



# High Touch High Tech®

Science Experiences That Come To You

## Edible Hibernation Den

### Supplies:

- Toothpicks (round and/or flat)
- Straws
- Mini marshmallows
- Large marshmallows
- Raisins
- gum drops
- large paper plate
- shredded coconut

### Instructions:

For this activity, become an engineer and be as creative as you can! You can use any type of gummy candy to construct your den. Animals must use their surrounding environment to construct a den. It may include sticks, rocks, branches, leaves and even snow!

1. Build a base for your den on your paper plate.
2. Place 2 marshmallows on either side of a toothpick.
3. Insert another toothpick in each marshmallow.
4. Place a 3<sup>rd</sup> marshmallow on one toothpick and a 4<sup>th</sup> marshmallow on the other toothpick.
5. Finally insert a 4<sup>th</sup> toothpick between these marshmallows.
6. You have formed a square. This can be the base for your den. You can enlarge this base using more toothpicks and marshmallow.
7. Next, insert toothpicks vertically into the marshmallows.
8. How many sides can you make?
9. Include gum drops and raisins in your construction.
10. Be sure to maintain a steady base as you build your den.
11. Remember, the animal needs a safe and sturdy den for hibernation!
12. When complete, surround your den with shredded coconut. This will be the snow around and on your den. Snow helps to insulate the den for a long, cold winter.

### The Science Behind It:

The coldest ecosystem on earth is the **tundra**, meaning “treeless plain.” There are two different locations for this type of ecosystem – the *arctic tundra* and the *alpine tundra*.

The **arctic tundra** is in the northern hemisphere, around the North Pole. This ecosystem receives an average of 5-10 inches of snow and rain each year. Winter temperatures are around -120° F. However, during the summer, the sun shines for 24 hours a day! Therefore, the *arctic tundra* can reach 90° F.



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**Alpine tundra's** are ecosystems on mountain tops throughout the world. Due to the high altitude (about 10,000 feet or more) these areas are tree-less and cold. These ecosystems are rugged with broken, rocky landscapes. The *Alpine* ecosystem has a long winter season because of the high altitude.

Because temperatures range from winter to summer, only select animals can live in the tundra. These large warm-blooded animals include musk-oxen, caribou, gray wolves, and polar bears. Most animals have many layers of fat or fur to insulate their bodies. Unlike desert animals with large ears and long legs, arctic animals have small ears, shorter legs and stubby tails to prevent heat loss.

Animals thrive during the summer months and use this time to prepare for the winter, when the tundra is covered with snow. Animals must survive the harsh cold winter environment. The animals either migrate to lower altitudes during the winter or **hibernate**.

**Hibernation** is an extended period of deep sleep that allows many animals to survive the harsh winter ecosystem. Certain animals hunker down in a den, tree hollow, or maybe a cave, for weeks or even months during the winter. During this time, their heart rate slows, body temperature drops and breathing is minimal. Animals have adapted to hibernate when the food supply is very low during the extreme cold weather.

Hibernators include bats, groundhogs, chipmunks, bears and more! During the summer months, these animals must prepare their winter sleeping place.

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