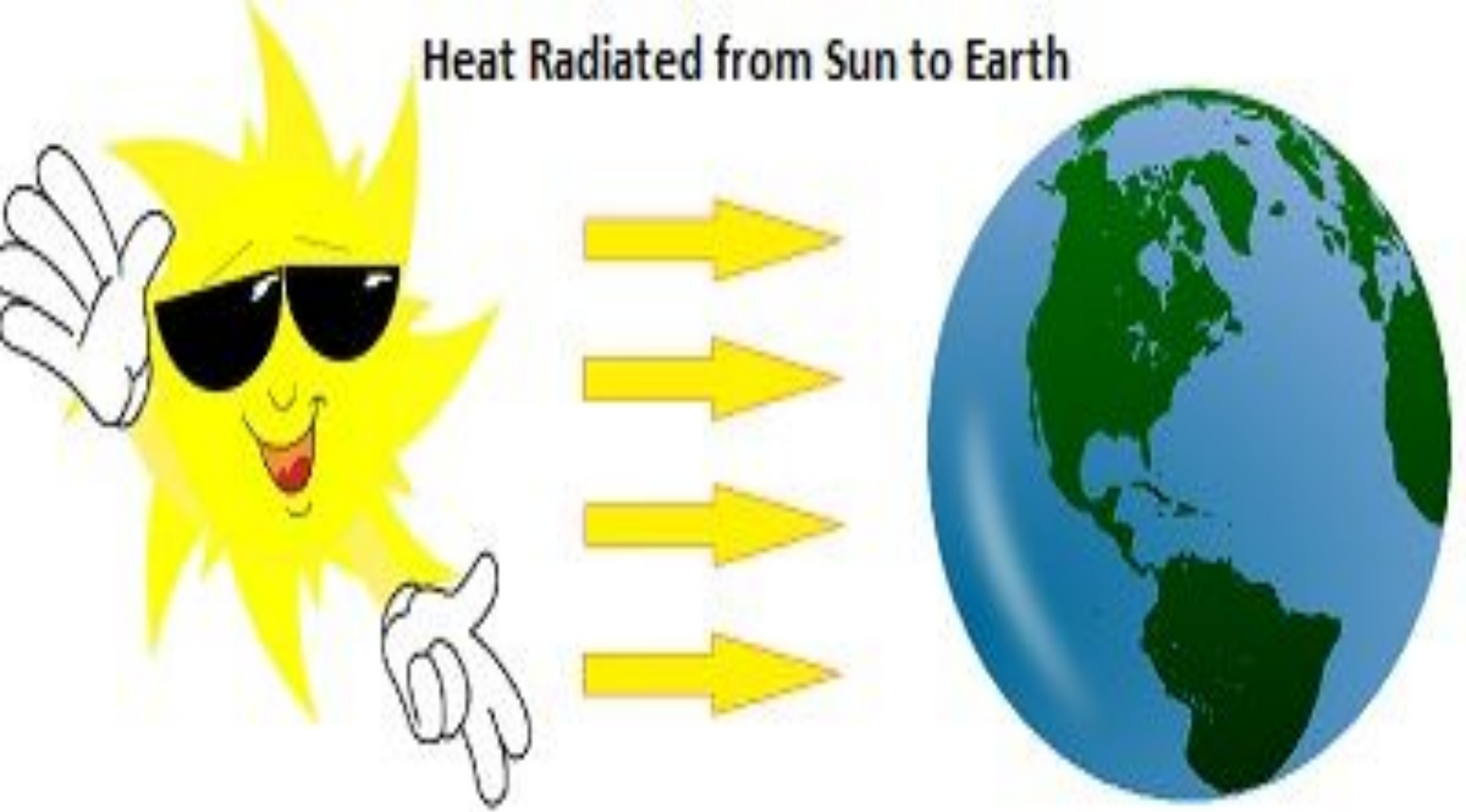
Radiation-

- The heat given off from the sun cannot reach us by the process of conduction or convection because both the processes require a medium to transfer the heat but due to absence of a medium such as air in maximum layers of space between the earth and the sun these processes cannot transfer the heat to the earth.

