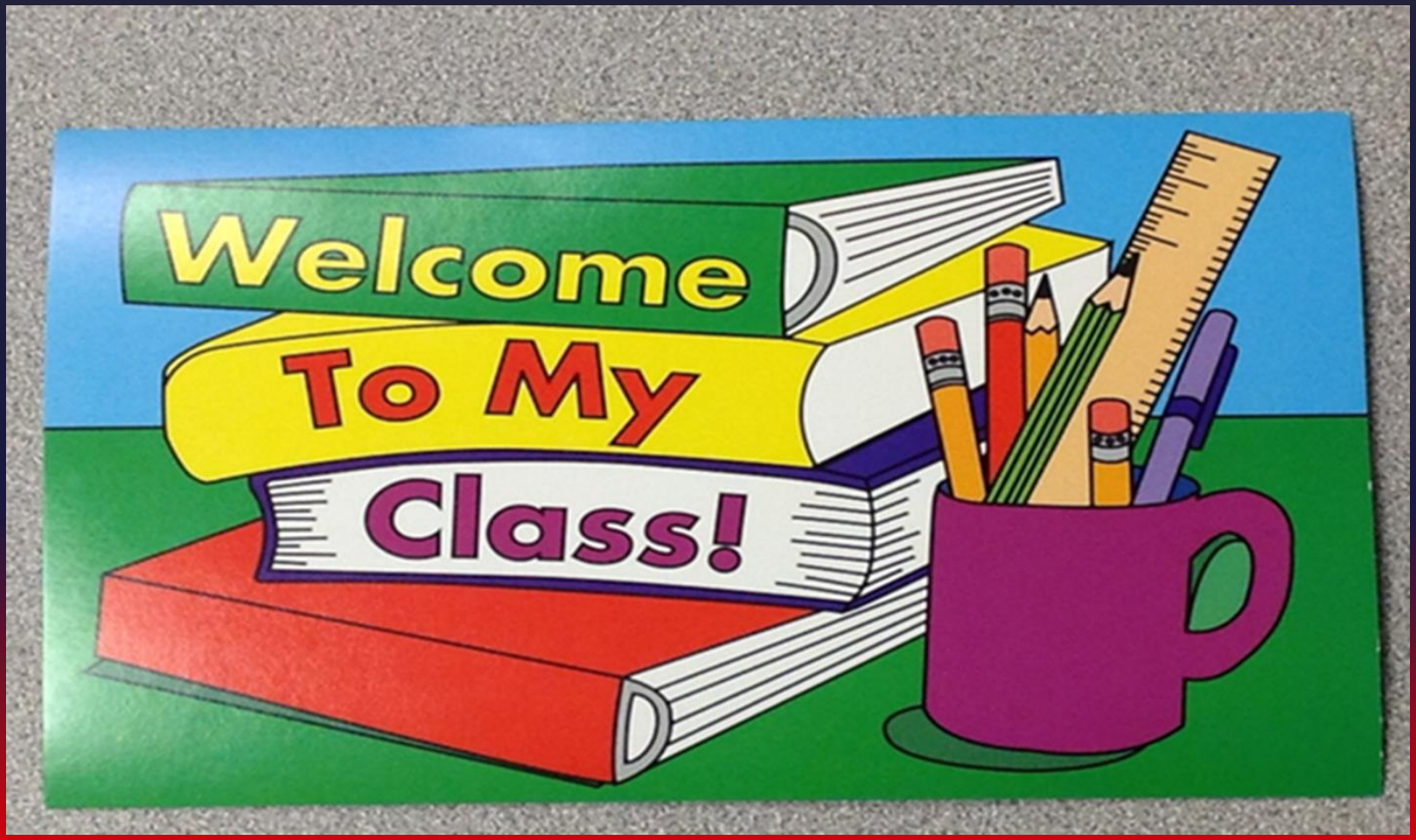
Pakistan School
Kingdom of Bahrain

Class: 9
subject : physics



Engaging starter

- How does heat transfer from fire place into the room ?
- Is it by
- Conduction?
- Convection ?
- Radiation?
- Justify your answ

topic

- Leslie cube experiment

Objective

- At the end of this lesson students will be able to:
- Describe the factors on which radiation depends.

