**Atom Models Comparison**

A **model** is a two or three-dimensional \_\_\_**REPRESENTATION**\_\_\_\_\_ of a person or thing or of a proposed structure, typically on a \_\_\_\_\_\_**SMALLER**\_\_\_\_\_\_\_ scale than the original. If the *nucleus* of an atom were the size of a \_\_\_\_\_\_**MARBLE**\_\_\_\_\_\_ , and the *electrons* were the size of \_\_**GRAIN**\_\_\_\_\_\_\_\_\_\_ \_**OF**\_ \_\_\_\_**SAND**\_\_\_\_\_ , then the electrons would be \_\_**25 METERS**\_\_\_\_ away from the *nucleus*.

*Draw a picture* of the above analogy. Include labels.

**Helium Atom**

25 meters

Grain of sand Grain of sand

(Electron) Marble (Electron)

(Nucleus)

|  |  |  |
| --- | --- | --- |
| **Model Creator/ Picture** | **Accurate** | **Inaccurate** |
| Macintosh HD:Users:alicia.yost:Desktop:19987427-1-gif.gif | It shows that the smallest particle of matter is the atom. | Does not show any subatomic particles. |
| Macintosh HD:Users:alicia.yost:Desktop:thomson-model.png | Shows the charges of subatomic particles. | Does not show a nucleus. |
| **Model Creator/Picture** | **Accurate** | **Inaccurate** |
| Macintosh HD:Users:alicia.yost:Desktop:Rutherford-atom.jpg | Shows the atom has a nucleus.  Shows the charges of subatomic particles.  Shows that most of the mass of an atom is in the nucleus.  Shows that electrons orbit the nucleus. | Cannot show the speed of the electrons.  Cannot show the correct amount of empty space in the atom. |
| Macintosh HD:Users:alicia.yost:Desktop:atom-h-he-li-na.gif | Shows the atom has a nucleus.  Shows the charges of subatomic particles.  Shows that most of the mass of an atom is in the nucleus.  Shows that electrons orbit the nucleus. | Cannot show the speed of the electrons.  Cannot show the correct amount of empty space in the atom. |
| Macintosh HD:Users:alicia.yost:Desktop:atom-quantum.jpg | Shows the atom has a nucleus.  Shows the charges of subatomic particles.  Shows that most of the mass of an atom is in the nucleus.  Shows that electrons orbit the nucleus. | Cannot show the speed of the electrons.  Cannot show the correct amount of empty space in the atom. |