External Observation of Honey Bee

Name _____ Date _____

Background Information: Honey bees have many interesting structural adaptations to help them survive and function as pollinators. Today you will get an up-close look at those structures, using binocular / dissecting microscopes. During your observations, refer to the drawing for identification of the different parts. You will be using 3-4 honey bees for your observations. Refer to several specimens since some bees will be missing parts due to collection and shipping. You will need to compare bees in order to make accurate observations.

Materials:

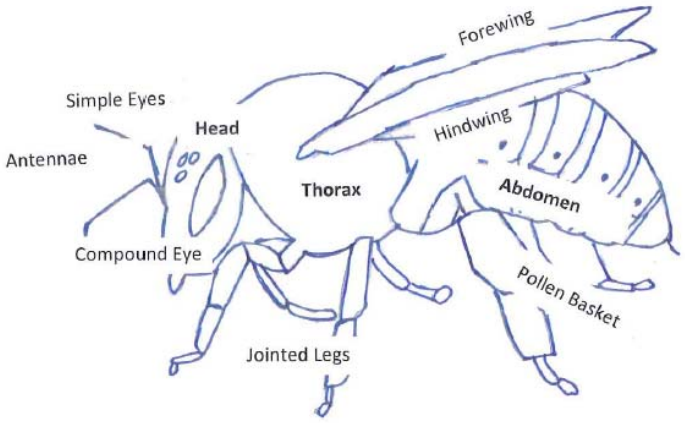
Dried honey bees (3-4 per student group)

Binocular / dissecting scope

Forceps and probe

Ruler

Petri dish



Directions for external observation:

1. Using your forceps to hold the bee, look at the bee under the binocular microscope. Look for different parts as you turn your bees around and make an initial survey of your specimens. Bees are covered with little hairs that pick up pollen. Pollen that is not in the pollen baskets can be dropped off at other flowers for fertilization.

2. Look for the two sets of wings on your bee (forewings and hindwings). Wings are important for flight so the bee can fly from the hive to the flowers (their food source). Bees are unique in that their two sets of wings "hook" together during flight to make one larger wing. Sometimes, bees "fan" the hive to help cool it off. Use your ruler to measure the length of several forewings and record those lengths for your bees. Draw a picture of a forewing as it looks under the microscope (include the veins and hairs on the wing). The wings are attached to which body part (head, thorax, or abdomen)?

Length of the forewings:	
Draw a picture:	
Attached to what part:	

3. Observe the abdomen of your bees. Use three words to describe the abdomen. Look for the spiracles (holes) along the side of the abdomen. Spiracles are how bees and other insects are able to exchange gases (breathe). Only female bees have stingers—you will probably not see the stinger because it is usually pulled into the body.

Three words to describe the abdomen:	

4. Find the legs on your honeybee. Bees taste with their feet to locate nectar. Using your diagram, look for all the legs. How many are there and what body part are they attached to (head, thorax, or abdomen)?

How many legs?	
Attached to what part?	

5. Using the drawing, find where the pollen baskets are located on the leg. They are surrounded by several long hairs that help pack the pollen to take back to the hive. Identify that area on the leg. Draw a picture of the back leg and indicate where the pollen basket is located.

Is there pollen in the basket of your bees?	
Draw a picture of the back leg and label the pollen basket.	

6. Examine the head of the bee and locate the compound eyes, simple eyes, antennae, and mouthparts. Each compound eye is made of thousands of light-sensitive cells to see colors and ultraviolet light. Bees have three simple eyes that can only sense light and dark. Locate the two antennae on the top of the head. They are used to feel or touch or smell. Mouthparts: A bee has two mandibles that suspend from the bottom of the mouth and are used for chewing. They also have a proboscis which is a tube for drinking liquids.

Draw the head from the front showing the compound eyes, simple eyes, antennae, mandibles, and proboscis.	