Characteristics of Life Worksheet Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Directions**: Complete this worksheet using the notes provided online.

1. What are the three main ideas of the **cell theory**?

 a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. What tool had to be invented before the cell theory could be developed? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3. Characteristic of Life🡪 All living things contain at least one \_\_\_\_\_\_\_\_\_\_\_\_**

 a. List two unicellular organisms: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. List two multicellular organisms that do not move: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c. List two multicellular organisms that move: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4.** **Characteristic of Life🡪 All living things must be able to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

a. When a male and a female organism must combine their sex cells to make offspring scientists call it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. When an organism can reproduce by itself, scientists call it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. If an organism cannot reproduce, it is said to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**5.** **Characteristic of Life🡪 All living things have a defined \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_body plan.**

a. List three structures that are usually found in plants:

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. List three structures usually found in vertebrate animals:

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6.** **Characteristic of Life🡪 All living things \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ larger and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a certain way.**

a. Flies start out as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which feed and grow into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. After reaching full size, they burrow underground and develop into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. About two weeks later they hatch out as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ flies. Adult flies cannot grow anymore and remain the same size until death.

b. Humans start out as an \_\_\_\_\_\_\_\_ cell from the their mother and a \_\_\_\_\_\_\_\_\_\_\_\_\_cell from their father. These two cells fuse together to make a zygote. The zygote attaches to the mother’s uterus and grows into an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. After developing arms and legs, it is called a fetus. After about 36 weeks, the fetus is born.

c. Oak trees start out as \_\_\_\_\_\_\_\_\_\_\_\_\_\_ which fall to the ground. Oak trees continue to \_\_\_\_\_\_\_\_\_\_\_\_ until they are killed by something.

d. Lobsters are arthropods, and must shed their skins to \_\_\_\_\_\_\_. Lobsters do not have a size limit, and continue to \_\_\_\_\_\_\_\_\_ and grow until something kills them.

**7.** **Characteristic of Life🡪 All living things \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in some way to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in their environment.**

a. A wasp stings your hand and you yell ouch. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the stimulus and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the response.

b. You turn on the lights and the roaches on the kitchen floor run for cover under the refrigerator . The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the stimulus and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the response.

c. When the sun comes out every morning, algae cells produce oxygen gas and float to the surface to be closer to the light. In the evening after dark they slowly sink again. . The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the stimulus and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the response.

**8.** **Characteristic of Life🡪 All living things must \_\_\_\_\_\_\_\_\_\_\_\_\_\_ genetic information and pass it on to their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

a. Imagine a man and a woman both have blonde hair and blue eyes. This means they have in their cells \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that codes for these traits. Their children will most likely have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. All cells store genetic information as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c. No two people have identical \_\_\_\_\_\_\_\_\_\_\_\_\_\_ unless they are twins.

d. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ found in a blood sample from a crime scene can be matched to a suspect’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to prove their guilt.

e. DNA from a human is most similar to the DNA from what animal? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Choices: cat, rabbit, fox, mouse, horse, deer, whale, chimpanzee, wombat, kangaroo)

f. DNA from a snake is most different from the DNA of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Choices: cat, dog, owl, grasshopper, lizard, turtle, frog)

**9.** **Characteristic of Life🡪 All living things must maintain \_\_\_\_\_\_\_\_\_\_\_\_\_\_ inside their bodies or cells to stay alive.**

a. A freshwater fish like a goldfish will die if placed in seawater. This happens because the goldfish cannot \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the change in its environment fast enough. The goldfish is poisoned by the extra \_\_\_\_\_\_\_\_\_\_ entering its body through its gills.

b. A saltwater fish like a tuna will die if placed in fresh water. This happens because the tuna’s blood already has a lot of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and cannot avoid losing it through its \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the environment.

c. Fish like tuna and goldfish cannot tolerate much change in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. When a human’s blood gets too salty, the person gets \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which is how their brain tells them they need to drink water.

d. When a human drinks too much water they have to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Their kidneys remove extra \_\_\_\_\_\_\_ from their blood and store it in their bladder.

e. Humans use their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to maintain a balance of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and salts in their blood.

**10.** **Characteristic of Life🡪 All living things must take in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from their environment and use it to stay alive.**

a. Plants get their energy from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. Animals get their energy from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. The energy in food is measured in units called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

d. The more calories a food has, the more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ it contains.

e. List three high calories foods: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**11.** **Characteristic of Life🡪 All living things \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ over time to adapt to changes in their environment.**

a. Populations that cannot adapt to changes fast enough go \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. Polar bears can only hunt seals on ice flows. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is causing the ice flows to melt sooner and form later. This means polar bear populations will most likely \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and maybe even go \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the near future.

c. What new trait could polar bears evolve to survive? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d. Antibacterial soap kills 99.9% of bacteria. This means 0.1% survive. What is probably true about the few bacteria that survive? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e. Over the last 50 years many bacteria have evolved resistance to antibiotic like penicillin. This probably happened because bacteria that survive exposure to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pass on their DNA to their offspring. Those that do not survive cannot pass on their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The next generation therefore contains more bacteria with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. In the space below, explain how fire might be mistaken as a living thing. Be sure to explain which characteristics fire has, and which characteristics fire does not have.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_