

15. In which state of matter do the following exist at room temperature?  
 a. Diamond **S**    b. Oxygen **G**    c. Cooking oil **L**    d. Mercury **L**    e. Clay **S**    f. Neon **G**
16. Fingernail polish remover (mostly acetone) is a liquid at room temperature. Would you describe acetone in the gaseous state as a vapor or a gas? **Vapor.**

17. Classify each of the following as homogeneous or heterogeneous mixtures.  
 a. Blood **Ho**    b. Chocolate-chip ice cream **He**    c. Brass (a blend of copper and zinc) **Ho**    d. Motor oil **Ho**  
 e. Black coffee **Ho**

18. Classify each of the following as an element or a mixture.  
 a. Silver **E**  
 b. Pine tree **M**  
 c. Orange juice **M**  
 d. Oxygen **E**  
 e. Iced tea **M** | air **M**

19. List four indications that a chemical change has probably taken place. **- color change - produces a gas - heat is produced - a precipitate is formed**
20. Classify each of the following as a physical or chemical change.  
 a. Bending a piece of wire **P**    b. Burning coal **C**  
 c. Cooking a steak **C**    d. Cutting grass **P**

21. When powdered iron is left exposed to the air, it rusts. Explain why the rust weighs more than the original powdered iron. **Iron reacted with oxygen in the air to make rust. Rust weighs more b/c of the oxygen.**

22. A friend observes a burning candle and comments that the wax is lost as the candle burns. Haven't recently studied the law of conservation of mass, how would you correct your friend? **The wax is turning into a new substance.**

23. Devise a way to separate sand from a mixture of charcoal, sand, sugar, and water. **Dissolve sugar in H<sub>2</sub>O, filter charcoal + sand. Separate charcoal from sand with tweezers.**

24. Identify each of the following as a mixture or a compound. For the mixtures, classify each as homogeneous or heterogeneous.
- a. Soda **Ho**
  - b. Candle wax **C**
  - c. Fog **C**
  - d. Ink **Ho**
  - e. Egg **He**
  - f. Ice **C**
  - g. Gasoline **Ho**
  - h. Blood **Ho**

25. Classify the following properties of the element silicon as chemical or physical properties.
- a. Blue-gray color **P**
  - b. Brittle **P**
  - c. Insoluble in water **P**
  - d. Melts at 1420 C **P**
  - e. Reacts vigorously with fluorine **C**

26. How do you know that each of these is a chemical change?
- a. Food spoils **Spoiled food tastes + smells different than fresh food.**
  - b. A foaming antacid tablet fizzes in water **a gas is formed.**
  - c. A ring of scum forms on your bathtub. **a new compound is formed.**
  - d. Iron rusts **A color change occurs.**
  - e. A firecracker explodes **Heat is produced.**

27. Compare the relationships among the individual particles in the three states of matter.