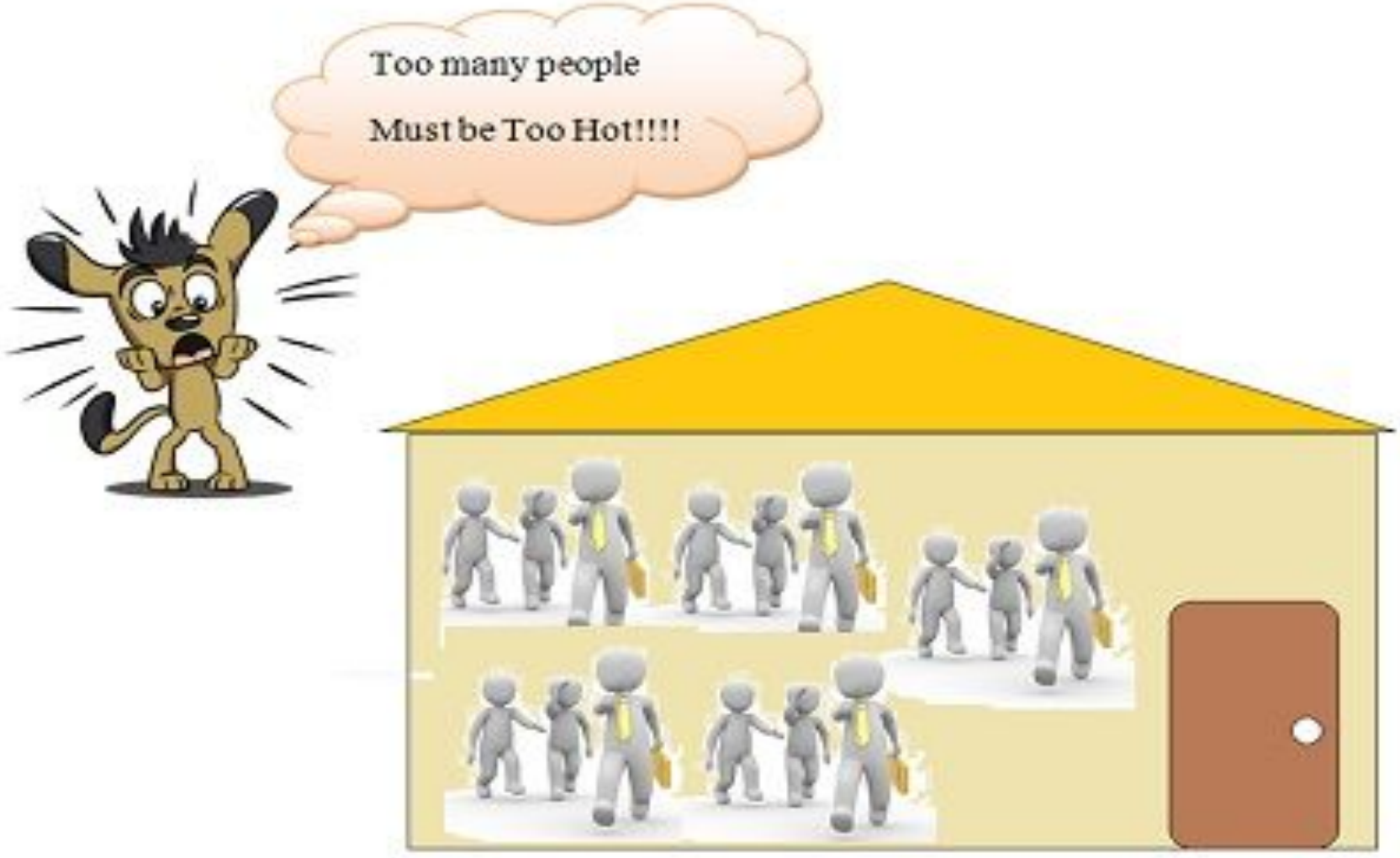
Heat Radiated from Sun to Earth



- At this moment another process called radiation comes into act to transfer the heat radiated by the sun to the earth.
- <u>This heat transferring process doesn’t require any medium.</u>

- Not only sun but all hot bodies radiate heat. That can propagate through medium or even in vacuum. Heating of room by a room heater, heating up of utensils kept over flame and then cooling down when kept away from heat are all due to radiation.

- Human body releases heat to the surroundings and receives heat from it by the process of radiation. This can be proved using a simple example. You feel quite comfortable in a room with one person but if the same room has many people you feel hot due to the radiation of heat from the human body.


Too many people
Must be Too Hot!!!!

- All hot bodies radiate heat which falls on the nearby objects.
- The objects absorb some part of heat, reflect some part of heat and transmit some part of the heat falling on them. The temperature of the object increases due to the absorbed part of the heat.

RELATION BETWEEN TEMPERATURE SCALES

FORMULAE

$$°F = \frac{9}{5} \times °C + 32$$

$$°C = \frac{5}{9} \times (°F - 32)$$

Relation between Kelvin scale and Celsius scale-

Formula

Temperature in K= T^0C + 273

Temperature in T^0C = Temperature in K - 273

For example,

Convert 20 ^0C into Kelvin scale -

= 20 + 273 = 293 K

PLENARY

Q. The radiators in cars are painted black. Explain why.

A. Since, the black bodies are better radiators, so due to this reason, radiators in cars are painted black.

ASSESSMENT

Q. If a pan is removed from the fire, then why does it cool down?

A. When a pan is removed from the fire, it loses heat to the surroundings by radiation and it cools down.

Q. Name the mode of transfer of heat in which medium is not required.

A. Radiation is the mode of transfer of heat in which medium is not required.

Q. It is preferred to use two thin blankets rather than one thick blanket. Explain the reason.

A. In case of two thin blankets, there is an air gap which does not allow heat pass out from the body and it is not as such as in case of one thick blanket.