**MOLES**

Moles are animals that live most of their lives underground. This lesson will teach you about moles, what they look like, where they live, what they eat, and some other cool facts about these expert dig gers.We will think about how moles physical features are adapted to help them survive in their habitat

**What Are Moles?**

Imagine that when you go outside, you notice a few hills of dirt in the grass that weren't there yesterday so you decide to investigate. You don't see anything and aren't sure what's making the dirt hills, so you flatten them with your foot and go play. The next day, you're surprised that the dirt hills are back. You have moles living under your grass.

**Moles** are small animals with soft fur that usually dig tunnels, live most of their lives underground, and have bad eyesight and long claws.

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There are 42 kinds of moles on Earth. The smallest one weighs less than an ounce, or a little more than 2 nickels, and isn't quite 2 inches long. The biggest mole weighs almost 8 ounces, which is a little more than 44 nickels, and is about 9 inches long.

Most live underground, though some live under dead leaves on the ground. If they had ears like yours, dirt would get in them and jam them up, so moles have small ears inside their head instead of outside so dirt can't get in.

Some people don't like the dirt hills they make in their yards. However, all the digging they do helps loosen the soil and makes it drain better, which helps plants in the long run.

**Where Do Moles Live?**

Moles live in Europe, Asia, and North America. There are 7 different kinds of moles that live in the United States alone.

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Moles were made to dig, like nature's excavators. They use their special feet and claws like shovels to dig through the dirt. Most are excellent swimmers, too.

Just like your town has a system of streets so you can get from place to place, moles dig out a system of tunnels so they can get around underground. Some tunnels go deeper into the ground than others.

Some moles live in dry areas and others live in wet areas. They sometimes build their tunnel entrances in a stream or pond.

Moles build their nests off the deeper tunnels. They also dig out places to stockpile food, like a pantry. Except when they are taking care of babies, most kinds of moles don't like to hang out with other moles and live alone.

HOW HAVE MOLES ADAPTED TO THEIR ENVIRONMENT?

Moles spend their lives underground, digging tunnels to reach their prey, which includes earthworms, grubs and any other insects they can find. In such a dark, dirt-filled environment, moles don't need senses such as powerful eyesight like some other animals do, but they depend on other adaptations for their health and survival.

**Senses**

Crawling around in underground tunnels all day would leave most creatures with eyes and ears full of dirt. Moles, however, have a thin layer of skin over their eyes for protection as well as eyelids shaped to help push dirt away, keeping their eyes clear. A mole's nostrils are shaped differently than most mammals. Instead of opening toward the front of the face, they open toward the side. This way, dirt falls around instead of into them. Also, moles don't have visible ears. Instead, they have small holes in their skull that are covered with a thin layer of skin to keep out dirt while still allowing the moles to hear.

**Digging**

A mole's front legs are short, stout, strong and end in powerful paws perfectly designed for digging. His legs don't bend the same way as most animals. Instead of bending toward his body at the elbow to support his weight while walking or running, they bend away from his body. This gives him the ability to quickly dig through tunnels in a swimming motion.

**Tunneling**

Since moles often have to travel both forward and backward through their tunnels, their fur has a special adaptation that lets it naturally lay in either direction. For example, dogs and horses have hair that lays in one direction, and if it is rubbed against the direction of growth, it lifts up, allowing dirt and debris underneath. A mole's fur has an unusual structure near the base that essentially allows it to swivel. When he is traveling forward in a tunnel, the fur lies flat toward his tail, but when he travels backward, it lies flat toward his head, keeping falling dirt off his skin.

**Breathing**

Few mammals could survive extended periods in underground tunnels without a regular source of oxygen. Moles, however, show no adverse affects when exposed to high levels of carbon dioxide, or conversely, low levels of oxygen, for long periods of time. Specialized blood cells affect the way hemoglobin binds to carbon dioxide, allowing them to breathe in the same air they just breathed out without any ill effects.

