

If We Add Heat...

1. Describe the general trend of the line in the beginning when heating the snow.
2. Why did the temperature stay relatively the same during this time period?
3. Describe the general trend of the line toward the end of heating.
4. Why did the temperature stay the same during this time period?
5. In which direction is heat transferred?
6. Does a substance necessarily get warmer when heat is added to it? Justify your answer by describing what you saw in your data.

Hot Rods, Understanding the Heat Capacity of Water

- 1) What value did you calculate for the amount of heat transfer for the steel rod? Did this represent heat gain or heat loss? Explain.
- 2) What value did you calculate for the amount of heat transfer for the water in the Styrofoam cup? Did this represent heat gain or heat loss? Explain.
- 3) The heat capacity of water and metal are different. Which has a higher heat capacity? Which has a lower heat capacity?
- 4) How does the heat capacity of different substances relate to the pond during freeze up?
- 5) Describe the transfer of heat during freeze up.
- 6) How does the heat capacity of different substances relate to the pond during thaw?
- 7) Describe the transfer of heat during thaw.
- 8) What could have caused differences in the calculations of the amount of heat transfer for the different lab groups? Name two possibilities.

Thermal Resistance, Insulating Properties of Glass and Styrofoam

- 1) What does a negative value for change in temperature indicate?
- 2) Which had a larger thermal resistance, glass or Styrofoam? What in your data indicated this?
- 3) What substance(s) may add thermal resistance to a frozen pond?
- 4) Based on this information, do you think the rate at which the ice thickens will change over the course of the winter? Why?

Thermal Resistance of Two Metals

- 1)

Temperature Gradient, Exploring the Speed of Heat Transfer

- 1) What is a temperature gradient?
- 2) How did the temperature gradient from trial 1 compare to trial 2?
- 3) What is the relationship between the temperature gradient to the rate of heat exchange?
- 4) How do changes in temperature gradients affect ice growth? In other words, when does the ice grow faster? slower?
- 5) Describe or draw a temperature gradient on a frozen pond.