WHAT ARE HONEY BEES AND WHY ARE THEY SO IMPORTANT?
Hi, I'm Bissy Bee. Do you know what a honey bee is? Do you know what one looks like? Well for starters, honey bees are small animals that are part of a class called insects. Insects have similar characteristics or traits. Many, like the honey bee, have two pairs of wings, three pairs of legs, and a body that is divided into three parts.

They have a head, a thorax (which is the middle part of their body) and an abdomen. Some other examples of insects are flies, crickets, mosquitoes, beetles, and butterflies. Honey bees also have short hairs on their bodies and their legs, and they are orange-brown to almost black in color. There are approximately 20 to 30 million species of insects in the world and currently scientists have identified around 920,000. And with each passing year about 2,000 new insects are identified.

Insects have been around for many years. In fact, honey bees have been in existence for over 40 million years. However, the honey bees that we know are not native to the United States. They were brought over by European settlers in the early 1600’s to produce honey and beeswax which were used in everyday Spanish life. Since then, honey bees have successfully spread throughout the world.

Honey bees are very important. Why do you think they are so important? Honey bees are the strongest link in the chain between the people who grow the food and the people who eat the food. Without honey bee pollination, the food we eat could decrease by 1/3rd. Foods such as watermelons, cucumbers, squash, blueberries and strawberries, as well as many others fruits, vegetables and nuts, are all pollinated by honey bees. In addition to pollinating crops, the honey produced by Florida honey bees is some of the best in the nation. Honey bees contribute millions of dollars to Florida’s economy each year.
Honey bees are social insects. Do you know what social insects are? They are insects that like to live in large groups; these large groups of honey bees are called colonies. A single colony will have anywhere from 40,000 to 60,000 bees. With so many bees in each colony, it is important that different jobs are given to different bees, and that each bee knows what it should be doing. Organization is important because the success of the colony depends on how well the bees perform their jobs.

To function well as a group, the entire colony must work as a team for the good of the hive. Do you know what a hive is? A hive is the bee’s nest or home where eggs are laid and honey is stored.

Within the hive, there are three types of bees: the queen, workers, and drones. Each has its own particular purpose in the hive. In a hive there is only one queen. The queen, as well as worker bees, have stingers which they will use to defend their territory. The queen is able to sting multiple times; while worker bees can only sting once. Drones do not have stingers. The queen is the largest bee in the hive, with a longer abdomen and a shiny thorax. She keeps the colony going by laying as many eggs as possible. A productive queen will lay as many as 2,000 eggs in a single day.

The worker bees make up the largest portion of the hive, although they are the smallest bees in the hive. They are all female and as previously mentioned, worker bees have stingers; however, they can only sting once and then they die. This is because when they sting, some of their internal organs are pulled out along with the stinger. Unlike the other bees in the hive, worker bees have stiff hairs on their hind legs which form what we call pollen baskets. The pollen baskets allow the workers to collect pollen from the flowers they visit. Worker bees also have long proboscises. A proboscis is a long straw-like tool that bees use to suck nectar from inside flowers. Nectar is what bees use to make honey. As you can see, workers are very busy bees. They are responsible for raising and feeding the young, collecting and storing food, making honey and beeswax, and protecting the hive.

The final bee that is found in the hive is the drone. Drones are larger than workers and have rounded abdomens, huge compound eyes, and powerful wings. Drones are the male honey bees in the hive and they serve one purpose, to mate with the queen bee, but not all drones mate. Drones that do mate, die; drones that do not mate are kicked out of the hive by the worker bees. The worker bees do this in order to conserve the food supply. Unfortunately for drones, they lack the essentials to survive.

Do you know how a bee becomes a bee? The queen lays thousands of eggs - some fertilized and some not. Fertilized eggs develop into either queens or workers, while unfertilized eggs develop into drones. The process goes something like this: the queen bee lays an egg in the honeycomb of a beehive. In three days, the egg hatches into a larva. Worker bees feed the larva, and the larva spins a cocoon around itself. In about ten days, the larva turns into a pupa. It now has eyes, wings, and legs. It looks more like a bee. In another couple of weeks, the bee is full grown. Finally, the bee chews its way out of the honeycomb cell and becomes an adult. Time frames for hatching depend on what type of bee is being formed.

