**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Period:\_\_\_**

**Activity Objectives:**

1. Describe how genes are passed from generation to generation through genes
2. Explain how traits are distributed

**Equipment and Materials:**

One plastic cup

A bag of mixed beans (50 percent red and 50 percent speckled)

**Procedures:**

This activity will demonstrate random mating, where animals are bred without regard for their particular characteristics.

1. Without looking at the beans, place your hand in the mixed bean sample and draw out 20 beans.
2. Count the number of beans of each color.
3. Put the beans in the cup. These 20 beans represent your animal and its genotype for this exercise.
4. One at a time, “breed” your animal to the animals of students sitting in front of you, behind you, to your left, and to your right. Do this by pouring your beans into their cups. Shake the beans to get a good mix.
5. Without looking at the new bean sample, count out 20 beans into the empty cup.
6. Record the new genotype in Table 1.

**Table 1 - Random Breeding Record**

|  |  |  |
| --- | --- | --- |
|  | Red Beans | Pinto Beans |
| Initial Genotype |  |  |
| Genotype after  Breeding #1 |  |  |
| After Breeding #2 |  |  |
| After Breeding #3 |  |  |
| After Breeding #4 |  |  |

**Key Questions:**

1. What results did you expect with the random mating of animals?
2. Were the results of the random breeding exercise what you expected? Explain.
3. List two advantages and two disadvantages to randomly breeding livestock.