

Simulations that may help you understand answers for this assignment:



http://www.glowscript.org/#/user/pgswack/folder/My_Programs/program/PressureWithEnergy

http://www.glowscript.org/#/user/pgswack/folder/My_Programs/program/HardSphereGasModel

1. Name and describe one phenomenon that is evidence that air is made of particles.
2. Suppose you have a sample of cold gas, and then you heat it up so that it becomes pretty hot. According to our particle model of gases, what is different about the gas when it is hot compared to when it is cold? A good sentence or two should be enough to give a good answer.
3. What is there in between the particles that make up a gas such as air? A good sentence or two should be enough to give a good answer.
4. What causes air pressure according to our particle model of gases? A good sentence or two should be enough to give a good answer.
5. You blow up a balloon. After a while you have a quiet moment and begin to wonder why the air pressure inside the balloon is greater than the air pressure outside of the balloon. How do we explain this with our particle model for gases? A good sentence or two should be enough to give a good answer.

6. I used to play basketball on our driveway back in Chicago. I kept the basketball in our house. I noticed in the winter that the basketball bounced well at first when I took it outside, but after a while when the ball grew cold, it wouldn't bounce very well any longer. The pressure of the air in the basketball had decreased. Why did the pressure of the air inside the ball decrease when it became cold? A good sentence or two should be enough to give a good answer.

7. Why do suction cups stick to windows and walls according to our particle model of gases?
 - (a) More air particles bombard the outside surface of the suction cup compared to the inside surface.
 - (b) The rubber suction cup is sticky, and so it sticks to the wall similar to how tape sticks.
 - (c) Air particles bombard the outside surface of the suction cup with a greater speed than the air particles inside the suction cup.
 - (d) The air particles inside the suction cup suck the inside surface of the cup so that it sticks to the window or wall.

8. How can we use our particle model of gases to explain how we are able to drink with soda straws? A complete sentence or two should be enough to give a good answer.

9. How does an ideal gas change when it is compressed, and is this how real gases behave? Give an example that supports your claim.

10. How does an ideal gas change when it expands into its material surroundings on Earth, and is this how real gases behave? Give an example that supports your claim.