**Chapters 9 and 12 Test Review**

**Physical Science – Matter Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Per:\_\_**

1. What is thermal energy?
2. Describe the difference between heat and temperature.
3. What is specific heat?
4. What is the equation for determining the energy of a system?
5. What is an isotope? Give an example.
6. A common isotope of iron has a mass number of 56. What is the total number of subatomic particles in the nucleus? How many neutrons does this isotope have?
7. Describe the three subatomic particles of an atom.
8. What does the atomic number stand for?
9. How many neutrons does a carbon atom with a mass number of 14 and an atomic number of 6 have?
10. What is a way of organizing the elements based on their chemical properties?
11. What do the vertical columns on the periodic table represent?
12. In what groups are the transition metals located on the periodic table?
13. What are periods? Why are they arranged this way?
14. What three metals are in the third period of the periodic table?
15. What types of elements are good conductors of heat and electricity?
16. What is a metalloid?
17. What group on the periodic table is the least reactive?
18. Why don’t noble gases such as helium and Xenon form chemical bonds with other elements?
19. How many electrons can fit in the first energy level?
20. How many electrons can fit in the second energy level?
21. Why do atoms form chemical bonds with other atoms?
22. What are the electrons in the outermost energy level called?
23. Draw energy level diagrams for elements 3, 14, and 19.
24. How many valance electrons are in an atom of aluminum have?
25. What is the device called that allows us to see the atomic spectrum of individual atoms? What is special about the spectrum of atoms?
26. What are atoms called when they lose or gain electrons?
27. How does an atom acquire a 1+ charge? How about a 2- charge?
28. Why is life on Earth referred to as carbon-based?
29. What state of matter are most elements in at room temperature?

Match the following scientist correctly with the statement that applies to them.

Discovered the electron using a cathode ray tube; Ernest Rutherford

Proposed the plum pudding model of the atom

Proposed the idea that atoms consist of a dense nucleus Neils Bohr

surrounded by mostly empty space

Proposed a planetary model for the atom where the Werner Heisenberg

nucleus is surrounded by electrons in certain energy

levels that orbit the nucleus.

Proposed that both the position and energy of an electron J.J. Thomson

cannot be determined at the same time

**Essay Prompt:** What is the difference between mass # and atomic mass?