

Read through the following questions *before* viewing the videotape.

- _____ 1. Matter exists in what three primary states?

_____ 2.
_____ 3.
- _____ 4. Which of the following is the most compressible: solid, liquid, gas.
_____ 5. Arrange in order of *increasing* (least to most) density: solid, liquid, gas
_____ 6. How can we change the state of matter?
_____ 7. What happens to the heated can of water after it is sealed and allowed to cool?
_____ 8. How are the temperature and pressure of a confined volume of gas related? (directly or inversely)
_____ 9. As the temperature is increased the pressure _____.
_____ 10. As the temperature is decreased the pressure _____.
_____ 11. What happens to a gas if it is cooled too much?

List 5 everyday uses for gases. _____

12. "LNG" stands for : _____

- _____ 13. What effect does liquefaction have on molecular motion and volume?
_____ 14. -196°C is the temperature of liquid _____.
_____ 15. Liquid nitrogen is used for flash ___ of some foods.
_____ 16. "Cryogenic" techniques are used to store _____.
_____ 17. Color of bromine gas.
_____ 18. Color of liquid bromine.
_____ 19. Color of solid bromine.
_____ 20. The most highly ordered state of matter is _____.
_____ 21. The external shape of a crystal is the same as the shape of the _____ that make it up.
_____ 22. All samples of quartz from any part of the earth have the same _____ between the faces of the crystal.

23. Explain, using a series of particle level drawings and discussion, why the can with water in it was crushed after it was heated, sealed and allowed to cool.
24. Explain, using a series of particle level drawing and discussion, the relationship between the temperature and pressure of a confined volume of gas as the gas is heated. Include in your discussion comments about (1) the number of collisions of the particles, (2) the speed and kinetic energy of the particles, (3) and the force of impact with the walls of the container.
25. Make a particle level drawing of a container of bromine after being immersed in liquid nitrogen, illustrating all three phases of matter.