Honors Biology 1

Mr. Stone

Number Line/Card Sort Activity: Student Instructions & Worksheet

In this activity, you will explore your perception of the size of different items. Your task is to create a "powers of 10" number line and place items appropriately on the number line.

Materials

• Cards for the objects

• Cards for the units, in powers of 10 meters

Instructions On a surface like a lab table, order the cards for powers of 10 in a vertical column, with the largest at the top and the smallest at the bottom. Space the cards equidistant from each other, leaving a gap between the cards for 10-10 and 10-15 . This is your number line. Next, place each object next to the closest power of 10 in the number line that represents the size of that object in meters. Some objects may lie between two powers of 10. When you are done placing all of the cards, record your results in the table on the next page and answer the questions that follow.

1. Which objects were the hardest for you to estimate size for? Why?

2. Why are we using powers of 10 for the number line instead of a regular linear scale (like a meter stick)?

Size in meters	Object(s)
10^{0}	
10^{-1}	
10^{-2}	
10^{-3}	
10^{-4}	
10^{-5}	
10^{-6}	
10^{-7}	
10^{-8}	
10^{-9}	
10^{-10}	
(large gap)	
10^{-15}	

Measurement and converting units – you must show work!

3. Measure the length of your hand to the nearest 16^{th} of an inch (in).

length of your hand _____

Convert your measurement to yards.

In yards _____

Convert your measurement to miles (hint: 5280ft = 1 mile)…

In miles _____

4. Measure the length or you hand to the nearest tenth of millimeter (mm).

Length of your hand _____

Convert your measurement to centimeters (cm).

In centimeters _____

Convert your measurement to meters (m).

In meters _____

Convert your measurement to kilometers (km).

In kilometers _____

For the rest of the school year, I would prefer to use the (circle one)

American Standard system Metric system

Practice questions:

5. A cell diameter of 40 micrometers is the same as
   a. 4,000 nanometer.
   b. 0.04 millimeter.
   c. 40,000 nanometers.
   d. both b and c.
   e. none of these

6. Which of the following is smaller than a milligram?
   a. microgram. b. decimeter. c. centigram.
   d. kilogram. e. gram

7. A milliliter of water is NOT
   a. 1/100 of a liter of water
   b. 1/10 of a centiliter of water
   c. 1000 microliters of water
   d. a cubic centimeter of water
   e. 1 g of water

8. Challenge Question! If 1g of water = 1mL of water = $1cm^3$ (cubic centimeter) of water, then what is the mass of water in a fish tank that measures $1m^3$ (cubic meter)?