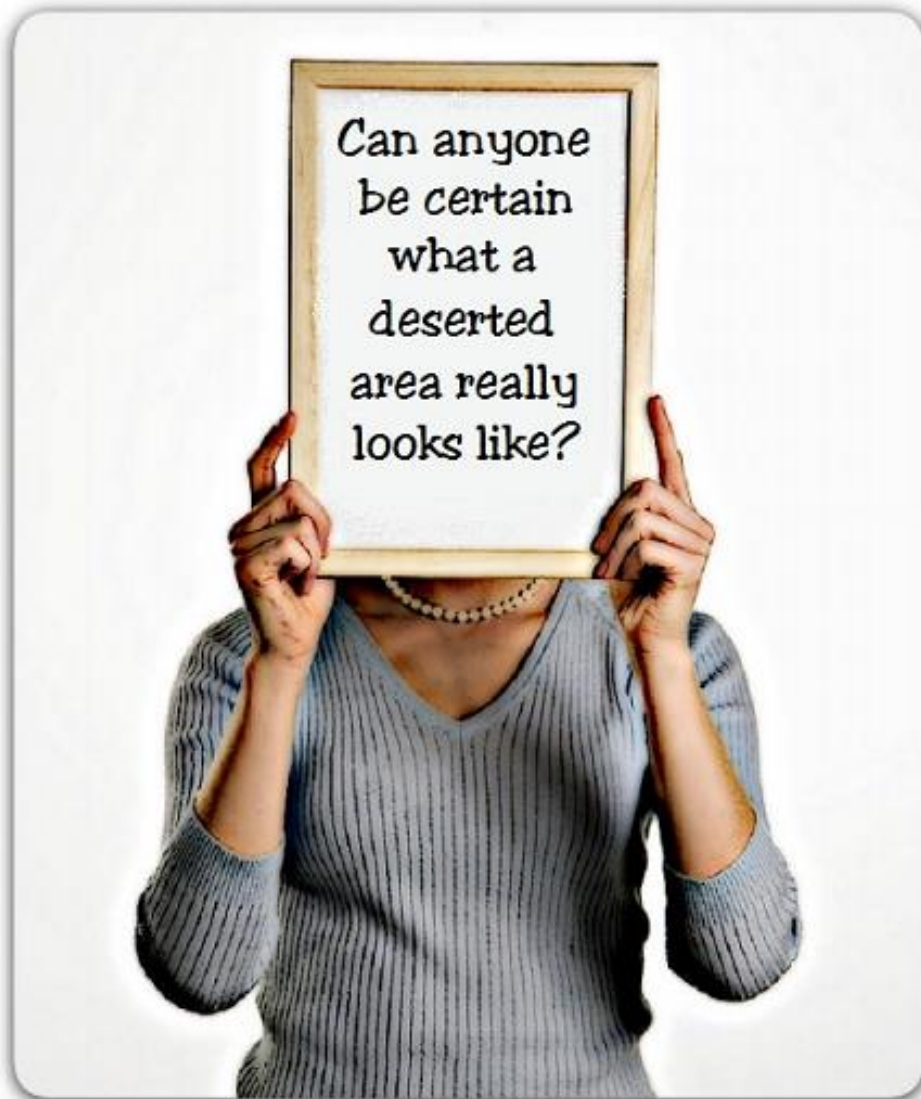


Chapter Seven

Tundra and Desert



Day One:

Today, you and your child will:

1. Read the text
2. Review the text with your child
3. Complete the student worksheets
4. Collect the materials you will need for days two and three

National Science Education Standards covered this week:

An organism's pattern of behavior is related to the nature of its environment.

This includes the kinds and numbers of other organisms present, the availability of food and resources, and the physical characteristics of the environment.

The tundra biome is cold all year long. This is a very dry biome with frozen soil (permafrost) throughout most of the year. Few organisms can be found here which include a large number of migratory animals.

The desert biome is hot during the day and typically cold throughout the night. This biome is dry all year long. It has poor, sandy soil and very few organisms.

Definitions

Tundra biome	the coldest biome on the planet; contains no trees and very few different kinds of plants and animals
Permafrost	a layer of frozen soil usually found in the tundra
Migration	an action by animals in which they leave a biome during the winter months and return in the spring
Alpine tundra	a tundra that is found on the tops of mountains
Arctic tundra	a tundra that is found around the north pole
Desert biome	a biome that has very hot days and cold nights with very little water and few organisms
Nocturnal	being able to sleep during the day and wake up at night

Sample questions to ask your child after completing the weekly reading.

