**Chemical Composition of a Human Body**

**Class Copy – Do not write on!**

The human body is comprised of many **elements**, lots of which are combined in compounds. Below is a list of the major elements with their percentages (by weight). You must measure the height of the figure of the human on the opposite side of this page and mark, as well as color, the percentages below. **Measure from the head down**. Be sure to indicate on the key which color you choose for each element. Look up the functions of the elements online and fill in the blanks in the chart below (Try LIVESCIENCE: Chemistry of Life - The Human Body; http://www.livescience.com/3505-chemistry-life-human-body.html).

**Major Elements Symbol Percentage Use/Function**

Oxygen O 65.0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Carbon C 18.5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hydrogen H 9.5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nitrogen N 3.3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Calcium Ca 1.5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phosphorous P 1.0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Most of the carbon, oxygen and hydrogen that makes up our cells comes from organic molecules like sugars, starches, proteins and fats. List a food you eat that would fit each of these categories.

Sugar: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Starch: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Protein: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Fat: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Some elements are considered to be major, but they are in such small percentages that it would be too difficult for you to mark those. Indicate the total of these on the figure as "other."

Potassium K 0.40 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sulfur S 0.30 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sodium Na 0.20 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chlorine Cl 0.20 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Magnesium Mg 0.10 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**TOTAL 1.2% Other**

Research online and find one food you could eat to get each of these trace minerals in your diet.

K:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ S:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Na: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cl: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Mg: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ P: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ca:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ N: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Elements present but in even smaller percentages are called **trace elements** – boron, chromium, cobalt, copper, fluorine, iodine, iron, manganese, molybdenum, selenium, silicon, tin, vanadium, and zinc. Together, they are less than 0.1%. Research ONE of these elements and find a food that you like to eat that contains the element. Element: \_\_\_\_\_\_\_\_\_\_\_\_\_ Food: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The human body is an average of 50 to 75% water (a **compound** made of the elements hydrogen and oxygen), depending on whether the individual is an adult or child, male or female, heavy or thin. Draw a rectangle (use a ruler!) next to the body diagram. Measure 60% of the rectangle draw a line; color in the percent of the rectangle that would be composed of water in blue.

