Modeling Adaptation

Imagine that three families have landed on an alien planet. On their home planet, the Hunter family survived by hunting in the cold north. The Seeder family farmed the temperate zone while the Fisher family lived on a tropical island. In this activity, you will model how well each family survives in a new environment.

Procedure

1. In each group of three, one person will play each of the Hunter, Seeder, and Fisher.
2. Flip a coin and record the results as 1 for heads or 0 for tails. Toss the coin three more times to produce a series of four 1s and 0s. This four digit number is the code for your new habitat as follows:

Table 1: Habitat Key

	First digit	Second digit	Third digit	Fourth digit
1	Hot	Wet	Dry cave	Food is plentiful
0	Cold	Dry	Outdoors	Food is scarce

3. Write down the description of your habitat and the habitat of all three in your group.
4. Find your family in Table 2 and record each number in your row that falls under a heading that describes your habitat. Record the total of these 4 numbers. This total represents the energy you have accumulated from your food.

Table 2: Energy Points

	Temperature		Water		Shelter		Food	
	Cold	Hot	Dry	Wet	None	Cave	Scarce	Plentiful
Hunter	8	-2	0	4	-6	7	-5	8
Seeder	0	3	2	2	-1	2	-2	6
Fisher	-5	8	-2	5	0	1	-1	4

5. Subtract 8 from your total to model the energy you must use to survive. If you don't have enough energy to do this, you're out of the game. The player with the most energy wins. Record the score and habitat of each family.
6. Record a prediction of what would happen if you reversed each player's habitat by changing all the 1s to 0s and *vice versa*.
7. Reverse your habitat code as described in step 6 and play a second round with these conditions.

Questions

1. Why do the Hunters score the most points in a cold habitat?
2. Why do Fishers score the least points in a cold habitat?
3. In which habitat were you most successful? How did it compare to your home environment?
4. Why are the numbers in Table 2 different for each family? What is the significance of positive and negative numbers?
5. Is one habitat best for all players? Explain this in terms of adaptation.