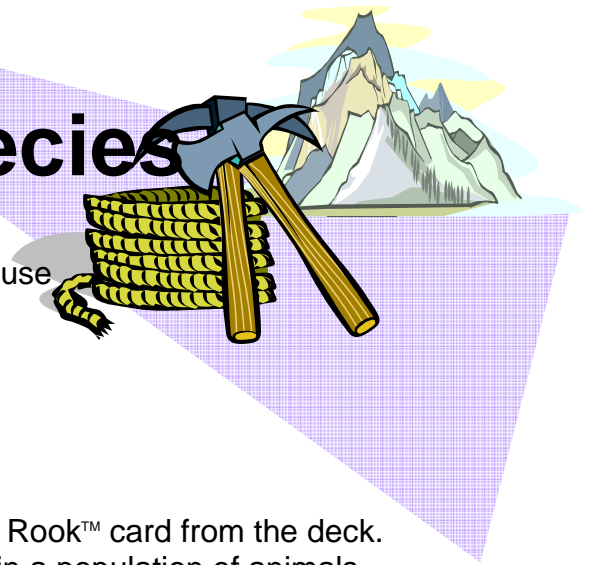


## ES – Activity #4

# Changing Species



**QUESTION:** How does adaptation within a species cause a species to change?

### **MATERIALS:**

deck of Rook™ cards

### **PROCEDURE:**

1. Remove all the 14s, 13s, 12s and 11s and the Rook™ card from the deck.
2. Each remaining card represents an individual in a population of animals called “varimals.” The number on each card represents the height of the individual.
3. Calculate the average height of the population of varimals represented by your cards. Record this average in the data section.
4. Suppose varimals eat grass, shrubs and leaves from trees. A drought causes many of these plants to die. All that’s left are a few tall trees. Only varimals at least 6 units tall can reach the leaves on these trees.
5. All the varimals under 6 units leave the area or die of starvation. Discard all of the cards with a number less than 6. Calculate the new average height of the varimals. Record this average in the data section.
6. Shuffle the deck of remaining cards.
7. Draw two cards at a time. Each pair represents a pair of varimals that will mate and produce offspring.
8. The offspring of each pair reaches the average height of its parents. Calculate and record the height of each offspring.
9. Discard all the parents and offspring under 8 units tall and repeat steps 6-8. Now calculate the new average height of varimals. Include both parents and offspring in you calculation. Record the average height.

**DATA:** See next page

### **QUESTIONS:**

1. How did the average height of the population change?
2. If you hadn’t discarded the shortest varimals, would the average height of the population have changed much? Explain?
3. Suppose the offspring grew to the height of one its parents. How would the results change in each of the following scenarios?
  - a. The height value for the offspring is chosen by a coin toss.
  - b. The height value for the offspring is whichever parent is tallest.
4. If there had been no variation in height before the drought occurred, would the height of the population have been able to change? Explain

## ES – Activity #4

Data Sheet 1 - Beginning Varimal population

<b>Average height of the beginning population of Varimals</b>	
<b>Average height of Varimals over 6 units tall</b>	

Data Sheet 2 - Varimals 6+ units tall

	<b>Female's Height</b>	<b>Male's Height</b>	<b>Offspring's Height</b>
<b>Pair 1</b>			
<b>Pair 2</b>			
<b>Pair 3</b>			
<b>Pair 4</b>			
<b>Pair 5</b>			
<b>Pair 6</b>			
<b>Pair 7</b>			
<b>Pair 8</b>			
<b>Pair 9</b>			
<b>Pair 10</b>			
<b>Average</b>			

Data Sheet 3 - Varimals 8+ units tall

	<b>Female's Height</b>	<b>Male's Height</b>	<b>Offspring's Height</b>
<b>Pair 1</b>			
<b>Pair 2</b>			
<b>Pair 3</b>			
<b>Pair 4</b>			
<b>Pair 5</b>			
<b>Pair 6</b>			
<b>Average</b>			