cup kernels
Parsnips	1/2 cup
Potatoes	1 small or 1/2 cup
Sweet potatoes or Yams	1/4 cup
Soup (cream or bean)	1/2 serving
Soup (meat or vegetable)	1 serving

## FRUIT

Each fruit exchange provides approximately 40 calories of energy. Fruits can be fresh, dried, cooked, canned, or frozen as long as no sugar is added. Those in bold type are especially rich in vitamin C. Eat at least two exchanges of fruit each day, with at least one being a vitamin C rich fruit.

EXCHANGE	AMOUNT
Apple	1 (2-inch)
Apple juice	1/2 cup
Applesauce	1/2 cup
Apricots	4
Apricots, dried	7 halves
Banana	1/2 small
Blackberries	1 cup
Blueberries	1 cup
<b>Cantaloupe</b>	<b>1/3 small or 1 cup cubed</b>
Cherries	12
Figs	2
Grapes	15
Grape juice	1/3 cup
<b>Grapefruit</b>	<b>1/2 small</b>
<b>Grapefruit juice</b>	<b>1/2 cup</b>
Guava	1
Honeydew melon	1/8
Mango	1/2 small
<b>Orange</b>	<b>1 small</b>
<b>Orange juice</b>	<b>1/2 cup</b>
Papaya	1/2 small
Peach	1 medium
Pear	1 small
Raisins	2 Tbls.
<b>Strawberries</b>	<b>1-1/4 cups</b>

## VEGETABLE

Vegetable exchanges supply approximately 50 calories. The vegetables in bold type are especially rich sources of vitamins. In raw form, most vegetables may be eaten as desired and do not need to be recorded on the daily food plan. When cooked, limit serving portions to 1/2 to 1 cup and record as one vegetable exchange. Eat at least two servings of vegetables each day, including one vitamin-rich vegetable.

Artichokes	Endive	Rutabagas
<b>Asparagus</b>	Green beans, young	Sauerkraut
Bamboo shoots	Green onions	<b>Spinach</b>
<b>Beet greens</b>	<b>Kale</b>	Summer squash
<b>Broccoli</b>	Kohlrabi	Tomato and tomato juice
Brussels sprouts	Lettuce	<b>Turnip greens</b>
Cabbage	Mushrooms	Turnips
<b>Carrots</b>	<b>Mustard greens</b>	Vegetable juice
Cauliflower	Okra	Watercress
Celery	Onions	<b>Winter squash</b>
Chard	Peas	
<b>Collard</b>	Pea pods	
Cucumber	Peppers	
<b>Dandelion greens</b>	<b>Pumpkin</b>	
Eggplant	Radishes	

## MILK & DAIRY

Each milk exchange supplies approximately 85 calories of energy. You need at least two cups of milk or its equivalent each.

EXCHANGE	AMOUNT
Buttermilk (skimmed)	1 cup
Cottage cheese	1/3 cup
Evaporated milk	1/4 cup
Evaporated milk (skimmed)	1/2 cup
Ice milk	1/3 cup
Nonfat dried milk powder	1/4 cup
Yogurt, nonfat (plain, flavored, or frozen)	1 cup
Yogurt, plain (partially skimmed milk)	3/4 cup
Yogurt, flavored (partially skimmed milk)	1/2 cup



## MEAT

Each meat exchange supplies approximately 55 to 75 calories of energy. The lean meats will average somewhat less and the fat meats somewhat more. An average serving portion of cooked meat weighs approximately three ounces and counts as three meat exchanges. (A serving is about the size of a deck of cards.) Eat at least two serving portions of meat or meat substitutes (four exchanges) each day.

### **List #1: Lean meats and low-fat cheeses.**

EXCHANGE	AMOUNT
Chicken (skin removed), lean beef & pork, game meats, pheasant, rabbit, turkey, veal	1 ounce
Bass, cod, flounder, haddock, halibut, lobster, salmon, trout	1 ounce
Crab, lobster, salmon, tuna (water packed)	1/4 cup
Clams, oysters, scallops, shrimp	3-5 medium
Dried beans, lentils, peas (cooked)	1/3 cup
Cottage cheese (1% fat)	1/3 cup
Skimmed milk cheese	1 ounce
Tofu	4 ounces

### **List #2: Higher fat meats and cheeses. Use these less often.**

EXCHANGE	AMOUNT
Fat beef, duck, goose, ham, lamb, pork	1 ounce
Cheeses: American, Cheddar, Swiss, most other cheeses	1 ounce
Eggs	1 egg
Peanut butter	1 Tbl.
Cold cuts	1 thin slice
Frankfurter	1 small
Sausage link	1 small

## MISCELLANEOUS

These foods and beverages are concentrated sources of calories. Use these foods sparingly.

**List #1: Fats, 45 calories per exchange.**

EXCHANGE	AMOUNT
Avocado	1/8 medium
Bacon, crisp	1 slice
Butter or margarine	1 tsp.
Cream, light	2 Tbls.
Cream, heavy or sour	1 Tbl.
Cream cheese	1 Tbl.
Cream cheese, light	1-1/2 Tbl.
French dressing	1 Tbl.
Light mayonnaise, margarine	1 Tbl.
Mayonnaise	1 tsp.
Nuts	6 small
Oil, most salad dressings	1 tsp.
Olives	5 small

**List #2: Sweets, 45 calories per exchange**

EXCHANGE	AMOUNT
Coca (sweetened)	1 level Tbl.
Hard candy, caramel	1 small piece
Sugar, syrup, honey, jam, jelly	1 level Tbl.

**List #3: Desserts and beverages, 40 calories per exchange.** Each serving listed is counted as two exchanges.

TWO EXCHANGES	AMOUNT
Cake	1 2-inch piece
Jello	1 serving
Sherbet, frozen yogurt	1/2 cup
Beer	6 ounces
Carbonated "soft" drinks	6 ounces
Gin, Rum, Whiskey, etc.	1 ounce*
*One jigger is 1-1/2 ounces and is counted as three exchanges.	
Liquers	1 ounce
Wine (sweet)	2 ounces
Wine (light, dry)	3 ounces

## FREE FOODS:

The following foods, seasonings, and beverages have either negligible calories or no calories at all. They may be used freely in reasonable amounts and do not have to be recorded on the daily food plan.

All raw vegetables from the vegetable exchange list	Non-stick sprays
Bouillon	Onion flakes
Broths, clear (no fat)	Pickles (dill or sour, unsweetened)
Carbonated beverages, sugar-free	Rennet tablets
Coffee (black)	Rhubarb (unsweetened)
Cranberries (unsweetened)	Salad dressing (oil-free)
Flavoring extracts	Soy sauce
Garlic	Spices
Gelatin (unflavored or flavored sugar-free)	Sugar substitutes
Herbs	Taco sauce
Horseradish	Tea
Lemon juice	Vinegar (all varieties)
Lime juice	
Mineral waters	
Mustard	

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**Food Supply Response Handout**

*Directions: The purpose of this handout is to give you a place to collect information from the "World Food Supply" article and other research you do. Identify factors in the first column; explain any conditions about this factor specific to your assigned country in the second column; and cite the source of your information the third column.*

<b>List the factors affecting famine:</b>	<b>Note the conditions regarding this issue in your country and assign it a 1-5 Risk Factor (1=lowest risk, 5=highest risk)</b>	<b>Source:</b>