Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Grasshopper Dissection

External Anatomy Proficiency

1. Pass off with Mrs. Smith the following body parts – BEFORE CUTTING YOUR GRASSHOPPER
   1. Abdomen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Thorax \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Head \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Legs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. Compound Eye \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. Ocelli \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   7. Mouth \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   8. Wing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   9. Antennae \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Determining the sex of your grasshopper
   1. Observe the posterior end of the abdomen.
   2. Females – will have an ovipositor – which is a muscular structure at the end of the abdomen.
   3. Males – won’t have an ovipositor.

What sex is your grasshopper?

What is the purpose of testes?

What is the purpose of the ovary?

What survival technique do these organs help accomplish?

1. Using a dissecting microscope locate the spiracles.
   1. What is the purpose of a spiracle?
   2. Which survival technique does this help accomplish?
2. Place your grasshopper in a dissecting pan – ventral side up.
   1. You have to cut off the legs first (cut as close to the thorax as possible without cutting the thorax.
   2. What survival technique do legs help accomplish?
3. Now put the grasshopper on its side.
   1. Put two pins in the very front of the thorax, and two pins at the end of the abdomen.
4. With a scalpel cut carefully through the exoskeleton at the top of the 8th abdominal segment. Cut up towards the head, come around and cut all the way back – make a window in the side of your grasshopper.
   1. Be careful when you remove the exoskeleton – some muscle should come but you don’t want to ruin the organs.
   2. What is the exoskeleton made of?
5. Grasshoppers have a respiratory system called a tracheal system. The tracheal system begins with the spiracle, which opens into air-sacs. It is really hard to see in your grasshopper but it good to be aware of it.
6. Remove the yellow fatty tissue covering all the organs.
7. Locate the crop. It should be near the head.
8. Locate the stomach; it should be right after the crop.
9. The intestine runs the rest of the length of the grasshopper.
   1. What is the end of the digestive system called (hint it is also used in the excretory system)?
10. Locate the heart – it is on the dorsal side of the grasshopper.
    1. Which body segment is the heart in?
    2. Insects have an open circulatory system – what does that mean?
11. Brain – made of 3 ganglion – you can try to find it (it’s in the head).
12. Ventral nerve cord – runs the length of the grasshopper on the ventral side.
    1. Which side of the body is the ventral side?
    2. Along the length of the nerve cord are ganglia – which are where the nerves come from that go to the limbs and organs

Crazy Fact:

Insects have a decentralized nerve system – which means the ganglia in the body segments are responsible for responses. This allows some insects to maintain some functions even though the head has been removed. For example, female preying mantis often eat the heads off of their male partners, which are then able to move and complete the mating process.