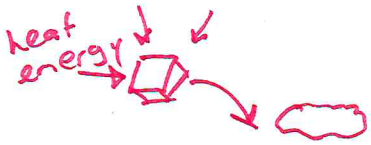


5. Describe how the law of conservation of energy is supported by the scenario in 2a above.

Heat energy entered the ice cube. This caused it to melt.

I can identify the difference between kinetic & potential energy in terms of particle arrangement and motion.

6. What is the difference between kinetic and potential energy?

Kinetic = movement of an object or particles

Potential = Storing energy

7. When does kinetic energy of particles change? When does potential energy of particles change?

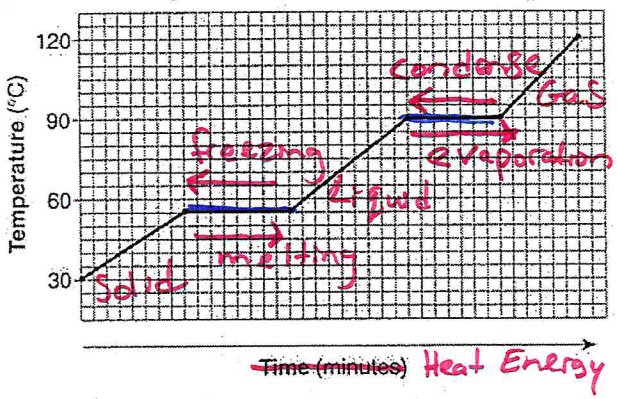
When particles move faster when T increases

During phase changes

I can interpret evidence from a heating curve.

(1)

Use the heating curve below to answer the questions:



Kinetic = movement = temperature

8. Label the phases and phase changes on the graph in both energy flow directions.

9. Which phase changes are endothermic?

melting, evaporation

10. What is happening to the kinetic and potential energy of the particles during these phase changes?

Kinetic is constant

Potential is increasing

11. Which phase changes are exothermic?

Freezing, Condensation

12. Explain why the melting point and freezing point of a substance can be the same.

Because it depends if energy is entering or leaving the system

ΔT = final T − initial T

(2)

I can calculate change in energy in a system.

13. A cup of coffee (140 g) cools from 75°C down to comfortable room temperature 20 °C. How much energy does it release to the surroundings? Assume the coffee has the same specific heat as water.

Given

$m = 140g$

$T_1 = 75°C$

$T_2 = 20°C$

$C = 4.18 J/g°C$

Unknown

$Q = ?$

$Q = mc\Delta T$

$Q = (140g)(4.18 J/g°C)(20°C - 75°C)$

$Q = -32186 J$

Exothermic

14. How many joules of energy are used to heat water by 4.00 °C if the mass is 86g?

Notes

Given

$m = 86g$

$\Delta T = 4°C$

$C = 4.18 J/g°C$

Unknown

$Q = ?$

$Q = mc\Delta T$

$Q = (86g)(4.18 J/g°C)(4°C)$

$Q = 1437.92 J$

Endothermic

15. If the specific heat of aluminum is 0.9 J/g*°C, what is the energy added to 249 g of aluminum to increase the temperature from 23 to 42°C?

Given

$m = 249g$

$C = 0.9 J/g°C$

$T_1 = 23°C$

$T_2 = 42°C$

$\Delta T = 42 - 23 = 19°C$

Unknown

$Q = ?$

$Q = mc\Delta T$

$Q = (249g)(0.9 J/g°C)(19°C)$

$Q = 4,257.9 J$

Endothermic