

# Dadasaheb Jotiram Godase Arts, commerce & sci college Vaduj

presented by – Swati J. Raskar

sub- physics

Std- s.y. B.SC



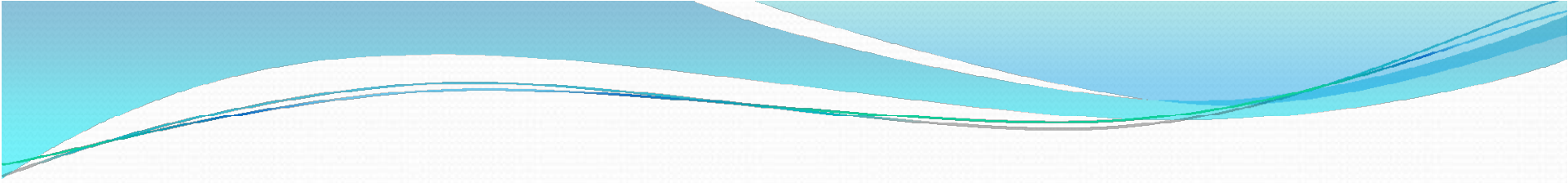
## TOPIC-Kinetic theory of

gases.

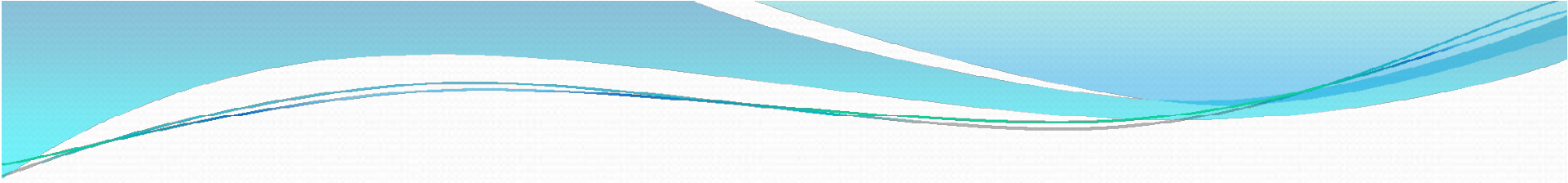
Introduction- The kinetic theory of gases

The behavior of ideal **gases** is explained by **the kinetic molecular theory of gases.**


Molecular motion, which leads to collisions between molecules and the container walls, explains pressure, and the large intermolecular distances in **gases** explain their high compressibility.05-Jun-2019



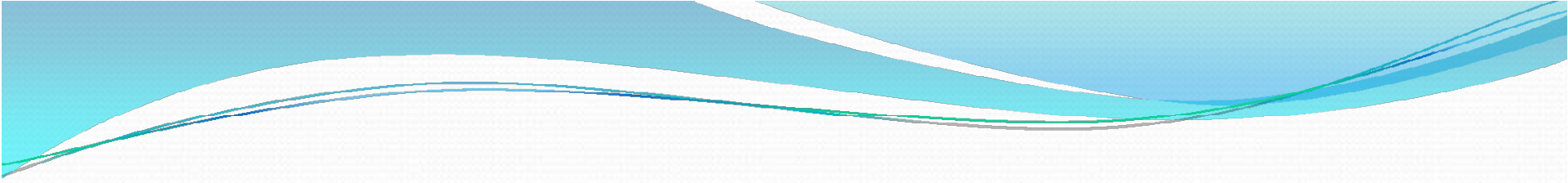
Laws of Thermodynamics.  
Two objects placed in thermal contact will eventually come to the same temperature. When they do, we say they are in thermal equilibrium. The zeroth law of thermodynamics says that if two objects are each in equilibrium with a third object, they are also in thermal equilibrium with each other. 17-3  
Thermal Equilibrium and the Zeroth Law of Thermodynamics  
Monday, September 30,



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Linear expansion occurs  
when an object is heated.  
Here,  $\alpha$  is the coefficient of  
linear expansion. Example:  
 $\alpha_{Al} = 25 \times 10^{-6}$ , so if  $\Delta T =$   
100C, an aluminum bar  
grows in length by a factor  
1.0025

