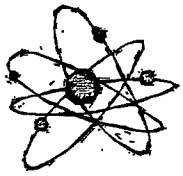
✶✶✶3D Atom Model is due: Monday, March 6, 2017✶✶✶

3D Atomic Model



This is a project used to demonstrate students understanding of the structure of an element. Students should have a working knowledge of the structure of the atom, including atomic number, atomic mass, and electron configuration.

Atom Model Project Directions:

1. From your element cube, determine the electron configuration. Most elements have several isotopes with different mass numbers. Remember, isotopes have the same number of protons and electrons, but different numbers of neutrons, so the mass numbers (protons + neutrons) of the isotopes will be different. The electron configuration (number of electrons in each energy level) of all of the isotopes will be the same. This information can be found at the following web sites:
   www.chemicalelements.com www.webelements.com http://periodic.lanl.gov/

2. **Construction of 3-Dimensional model. Requirements:**
   - *The 3D model needs to hang or stand by itself.*
   - *Size should not exceed 18 inches wide or high.*
   - *It is encouraged to use cheap, easy to find materials such as wire, Styrofoam balls, or beads; no perishable food, but candy is acceptable.*
   - *The protons, neutrons, and electrons should be color coded, and a key should be included on the label.*
   - *Build the nucleus showing the actual number of protons and neutrons for smaller atoms. For atoms with a large number of protons and neutrons, you don't need to use the exact number. You may glue protons and neutrons onto the surface of a Styrofoam or other type of ball to give the appearance of a larger nucleus. The protons should be evenly mixed with the neutrons.*
   - *Your model should have the correct number of energy levels, and the correct number of electrons in each energy level. Electrons repel each other, so the electrons in each energy level should be evenly distributed.*
   - *You may not use a store bought model*

3. **Labels**
Neatly label the nucleus and each energy level. Attach a label (a 5 x 7 index card works well for this) neatly written or typed that includes the following information:
   a) name, symbol, and mass number of element (e.g., Cadmium Cd 114)
   b) atomic number
   c) number of protons, neutrons and electrons
   d) electron configuration (e.g., 2, 8, 18, 18, 2 for cadmium)
   e) classification (metal, non-metal or metalloid)
   f) color-coded key for the protons, neutrons, and electrons

Element 3 - D RUBRIC

Points possible 28

CATEGORY	4	3	2	1	0
Mass Number # of Protons & Neutrons	100% accurate.	80% accurate.	60% accurate.	Fewer than 60% accurate.	No attempt was made.
Number of Electrons	100% accurate.	80% accurate.	60% accurate.	Fewer than 60% accurate.	No attempt was made.
Electron Configuration	100% accurate.	80% are accurate.	60% are accurate.	Fewer than 60% accurate.	No attempt was made.
Nucleus in center of model (P& N)	100% accurate.	80% accurate.	60% accurate.	Fewer than 60% accurate.	No attempt was made.
Color Coded Key	Effectively represents model. (detailed)	Adequately represents model.	Partially represents model.	Lacks representation.	No attempt was made.
Creativity Construction Design	The design reflects an exceptional degree of student creativity in the model.	Some of the design reflects student creativity in the model.	The design reflects little student creativity in the model.	The design is not well thought out. It appears little attention was given to the model.	No attempt was made.
Time and Effort (2 class periods)	Class time was used wisely. Much time and effort went into the planning and design of model.	Class time was used wisely; however the student could have put in more time and effort in.	Class time was somewhat used wisely; however the student could have put more time and effort in	Class time was not used wisely.	

Points Received _____