There are several insects that look like the honey bee and may be similar in color and size, but their behaviors and characteristics are quite different. Some of these insects include yellow jackets, paper wasps, bumblebees, horse and deer flies, and carpenter bees.
Though named bees, carpenter bees and bumblebees lead different lives from honey bees. The bumblebee lives in a colony that is very small and has only about four hundred bees, while the carpenter bee lives a **solitary** life. They are also both larger and have more hair than the honey bee. Horse flies and deer flies are different because they do not drink nectar, instead they drink blood from farm animals and humans, like mosquitoes do. Hornets and wasps behave differently - some drink nectar like the honey bee, while others eat bugs. Some live in large colonies and some live alone. They can sting multiple times, and are often much more aggressive than the honey bee.

It is important to understand and respect honey bees as well as all insects. It's best to leave insects alone to do their jobs - this way, you can avoid the possibility of getting bitten or stung. But as long as no bees are around, never resist the chance to smell the flowers!
Lesson A

Vocabulary

ab· do· men: (noun) - the hind portion of the body behind the thorax in an arthropod

col· o· ny: (noun) - a group of plants or animals that belong to one species (as of a colony of bees)

com· pound eye: - one of two large eyes on the sides of a bee’s head, which allows the bee to tell the difference between brightness and darkness, movement and color

drone: (noun) - male bee whose sole purpose is to mate with the queen bee

fer· til· ize: (verb) - to make fertile: as a: to cause the fertilization of; also: to unite with in the process of fertilization <a sperm fertilizes an egg>

hive: (noun) - a container for housing honey bees b: the usually aboveground nest of bees c: a colony of bees

hon· ey· bee: (noun) - a bee that produces honey and lives in colonies; especially: a European bee widely kept in hives for the honey it produces

in· sect: (noun) - any of a class of arthropods (as butterflies, true bugs, two-winged flies, bees, and grasshoppers) with the body clearly divided into a head, thorax, and abdomen, with three pairs of jointed legs, and usually with one or two pairs of wings

lar· va: (noun) - a young wingless often wormlike form (as a grub or caterpillar) that hatches from the egg of many insects

nec· tar: (noun) - a sweet liquid given off by plants and especially by flowers and used by bees in making honey

pollen basket: (noun) - a flat or hollow area bordered with stiff hairs on the hind leg of a bee in which it carries pollen to the hive or nest

pol· li· na· tion: (noun) - transfer of pollen from the anther to the stigma; important step in the development of seed plants

pro· bos· cis: (noun) - a long tube-shaped body part (as the sucking organ of a butterfly) in the mouth region of an invertebrate

pu· pa: (noun) - a stage of an insect (as a bee, moth, or beetle) having complete metamorphosis that occurs between the larva and the adult, is usually enclosed in a cocoon or case, and goes through changes inside by which structures of the larva are replaced by those of the adult

queen: (noun) - the fertile fully developed female of social bees, ants, and termites whose purpose is to lay eggs

sol· i· tary: (adjective) - growing or living alone: not forming part of a group or cluster

tho· rax: (noun) - the middle of the three main divisions of the body of an insect

work· er: (noun) - female member of a colony of honey bees that performs most of the work and protects the colony
Know – Want – Learn (KWL)
KWL is a teaching technique created by Ogle (1986) to develop independent learning.

Please complete the first two columns “K and W” before the lesson and then complete column “L” after the lesson.

- K – list what you know about bees
- W – list what you want to know about bees
- L – list what you learned about bees

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<td>What I know</td>
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**LESSON A:**

**WHAT DO BEES DO?**

The queen, workers and drones look very different and have different jobs in the hive. Identify each bee (queen, worker or drone) in the blank below and then list their jobs.

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