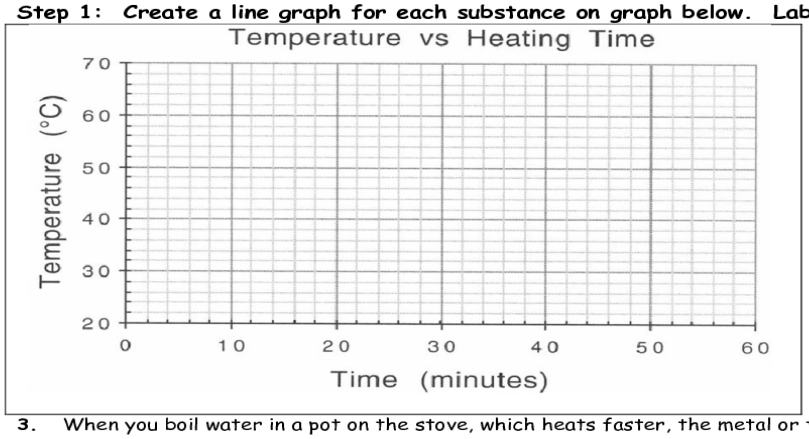
Name:_____ Per:_____

Worksheet- Introduction to Specific Heat Capacities

Heating substances in the sun: The following table shows the temperature after 10.0 g of 4 different substances have been in direct sunlight for up to 60 minutes.

Time (minutes)	Air (° C)	Water (° C)	Sand (° C)	Metal (° C)
0 (initial)	25°C	25°C	25°C	25°C
15.0 min	28.9°C	26.2°C	30°C	35°C
30.0 min	32.5°C	27.5°C	35°C	45°C
45.0 min	36.2°C	28.8°C	40°C	55°C
60.0 min	40°C	30°C	45°C	65°C

Step 1: Create a line graph for each substance on graph below. Label the substances.



Step 2: Answer questions

1. Order the substances based on the time required to heat them from :
   slowest
   ↓
   fastest
2. Which do you think will cool the fastest? Explain

3. When you boil water in a pot on the stove, which heats faster, the metal or the water? Explain.

4. Why do you think different substances heat up and cool down at different rates?

***Specific heat capacity = the amount of heat needed to raise the temperature of 1 g of a substance by 1 degree. ***

5. Based on the definition above, which of the 4 substances do you think has:
   a) the highest specific heat capacity? b) the lowest heat capacity?

6. Here are the heat capacities of the four substances: **4.18 J/g °c, 1.00 J/g °c, 0.80 J/g °c, & 0.60 J/g °c.** ***Match & then label*** *each substance with its specific heat capacity on the graph.*

7. If something has a **high specific heat capacity** will it take a lot of heat or a little heat to change its temperature? Explain. (careful! Use the definition, your graph, and the data from #6)

8. Assuming they both start at the same temperature, which will heat up faster, a swimming pool or a bath tub? Explain your thinking.