Factors:

- Radiations are emitted by all bodies. The rate at which radiations are emitted depends upon
- various factors such as
- i. Color and texture of the surface
- ii. Surface temperature
- iii. Surface area
- Remember That:

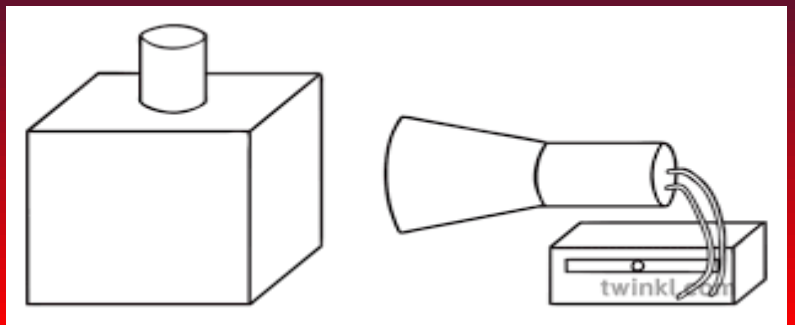
Surface temperature

- When temperature of an object is higher than its surroundings then it is radiating more heat than it is absorbing.
- When temperature of an object is lower than its surroundings, then it is radiating less heat than it is absorbing.

Leslie cube experiment:

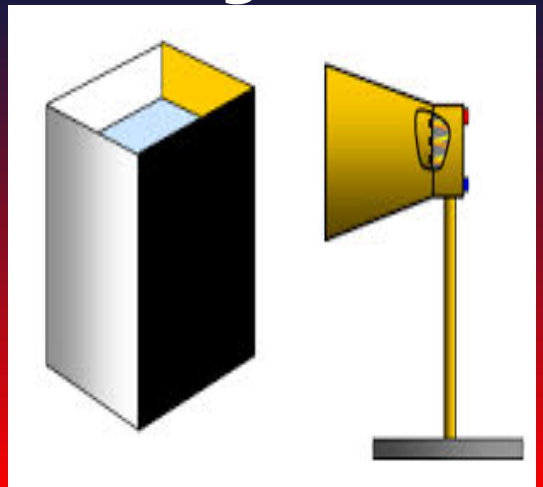
- The rate at which various surfaces emit heat depends upon the nature of the surface. Various parts in the atmosphere. This can be observed by a simple experimental set up as shown surface. Various surfaces can be compared using Leslie's cube.
- Leslie Cube:
- A Leslie cube is a metal box having faces of different nature. The
- four faces of Leslie's cube may be as follows:
- A shining silvered surface
- A dull black surface
- A white surface
- A colored surface

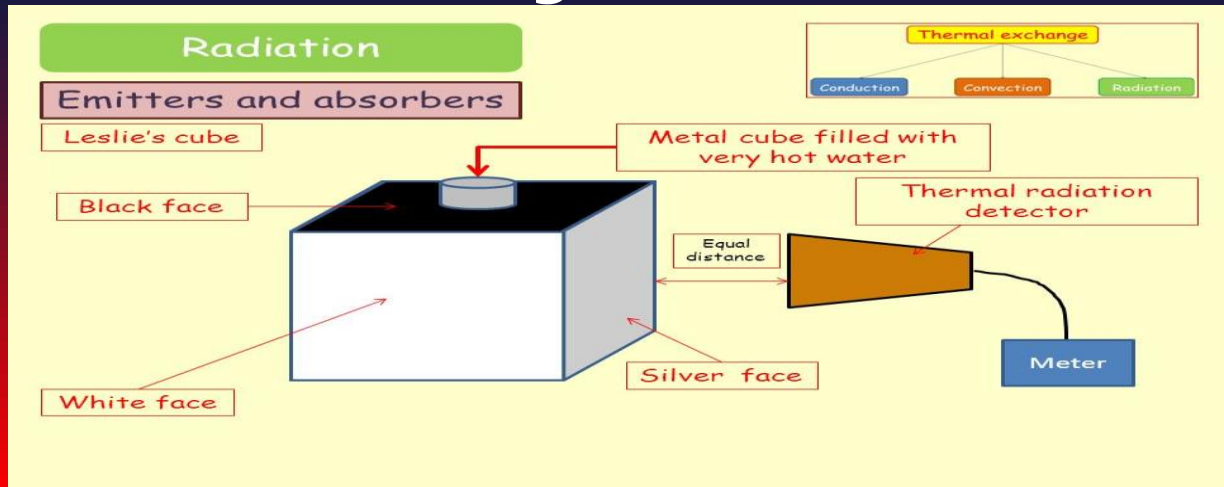
- Hot water is filled in the Leslie's cube and is placed with one of its face towards a radiation detector. It is found that black dull surface is a good emitter of heat. The rate at which various surfaces absorb heat also depends upon the nature of those surfaces.



