

Name:

Specific Heat Worksheet

$$(m)(\Delta T)(C_{sp})=Q$$

1. What is the specific heat of a substance that absorbs 2500 joules of heat when a sample of 100 g of the substance increases in temperature from 10 °C to 70°C?
2. If 200 grams of water is to be heated from 24.0°C to 100.0°C to make a cup of tea, how much heat must be added? The specific heat of water is 4.18 J/g·C
3. How many grams of water would require 2200 joules of heat to raise its temperature from 34°C to 100°C? The specific heat of water is 4.18 J/g·C
4. A block of aluminum weighing 140 g is cooled from 98.4°C to 62.2°C with the release of 1080 joules of heat. From this data, calculate the specific heat of aluminum.
5. 100.0 mL of 4.0°C water is heated until its temperature is 37°C. If the specific heat of water is 4.18 J/g·C, calculate the amount of heat energy needed to cause this rise in temperature.
6. A total of 54.0 joules of heat are absorbed as 58.3 g of lead is heated from 12.0°C to 42.0°C. From these data, what is the specific heat of lead?
7. The specific heat of wood is 2.03 J/g·°C. How much heat is needed to convert 550 g of wood at -15.0°C to 10.0°C?
8. What is the total amount of heat needed to change 2.25 kg of silver at 0.0°C to 200.0°C? The specific heat of silver is 0.129 J/g·°C
9. Granite has a specific heat of 800 J/g·°C. What mass of granite is needed to store 150,000 J of heat if the temperature of the granite is to be increased by 15.5°C?
10. A 55 kg block of metal has an original temperature of 15.0°C and 0.45 J/g·°C. What will be the final temperature of this metal if 450 J of heat energy are added?
11. Object A specific heat is 2.45 J/g·°C and object B specific heat is 0.82 J/g·°C. Which object will heat up faster if they have the same mass and equal amount of heat is applied? Explain why.

$$c_{\text{water}} = 4200 \text{ J/kgK}$$

$$c_{\text{ice}} = 2100 \text{ J/kgK}$$

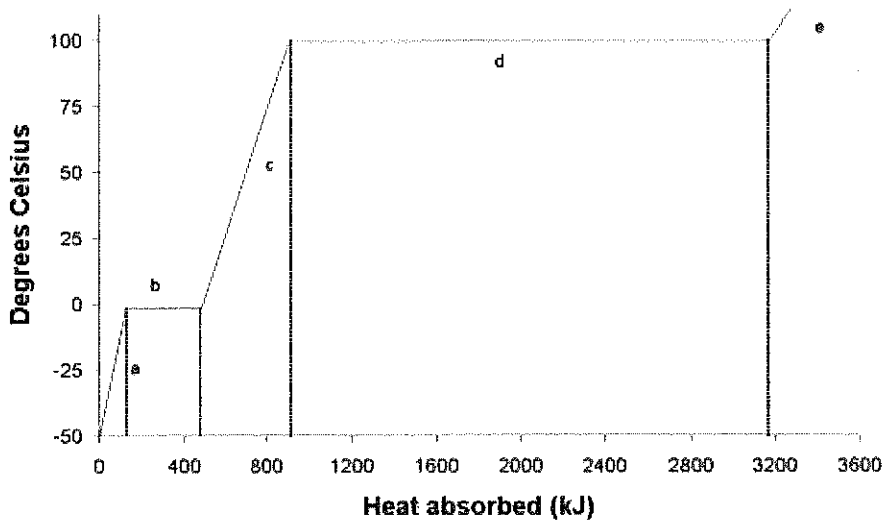
$$c_{\text{copper}} = 390 \text{ J/kgK}$$

$$L_{f, \text{ice}} = 3.34 \times 10^5 \text{ J/kg}$$

$$L_{v, \text{water}} = 22.5 \times 10^5 \text{ J/kg}$$

Latent heat and Specific heat capacity questions.

1. How much water at 50°C is needed to just melt 2.2 kg of ice at 0°C?
2. How much water at 32°C is needed to just melt 1.5 kg of ice at -10°C?
3. How much steam at 100° is needed to just melt 5 kg of ice at -15°C?
4. A copper cup holds some cold water at 4°C. The copper cup weighs 140g while the water weighs 80g. If 100g of hot water, at 90°C is added, what will be the final temperature of the water?



5. a) Explain where the energy is going at each section of the curve from "a" to "e"
- b) Using section "b", calculate the amount of ice used to produce the graph
- c) Using section "c", calculate the amount of ice used to produce the graph