Standard 6: **Design a game that teaches one or more of standards 1-5.**

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| *Criterion* | *Exceeding Standard* | *Meeting Standard* | *Approaching Standard* |
| Is the game a learning tool for standards 1-5? | The game requires that students learn and/or practice ***two or more*** essential components of Unit 2 Standards 1-5. Students who play the game feel much more confident about passing the unit exam. | The game requires that students learn and/or practice ***at least one*** essential component of Unit 2 Standards 1-5. Students feel it helped them somewhat for the unit exam. | It is possible to play the game without knowing or practicing standards 1-5. |
| Is the game fun/engaging? | A majority of students who play the game like it and say they would choose to play it again, even outside of class. There are levels to pass or other ways where the game can keep being interesting over time. | A majority of students playing the game say it was fun to play in class. | A majority of students say they do not enjoy the game. |
| Is the game original/creative? | The game teaches atoms/elements in a way not typically done in science class. A teacher might not think of doing this to teach atoms. | The game is original to the group who made it. It is similar to the kinds of things you would do in a class – answer quiz questions, etc. | The game is copied directly from another group or online idea. (No credit for this!) |
| Is the game presented professionally? | The parts of the game are made neatly and with care. Pieces are laminated or otherwise protected, the game parts are word-processed (i.e., not handwritten). | The parts of the game are made neatly and with care. Game parts may be handwritten or word-processed. | The parts of the game are somewhat disorganized or sloppy. All parts are handwritten and some are difficult to use. |

*Unit Standards*

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| Standard | |
| **1** | **Predict whether two charged objects will attract or repel each other, and explain why.** |
| **2** | **Describe the relative amount, charges, masses, and locations of the protons, neutrons, and electrons in an atom of an element.** |
| 2a For a given element, determine the number of protons |
| 2b When given a number of protons, identify the element name and symbol |
| 2c Identify the number of neutrons in an atom from atomic number and mass number |
| 2d Identify the number of electrons in an atom when given the number of protons and charge |
| 2e Identify the charge of an ion from the number of protons and electrons |
| 2f Identify the mass of an atom from the number of protons and neutrons |
| **3** | **Explain the arrangement of the elements on the Periodic Table, including the significant relationships among elements in a given column or row. (**Determine an element’s placement on periodic table based on properties, number of protons, or electron configuration) |
| **4** | **Create visual models for atoms of different elements that shows the location of electrons and their relative distance from the nucleus.** |
| 4a Draw a Bohr model for a given element |
| 4b Write an electron configuration to describe location of each electron in an atom |
| 4c Determine the number of core and valence electrons |
| **5** | **Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.** |
| 5a Define electronegativity |
| 5b Explain how nuclear charge and shielding determine electronegativity |
| 5c Use nuclear charge and shielding to determine relative electronegativity for various elements |
| 5d Use nuclear charge and shielding to predict relative atomic size for various elements |
| **6** | **Design a game that teaches one or more of standards 2-5** |