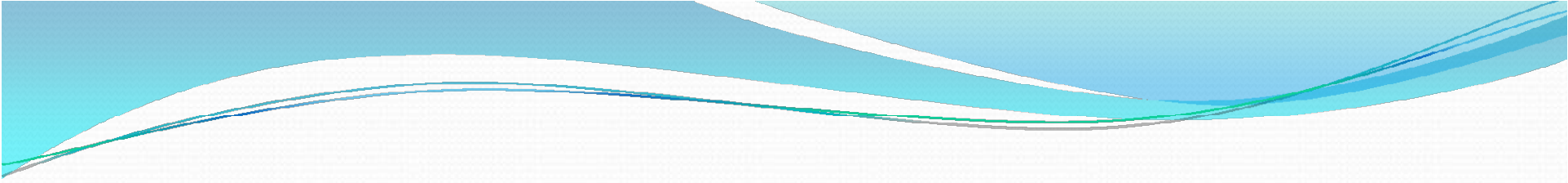


Does a hole in a piece of metal get bigger or smaller when the metal is heated? A. Bigger, because the distance between every two points expands. B. Smaller, because the surrounding metal expands into the hole.

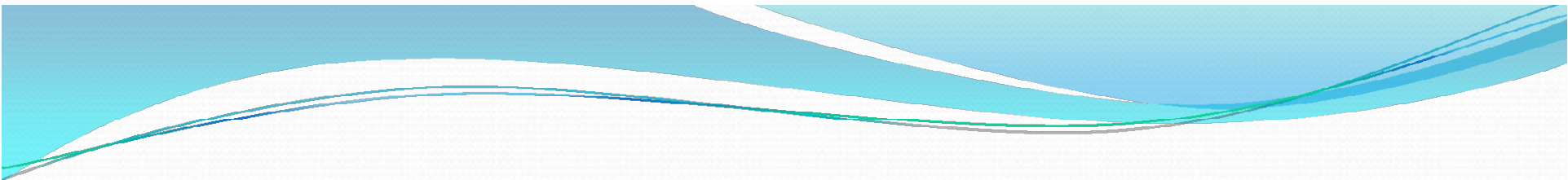


The gases law and absolute temperature-

The concept of absolute zero allows us to define a third temperature scale—the absolute, or Kelvin, scale. This scale starts with 0 K at absolute zero, but otherwise is the same as the Celsius scale. Therefore, the freezing point of water is 273.15 K, and the boiling point is 373.15 K. Finally, when the volume is constant, the pressure is directly proportional to the temperature.

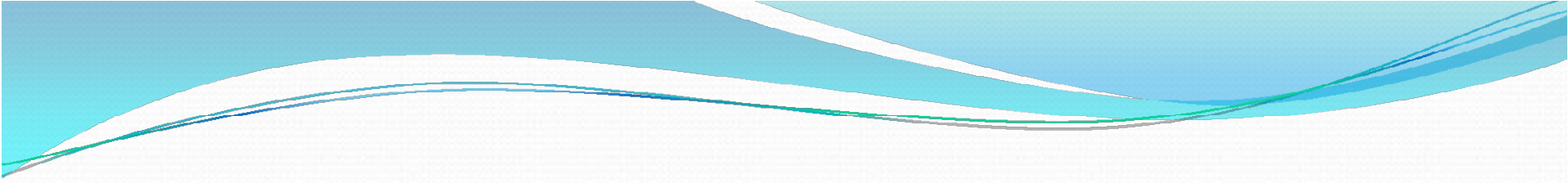


Ideal gas equation-We can combine the three relations just stated into a single relation: What about the amount of gas present? If the temperature and pressure are constant, the volume is proportional to the mass  $m$  of gas:



The ideal gas law-A mole (mol) is defined as the number of grams of a substance that is numerically equal to the molecular mass of the substance: 1 mol H<sub>2</sub> has a mass of 2 g. 1 mol Ne has a mass of 20 g. 1 mol CO<sub>2</sub> has a mass of 44 g. The number of moles (mol) in a certain mass





Temperature Heat is the flow of energy due to a temperature difference. Heat always flows from objects at high temperature to objects at low temperature. When two objects have the same temperature, they are in thermal equilibrium. No Temperature Difference  $\rightarrow$  No Heat flow



**THANK YOU**