

Handout -(L-6 Changes around us MODULE – 2)

All things around us are made of extremely small particles which are not visible from our naked eyes. Difference in the arrangement of these particles can result in a change.

Different ways to bring changes

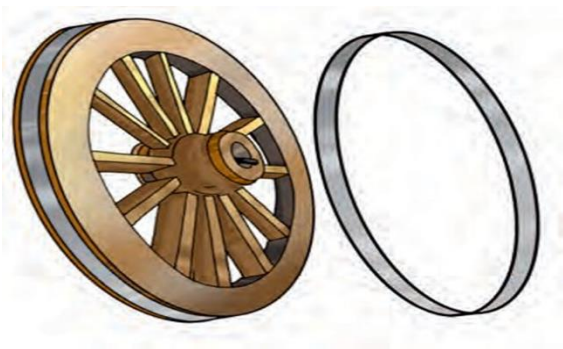
- cutting
- applying pressure
- dissolving something in water
- mixing two or more things together
- hot and cold treatment (heating / cooling something to bring a change)

How is the wooden handle fixed to the iron blade of these tools?



The iron blade of these tools has a ring in which the wooden handle is fixed. Normally, the ring is slightly smaller in size than the wooden handle. To fix the handle, the ring is heated and it becomes slightly larger in size (expands). Now, the handle easily fits into the ring. When the ring cools down it contracts and fits tightly on to the handle.

How is the metal rim fixed on the wooden wheel of a cart?



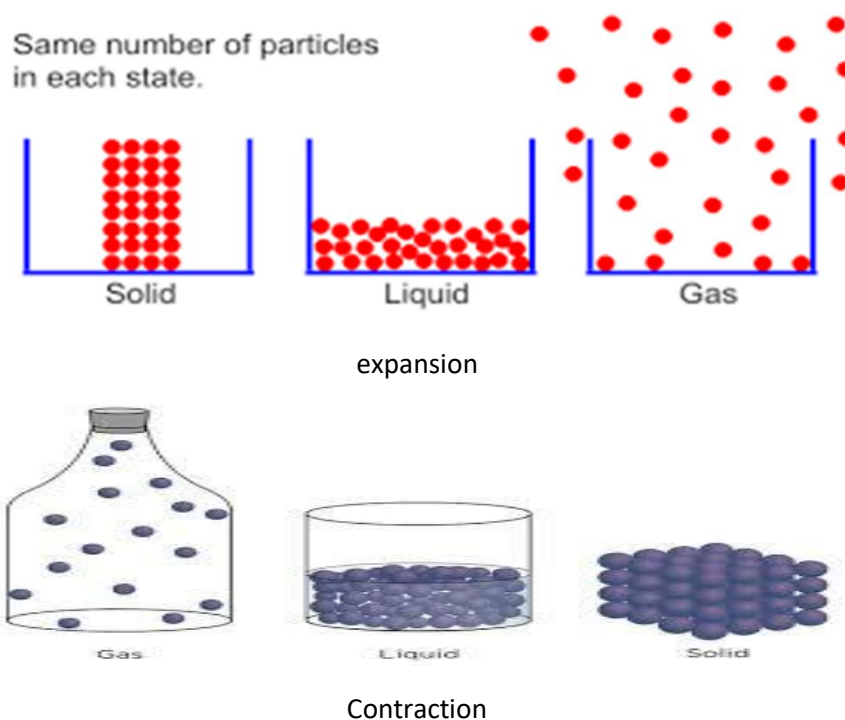
For fixing the metal rim on a wooden wheel of a cart. The metal rim is made slightly smaller than the wooden wheel. On heating, the rim expands and fits onto the wheel. Cold water is then poured over the rim, which contracts and fits tightly onto the wheel.

expansion and contraction

When the particles move apart it is called as **expansion**. On heating materials expand. For example Metals expand on heating, melting of ice, boiling of water etc.

When the particles come closer it is called as **contraction**. On cooling materials contract. For example

Metals contract on cooling, condensation of water vapour, freezing of water etc.



Interconversion of the three states of water is a reversible change.

Burning of candle and heating of wax

- Take a small candle and measure its length with a scale. Now, fix it at a suitable place and light it. Let it burn for some time. Now blow out the candle and measure its length again. Can the change in the length of the candle be reversed?
No, because the wax forms new substances such as light, smoke and heat which cannot turn into wax again.
- If we were to take some wax in a pan and heat it, can this change be reversed?
Yes, because here only the solid wax gets melted to form liquid wax. If we cool this liquid wax, it will again turn into solid wax.

Changes can also be brought by mixing two or more substances. For example, salt mixed in sea water can be separated by the process of evaporation and condensation. For setting of curd small amount of curd is mixed in warm milk and kept at room temperature for few hours. This change in the milk cannot be reversed.