Results of Leslie cube experiment

- A dull black surface is a good absorber of heat as its temperature rises rapidly.
- A polished surface is poor absorber of heat as its temperature rises very slowly. The
- observations made from the set up shown in figure are shown in the table given below:



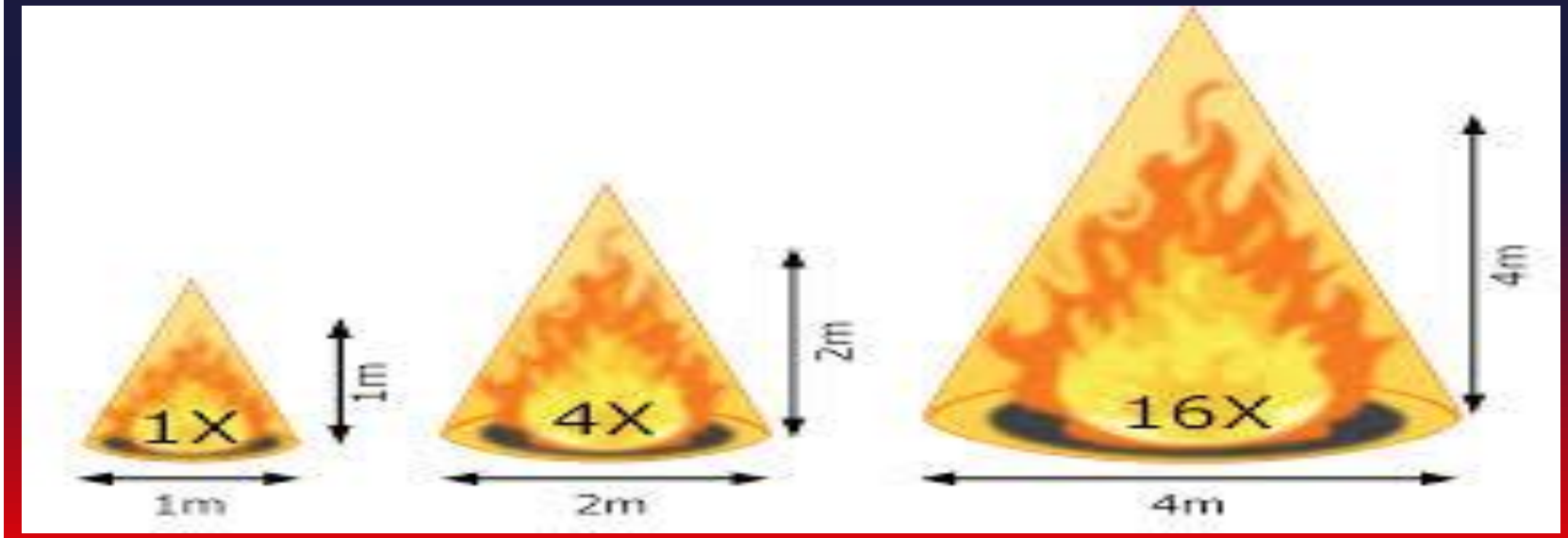


Result of Leslie cube

Surfaces	Emitter	Absorber	Reflector
Dull black surface	Best	Best	Worst
Colored surface	Good	Good	Bad
White surface	Bad	Bad	Good
Shining silvered surface	worst	Worst	Best

Relation of Surface Area with Radiations:

It is also found that the transfer of heat by radiation is also affected by the surface area of the body emitting or absorbing heat. Larger is the area, greater will be the transfer of heat. It is due to this reason that large numbers of slots are made in radiators to increase their surface area.



plenary

- There are ….factors on which radiation depends.
- Describe any one factor on which radiation depends.
- ……did the experiment for the study of radiations.
- Tell the colors of 4 sides of Leslie cube.
- ……color is the best absorber and emitter. (black / silver).
- Larger the surface area larger will be the transfer of heat . T/ F

homework

- Write a note on Leslie cube experiment.
- a. Apparatus
- b. Working
- c. Result

message

- ALLAH HAFIZ