How Big is a Billion?

OVERVIEW

A short demonstration of how much 1 billion is, using increasing amounts of rice to represent the world's population. Students then create their own representations of 1 billion.

INQUIRY/CRITICAL THINKING QUESTIONS

- How much is 1 billion?
- How can we represent the number "1 billion"?
- How many people can the planet support?

OBJECTIVES

Students will:

- Observe a demonstration of how much 1 billion is
- Gain an understanding of the significance of global population
- Create their own representation of 1 billion

TIME REQUIRED: 30 minutes

KEY ISSUES/CONCEPTS

- **Population**
- **Exponential growth**

SUBJECT AREAS

- **Social Studies** (Geography, Economics, Global Studies)
- **Science** (Life, Environmental)
- **Math**

NATIONAL STANDARDS CONSISTENCY

- **NCSS: 3, 9**
- **NSES: C, F**

GRADE LEVEL: 5–8

FTF Related Reading

- Intermediate: Chapter 2 from *Global Issues and Sustainable Solutions*
- Advanced: Unit 2 from *It's All Connected*

Materials/Preparation

- 1 small bag of uncooked rice
- Teaspoon, 1 cup measuring cup, gallon jar

Activity

Introduction

1. The purpose of this exercise is to put into perspective how many people there are in the world. To get started, ask students what the population of the world is (about 6.5 billion).
2. Ask them if they can imagine how big the number 1 billion is. Tell them you are going to help them see how big 1 billion is.

Steps

1. Scoop out a level teaspoon of rice from a bag of uncooked grains and show to the class. Tell them that there are about 200 grains of rice in 1 teaspoon.
2. Show them a cup of rice and explain that there are approximately 9,600 grains of rice (48 teaspoons) in 1 cup. Ask how many cups are in 1 gallon (16 cups). Then ask how many grains of rice there are in 16 cups (9,600 x 16 = 153,600 grains of rice).
3. Ask how many gallons it would take to equal 1 million grains of rice. Answer: 1,000,000 divided by 153,600 = 6.5 gallons = 1 million grains of rice.
4. Ask students: If 6.5 gallons equals 1 million grains of rice, how many gallons would it take to equal 1 billion grains of rice? Answer: 6.5 gallons (1 million) times 1,000

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would be 6,500 gallons, which equals approximately 1 billion.

5. Ask how many gallons of rice it would take to equal 6 billion (the approximate number of people on the planet). Answer: It would take approximately 39,000 gallons of rice to equal 6 billion!.
6. Arrange students in groups of 3-4 and have each group come up with another way to demonstrate how much 1 billion is. Encourage them to think about creative and different ways to demonstrate this number. For example, the number of kids jumping up and down for a length of time, or the number of sugar cubes laid end to end, etc.
7. Have each group make a poster showing their "1 Billion" representation and present it to the class.
8. Conclude with the following reflection questions.

Assessment Reflection Questions

For Intermediate and Advanced Students

- Which of the examples created by students was the most effective in demonstrating 1 billion?
- What is the significance of having 6.5 billion people in the world?
- Of the 6.5 billion people on the planet, how many live in the United States? (280 million) China? (1.2 billion) India? (1 billion)
- How many people do you think the planet could support?

Action Projects

- Visit **www.facingthefuture.org**, click on **Take Action**, then **Fast Facts and Quick Actions** for more information and action opportunities related to population growth.

Additional Resources

Films

- *Jam Packed: The Challenge of Human Overpopulation, T*he Video Project, 1997, 28 minutes. Jam Packed explores human population growth from the perspective of a young adult.

- *World Population,* ZPG, 2000, 7 minutes. This short video presents a visual representation of population growth throughout history.

Books

- *Anno's Magic Seeds,* Mitsumasa Anno, Puffin Books, 1995. A children's story about a man who plants seeds that double every year, incorporating concepts in math, economics, and the environment.

Websites

- **www.prb.org** - The Population Reference Bureau informs people around the world about population, health, and the environment, and empowers them to use that information to advance the well-being of current and future generations.

- **www.populationaction.org** – Population Action International (PAI) is an independent policy advocacy group working to strengthen political and financial support worldwide for population programs grounded in individual rights.

- **http://www.unfpa.org** – The United Nations Population Fund (UNFPA) is an international development agency that supports countries in using population data for policies and programmes to reduce poverty, to prevent HIV/AIDS, to promote reproductive health, and to promote dignity and respect for women and girls.