To melt: $q = m \cdot H_f$

Heat of Fusion (H_f) – the amount of energy needed to melt 1 gram of solid at its normal melting point. H_f water = **334** J/g .

To boil: $q = m \cdot H_v$

Heat of Vaporization (H_v) –the amount of energy needed to boil 1 gram of a liquid at its normal boiling point. H_v water = **2260** J/g.

Classwork:

1) How much heat is needed to melt 50. grams of ice at its normal melting point?

2) How much heat is absorbed by 200. grams of water when it's turned into steam at its normal boiling point?

3) How much heat is released by 150. grams of water when it freezes at 0°C?

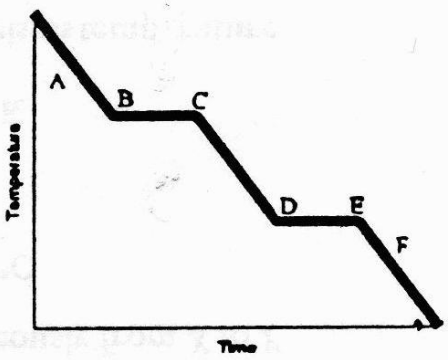
Homework:

1) How many grams of ice can be completely melted by absorbing 33,360 J of energy?

2) How much heat is released by 300. grams of steam when it condenses at 100°C?

3) How much heat is needed to raise the temperature of 125 grams of water from 0° C to 75 °C?

32. The graph at right represents the uniform cooling of a substance, starting with the substance as a gas above its boiling point.

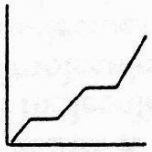


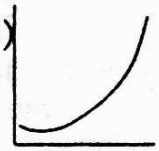
During which interval is the substance completely in the liquid state?

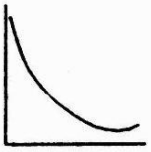
(1) *AB* (3) *CD*
(2) *BC* (4) *DE*

33. Which graph best represents a change of phase from a gas to a solid?

(1) 

(2) 

(3) 

(4) 

34. How many joules of heat are absorbed when 70.00 grams of water are completely vaporized at its boiling point?

(1) 1582 (2) 15.82 (3) 15820 (4) 158200

35. What is the total number of joules of heat energy absorbed when 10 grams of water is vaporized at its normal boiling point?

(1) 33.4 (2) 226.0 (3) 22600 (4) 3340

36. The heat of fusion of a compound is 30.0 joules per gram. What is the number of joules of heat that must be absorbed by a 15.0-gram sample to change the compound from solid to liquid at its melting point?

(1) 15.0 joules (2) 45.0 joules (3) 150.0 joules (4) 450.0 joules.

37. An example of a physical change is

(1) burning magnesium
(2) boiling water
(3) combining sodium and chlorine to form sodium chloride
(4) exploding fireworks