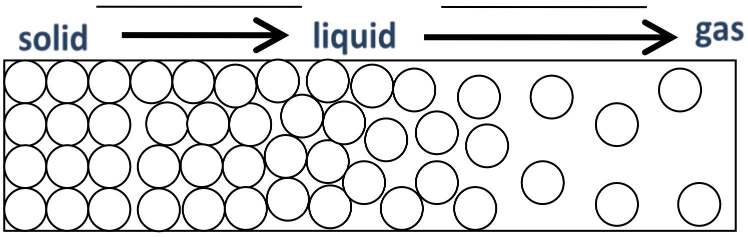
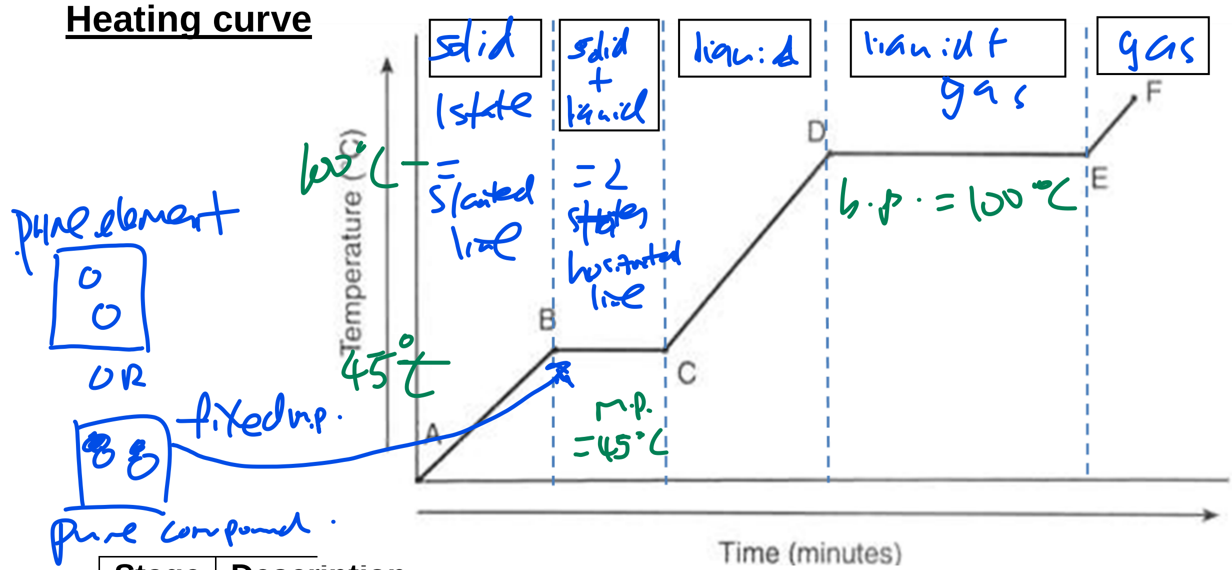
5 Using Particulate model of matter to *explain*: Changes in states of matter

a) Heating a solid



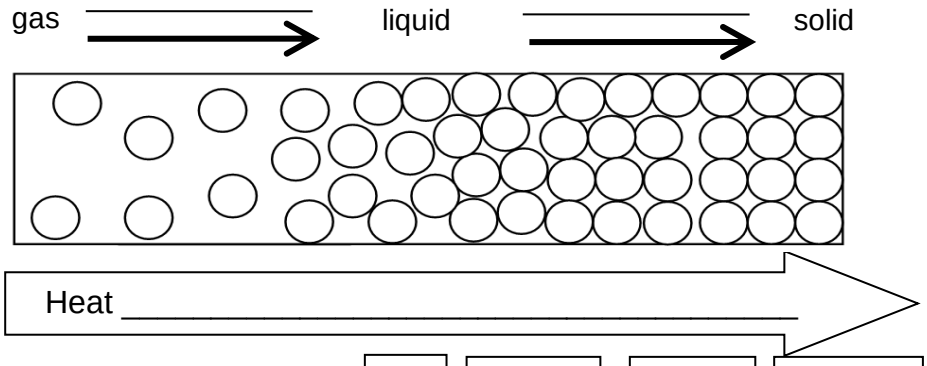
Heat taken in / gained / absorbed

Heating curve

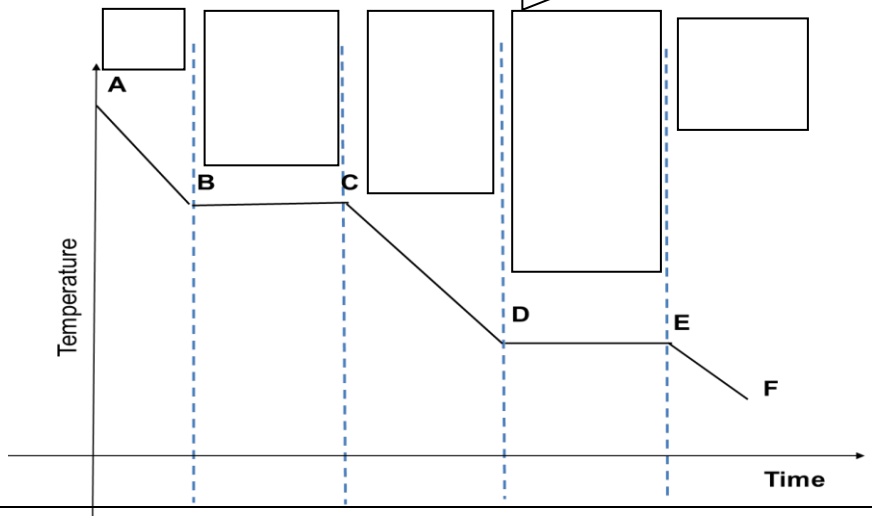


Stage	Description
AB	When solid is ***heated***, particles gain heat energy and vibrate faster ~~at its~~ about fixed positions. Heat absorbed causes temperature to rise. → indicates energy level of particles
BC	At melting of solid (change of state), heat energy gained is used to overcome the strong forces of attraction between the particles. Temperature remains constant until the solid melts completely into a liquid at point C. (1) why heat absorbed ↑ change, remain constant?)
CD	When the liquid is ***heated***, particles gain heat energy and slide past each other more vigorously. Heat absorbed causes temperature to rise.
DE	At boiling of liquid (change of state), heat energy absorbed is used to overcome the strong forces of attraction between the particles. Temperature remains constant until the liquid boils completely into gas at point E.
EF	When the gas is further heated, particles gain heat energy and move at even higher speeds at all directions (freely).

b) Cooling a gas



Cooling curve



Stage	Description
AB	When the gas is ***cooled***, particles _____ heat energy and move freely in all directions at _____. Heat energy released causes temperature to fall.
BC	At _____ point (change of state), heat energy _____ is due to _____ stronger forces of attraction between particles. Temperature remains _____ until the gas condenses completely into liquid at point C.
CD	When the liquid is _____, particles _____ heat energy and _____ more slowly. Thermal energy released causes temperature to fall.
DE	At _____ point (change of state), heat energy _____ is due to _____ stronger forces of attraction between the particles. The stronger forces of attraction cause the particles to _____ to their _____ _____. Temperature remains _____ until liquid freezes completely into solid at point E.
EF	When the solid is further cooled, particles _____ heat energy and vibrate _____ about their fixed positions. Thermal every released causes temperature to fall.