Hot Rod Conduction Lab

Name_____ Date_____

ENGAGE: Making Metals

- Three properties of metals:
  1.
  2.
  3.
- An _____ is a mixture of two or more elements that is made up of at least one metal. Examples include: brass, bronze, steel.

EXPLORE:

One method of moving heat called _____ is when thermal energy travels through a solid. Metals are generally good conductors. However, heat conductivity is a physical property that varies from metal to metal. Although metals are generally good conductors, not all metals conduct heat equally. This activity involves rods of five different materials:

1) Aluminum (Al) a pure metal
2) Copper (Cu) a pure metal
3) Nickel (Ni) a pure metal
4) Brass, an alloy made of Copper (Cu) and Zinc (Zn)
5) Stainless steel, an alloy made of Iron (Fe), Carbon (C), and Chromium (Cr)

Problem: Which type of metal is the best conductor of heat?

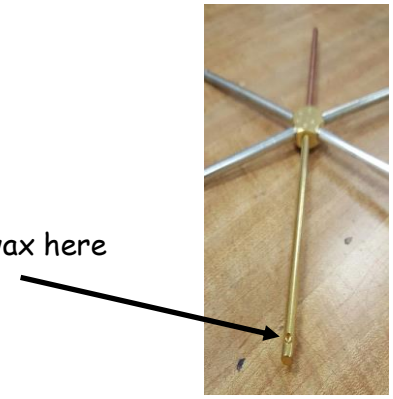
Hypothesis: If brass, stainless steel, aluminum, copper, and nickel are exposed to heat through a lit candle, then _____will melt the wax at the end of the metal rod first.

Materials:

- Conductometer Rod (Conduction Wheel)
- Tea-light candle
- Wax
- Timer

Safety Precautions:

- Heating metals- wear goggles
- Hot Liquids- Goggles/gloves



Procedure:

1. Insert wax in each indentation at the end of each spoke on the conductometer.
2. Light candle or burner. Place the conductometer above the flame BUT NOT TOUCHING IT! You want it to be about an inch or so above the flame.
3. Begin timing your trials now. You want to observe the wax as the rod is heated- record when it melts on each metal rod.

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Data Collection:

Name of Metal or Alloy	Time to Melt Wax Group 1	Time to Melt Wax Group 2	Time to Melt Wax Group 3	Time to Melt Wax Group 4	Time to Melt Wax Group 5	Time to Melt Wax Group 6
Aluminum						
Copper						
Nickel						
Brass						
Stainless Steel						

EXPLAIN

1. Sequence your results from the least amount of time for the wax to melt to the most amount of time for the wax to melt.

_____

_____

_____

2. What is the independent variable in this experiment?_____
3. What is the dependent variable in this experiment?_____
4. What other variables account for the fact that not all groups recorded the exact same times for each material to melt the wax?_____
5. Did the data support my hypothesis? Why or why not?_____

_____

ELABORATE: METALS AND ALLOYS AROUND THE HOUSE

Copper

steel

1. _____ is used as a frame for houses and buildings. Why is this a good choice?_____
2. _____ is used as a heating element to cook on. Why is this a good choice?

_____

3. Name two other alloys and metals you can find in your house and describe what they are used for._____ is used to _____

_____ is used to _____