

# Deserts

Investigation Data Sheet



## How Do Desert Plants and Animals Conserve Water?

Adaptations are physical features and behaviors that allow an organism to function effectively in its environment.

### Objective

Observe live plants and design animal models to learn about methods of water conservation by desert organisms.

### Materials

- sponges
- balance scale
- brown paper
- twist ties
- desk lamp
- non-desert plant (philodendron)
- water
- empty plastic bottle
- plastic bags
- tape
- desert plant (cactus)

**Safety Notice:** All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

### Procedure

#### Experiment 1: Plants

1. Carefully cover both the desert plant (Plant A) and the non-desert plant (Plant B) with plastic bags and place them in a sunny location. After 24 hours have passed, observe the plants and their coverings.

- Describe any differences that you see.

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- Which plant is better equipped to survive in a desert environment? Why?

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#### Experiment 2: Animals

1. Saturate a small sponge with water. This sponge represents a desert animal with a limited amount of available water. The goal is to find a way to conserve the animal's water over a 24-hour period. Be sure to leave your "animal" out in the open for 4 hours to feed.
2. Measure the beginning moisture content of each sponge. Weigh and record the weight of each sponge on the data table.
3. Using your knowledge of the various adaptations of desert animals, plan a strategy to conserve the moisture content of each sponge.

- **Sponge A:** Create a burrow with the plastic bottle and brown paper. What kinds of desert animals burrow underground?
- **Sponge B:** Create a protective covering with a plastic bag. What desert animals have thick, scaly skin to retain water?
- **Sponge C:** Protect from the light. What types of desert animals are active at night?
- **Sponge D:** Control (An unprotected sponge should be left in the open.) Why is it necessary to have a control?

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4. Allow all sponges to remain in the open for 4 hours. Then place Sponge A, B and D under the desk lamp. Place Sponge C in a dark place. After 24 hours have passed, remove the sponges and weigh them again. Record the weights in the data table below.
5. Compare with previous weights and make inferences about the results in relation to real organisms.
6. Repeat the experiment with alternative "adaptation" ideas based on your results.

### Conclusions

Which "adaptations" were the most successful in conserving water?

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### Data Table

Sponge	Starting Weight	Weight After 24 Hours	Total Weight Loss
<b>Sponge A: Burrow</b>			
<b>Sponge B: Thick Skin</b>			
<b>Sponge C: Nocturnal</b>			
<b>Sponge D: Control</b>			