Why would it be good to be able to hunt at night?

It would be easier to sneak up on prey; it would be much cooler during this time; many organisms are nocturnal, so there would be plenty of prey that were also awake during this time.

What is the difference between an arctic and alpine tundra?

Both areas are different kinds of tundra; however, alpine tundra are found on the tops of mountains while arctic tundra is found around the North Pole

Why do you think there are so few plants and animals in the tundra?

The tundra is very cold and has a layer of permafrost which does not allow many plants to survive. Without many resources such as plants, most organisms cannot survive in this biome.

Answers to worksheet questions:

Page 1:

Across:

2. arctic
3. tundra
6. permafrost
7. nocturnal

Down:

1. migration
4. desert
5. alpine

Page 2:

- 4 - tundra biome
- 3 - permafrost
- 1 - migration
- 7 - alpine tundra
- 2 - Arctic tundra
- 6 - desert biome
- 5 - nocturnal

Page 3:

"Compare and contrast the tundra biome and the desert biome"

Both biomes have cold nights, very few plants and animals and very little water. Differences between these biomes include temperatures during the day and the absence of permafrost and migrating organisms in the desert.

Day Two:

Today, you and your child will:

1. Review Day One using the following text
2. Run the first activity this week

The following text will give you the most important items to review for your activity today.

A frozen layer of permafrost is subject to change during seasonal increases in temperature.

The nature of a frozen layer of soil turning into soft and spongy ground during every warm season affects the abilities of individuals to construct buildings in this area.

Perma-what???

Objective:

The child will construct a small structure on a frozen permafrost model and predict/record what happens to the structure upon warming from summer heat.

Materials:

one plastic shoebox

two cups of fresh water

one-half cup of small gravel stone

one cup of garden dirt

four toothpicks

One solid cubic piece of clay, about 3 inches on a side

(** see recipe on the next page for a cheap clay you can make)

Freezer

Procedure:

Mix small gravel, garden dirt and water into the plastic shoebox. Freeze the shoebox overnight.

While the mixture is freezing, construct a small clay house with toothpicks as corner supports so that structure will rest on permafrost. Have the child predict what will happen to the structure when it is placed on the melting permafrost.

After the "permafrost" is frozen, place the small clay house on toothpick supports on top of permafrost and place near window or outside on a warm day to allow surface of frozen permafrost to be heated.

Have the child make a prediction as to what may happen to the house.

Observe what happens to the permafrost and the house and compare results from observations with the child's predictions.

Explanation:

One problem in building large/heavy structures in the tundra biome is the unstable nature of permafrost. Permafrost freezes solid in winter but warm surface temperatures in summer melt the upper layer resulting in a soft, wet, spongy environment. For those building structures in such an environment, serious consideration must be given to the behavior of permafrost.

Sawdust clay

1 cup sawdust $\frac{1}{2}$ cup flour $\frac{1}{4}$ cup water

Mix together until you get a spongy, doughy clay. This material will harden overnight and can be painted as well.

Day Three: Lab Activity

Today, you and your child will:

1. Review Day One using the following text
2. Run the first activity this week

The following text will give you the most important items to review for your activity today.

Organisms who live in cold environments have body structures that assist in their survival.

A thick layer of "blubber" can insulate an animal from the cold environment of the tundra.

Pinching an inch on a polar bear

Objective:

Children will measure how a layer of “blubber” can insulate an animal from the cold.

Materials:

two large baggies (gallon-size works well)
two small sealable baggies (sandwich or quart-size works fine)
vegetable shortening (enough to fill a large baggie)
bucket of ice water

Procedure:

Fill one of the large baggies with vegetable shortening and seal it tightly.

Seal the other large baggie.

Submerge both bags in the bucket of ice water for five minutes.

Place your hands into the small, dry baggies.

Insert one of your bagged hands into the large baggie that is filled with the shortening. The large bag should remain in the ice water.

Insert your other bagged hand into the large baggie that was not filled with shortening. The large bag should remain in the ice water. Which one feels colder?

Explanation:

The shortening in the baggie does not allow heat to escape into the ice water as easily as the empty baggie. Therefore, when you place your bagged hand into the shortening, the heat in your hand does not escape (very well) into the ice water. The empty bag allows your heat to escape very quickly and will feel very cold.