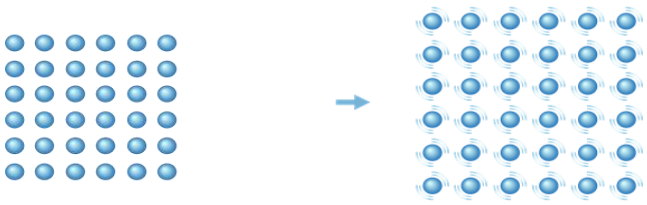
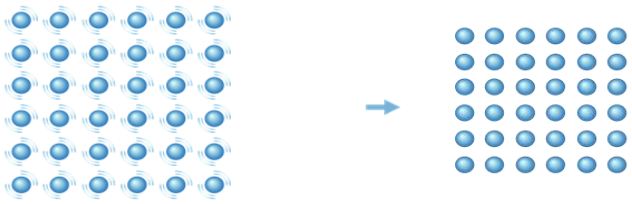
Energy and volume page 17

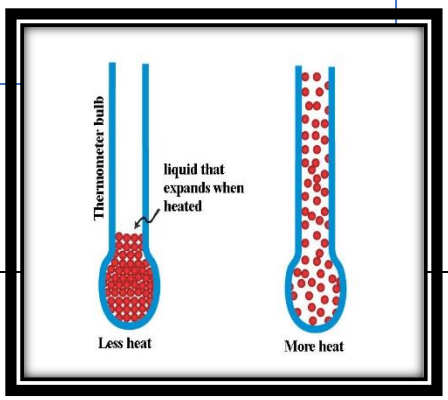
Thermal __Expansion_____	Thermal __Contraction_____
The increase/decrease in volume of a material when particle motion increase/decrease.	The increase/decrease in volume of a material when particle motion increase/decrease.
As the Temperature of a material (Increase/Decrease), its particles move (faster/slower) Particles collide with each other (more/less) often and push each other farther apart causes the substance to take up (more/less) space.	As the Temperature of a material (Increase/Decrease), its particles move (faster/slower) Particles collide with each other (more/less) often which causes the substance to take up (more/less) space.
Sketch a diagram to model ***Thermal Expansion***. 	Sketch a diagram to model ***Thermal contraction***. 

Energy and Temperature page 17-18

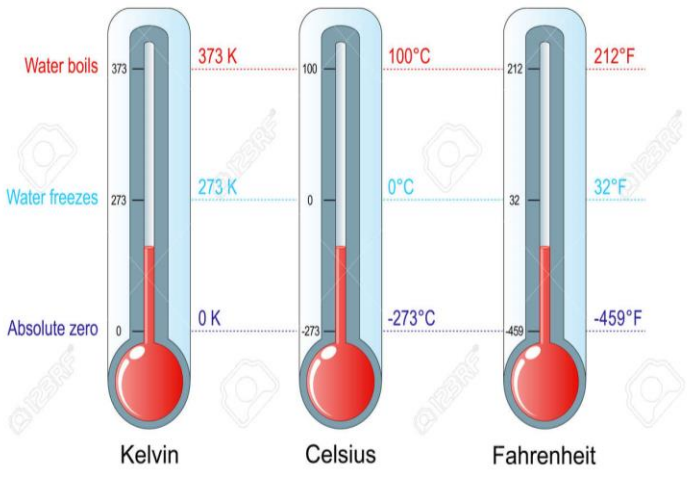
_____ is the measure of the average kinetic energy of the particles in a material.

1 *Liquid-in-glass thermometers* *(Book 1B, p. 179)*

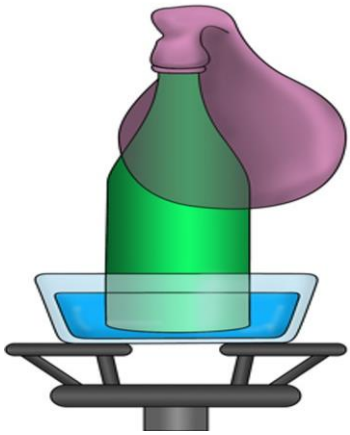
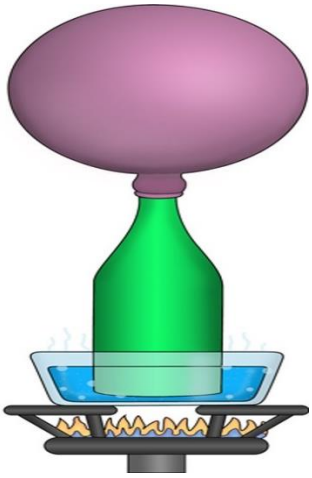
- When the temperature rises, the liquid inside the glass (24) ___Expand___. It takes up more (25) ___space___ in the glass, so the liquid level goes up.
- When the temperature falls, the liquid (26) ___Contract___. It takes up less space in the glass, so the liquid level (27) ___Goes down.___.



Temperature scales

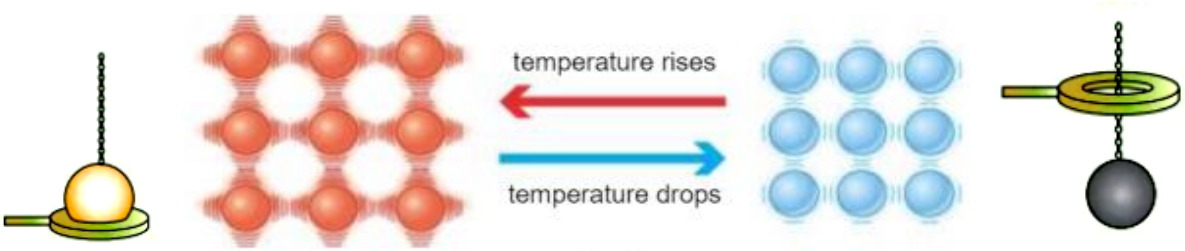


Particles in Gas page 19

Balloon was cooled.	**Balloon was heated.**
	
Kinetic energy (increase/**decrease**) Gas particles (**slowed down**/speed up) Particles moved (**closer**/farther apart) Thermal (Expand/**Contract**)	Kinetic energy (**increase**/decrease) Gas particles (slowed down/**speed up**) Particles moved (closer/**farther apart**) Thermal (**Expand**/Contract)

Particles in solid page 20

➢ Explaining thermal expansion and contraction in solids:



Thermal expansion	Thermal contraction
➢ Occurs when the temperature of a substance (4) **Rises**.	➢ Occurs when the temperature of a substance (9) **drops**.
➢ The particles (5) **gain** energy and move (6) **faster**.	➢ The movement of the particles (10) **Slows down**.
➢ The spaces between the particles become (7) **larger**.	➢ The spaces between the particles become (11) **smaller**.
➢ The substance (8) **expands**.	➢ The substance (12) **contracts**.