

# The Mechanical Universe TEMPERATURE & THE GAS LAWS 18



Read the following questions before the video begins. Answer the questions while the video is in progress. This is an INDIVIDUAL effort, so complete it by yourself.

**DON'T ASK OTHERS FOR ANSWERS** since doing so would be cheating.

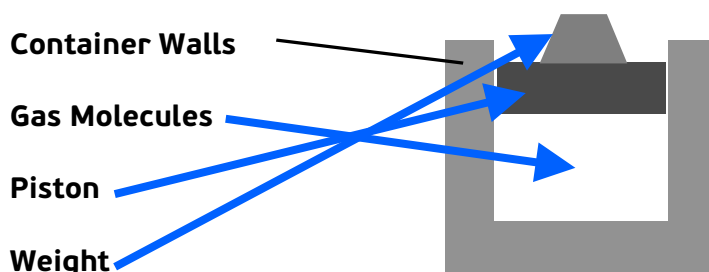
Most of the important information (and answers to the questions on this sheet) is in the text spoken during the presentation. So don't become entranced by the visuals and imagery; concentrate and stay focused on the words!

1. Temperature scales are effective scientific scales because they offer a

Standard for comparison.

2. PRESSURE = FORCE / AREA

3. Draw connecting lines to label the following:



4. The animated simulation shown is called a Molecular  
Dynamics Simulation.

5. Because of the heater, the balloon needs ( MORE **FEWER** THE SAME NUMBER OF ) air molecules to maintain the balance of pressure.

6. Joule, Maxwell, and Boltzmann found the pressure of a gas is (select all that apply).

- A. proportional to the number of particles in the gas
- B. proportional to the volume of the gas
- C. proportional to the kinetic energy of the particles in the gas
- D. inversely proportional to the number of particles in the gas
- E. inversely proportional to the volume of the gas
- F. inversely proportional to the kinetic energy of the particles in the gas

7. Robert Boyle worked in his lab at

- A. The Royal Society of London
- B. Oxford University
- C. Cambridge University
- D. The University of London

> > > continued > > >

8.  $PV$  is proportional to the total Kinetic Energy of all the molecules of the gas.

9. All gases expand the same amount with a given rise in Temperature.

10. The equation for the kinetic theory of gases is  $kT = \frac{2}{3} \bar{K}$