

Physical Science
Week 4: Text pp. 126-135

True (+) or False (0): Write all answers on the answer sheet.

1. There are forms of the same element that have a different atomic mass.
2. When chemists speak of the atomic mass of an element, they mean the average mass.
3. The average atomic mass of hydrogen is 1.00.
4. The nucleus of some atoms is unstable and capable of breaking apart.
5. Radium decays into barium.
6. Half life is how long it takes for $\frac{1}{4}$ of the original substance to decay into a new substance.
7. An alpha particle is 2 protons and 1 neutron.
8. A beta particle is one neutron.
9. There are 3 types of nuclear (atomic) radiation.
10. The most dangerous type of radiation is gamma.
11. Nuclear fission means the splitting of an atom's nucleus.
12. In 1986, a serious nuclear accident occurred at Chernobyl, Russia.
13. The Chernobyl reactor was a safe design.
14. France produces 75% of its electricity by nuclear plants.
15. The sun is powered by nuclear fusion.
16. Einstein's famous equation ($E=mc^2$) means energy equals mass times the speed of light squared.
17. In the first atomic bomb (Trinity), one ton of mass was converted to energy.
18. Atoms seek to have 8 electrons in their outermost shell.
19. Electrons in the outer shell are called valence electrons.
20. On the periodic table, each horizontal row is called a group.
21. On p.133 in your text, the table has some elements shaded yellow to show that they are nonmetals.
22. Cobalt is atomic number 29.
23. Silver has an atomic mass of 107.9.
24. Hydrogen has the lowest atomic mass of any element.
25. Most of the elements on the periodic table are nonmetals.

Fill in the answers on the answer sheet:

1. Most nuclear reactors use the heat given off to produce ? .
2. Any substance that is liable to produce radiation is said to be ? .
3. The half life of radium-226 is ? years.
4. The 3 types of radiation are ? , ? , and ? .

5. Which rays can penetrate 2-3 feet of concrete?
6. What is nuclear radiation that is used to sterilize food called?
7. The word fission means _?_.
8. Nuclear power plants generate much less _?_ than most other forms of power.
9. In nuclear fusion, hydrogen atoms fuse together to form _?_.
10. The columns of the periodic table are called _?_.
11. How many nonmetals are shown on your periodic table, p133?
12. How many valence electrons do the elements IIA have?
13. What element is used in smoke detectors?
14. What element is a diamond made of?
15. What special name do the elements in VIIIA have?
15. _?_ is a very important process in living things.

Definitions- write the definitions for these terms on the answer sheet and be able to explain them next week from memory in your own words .

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|-------------------|----------------------|
| 1. isotope | 6. nuclear reactor |
| 2. atomic number | |
| 3. atomic mass | 7. gamma rays |
| 4. half life | 8. nuclear fission |
| 5. chain reaction | 9. valence electrons |