Activity: Renew-A-Bean

Name: _____

Purpose

The resources that provide the energy that we use every day can be divided into two different groups: Renewable and Nonrenewable. Nonrenewable energy resources are those that are used and cannot be recreated in a short period of time. In this activity, you will be given a bag of "energy beans." Each bag contains energy provided by both renewable (white beans) and nonrenewable (brown beans) resources. You will "use" the energy provided by both types of resources by randomly picking beans from a bag- some of the "energy" you use will be renewable, some will be nonrenewable. You will see what happens to the renewable/nonrenewable resources that remain after many years of energy use.

Equipment

1. 1 plastic bag containing 90 brown kidney beans (nonrenewable energy resources) and 10 white beans (renewable energy resources)
2. Calculator
3. Pencil

Procedure- Part 1

1. Have one person from your group pick out 10 "energy beans" from the bag, without looking. These beans represent the energy use of one year.
2. Count the brown and white beans and record the number on the attached data collection for Year 1.
3. The brown beans represent energy from nonrenewable energy resources, so when a brown bean is picked, it cannot be returned to the bag (place it aside). The white beans are renewable energy beans, so they should be put back into the bag each time after counting them.
4. Let another person from the group pick 10 beans to represent energy use in Year 2. Fill in the number of brown and white beans on the chart, and return the white beans as in step 3.
5. Repeat the process, returning all white beans to the bag after each person's turn, until 20 years have passed or all of the brown beans are gone.

Procedure- Part 2

1. Consider the growing use of power and energy over time. Repeat steps 1-5, but increase the amount of energy use by picking out 5 additional "energy beans" each year (pick 10 beans in Year 1, 15 beans in Year 2, 20 in Year 3, and so on). Record information on the attached data collection sheet.
2. Complete the concluding questions.

Data Collection For Renew-A-Bean Name: _____

Part 1: No increase in number of beans used each year

Year	Total beans removed	Number of brown beans	Number of white beans	Percent of beans that are renewable	Number of beans remaining
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Part 2: Increasing use in the number of beans used each year

Year	Total beans removed	Number of brown beans	Number of white beans	Percent of beans that are renewable	Number of beans remaining
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Conclusions

1. How many years did it take for the nonrenewable resources to run out when you used 10 energy beans per year?

2. How many years did it take for the nonrenewable energy resources to run out when you increased the rate at which we consumed resources each year?

3. What are some examples of renewable and nonrenewable resources?

4. Describe what happens to the proportion of renewable vs. nonrenewable energy resources that remain available, as energy is used over time.

5. What does this activity demonstrate about our consumption of resources- What will happen if we keep using non-renewable resources?