Mrs H’s BOHR MODEL OF THE ATOM

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| **What** | **How it is shown in the model** |
| Electrons are bound in atoms | Electrons are people, usually on the ground but can be excited to climb a ladder! |
| Electrons are found in certain orbits | Students are only found on rungs of ladders or free of the ladder and running around the roofs |
| Energy levels get closer together, the energy difference between levels decreases as you go further away from the nucleus | Our model should have the ladder rungs getting closer together the further up the ladder you go. Presently Mrs H hasn’t managed to source this! |
| Electrons cannot be between energy levels | Students have only one leg and no arms, they are unable to hold on between two of the rungs of the ladder. |
| Electrons rapidly return to a lower energy level | Students have acrophobia (thanks to Theo who taught Mrs H a new word!) |
| An electron has 0J of energy when it is ionised and free of the influence of the nucleus | When the electron is on the platform at the top of the ladder it is “ionised” and free from the electron |
| Electrons are excited | Students absorb the energy from the ball s and move to another rung of the ladder. |
| Electrons can lose energy, when they give off a photon, moving down one or more E levels | Students lose energy when they emit a ball, of the correct size to totally correspond to a jump to another rung of the ladder |
| Photons have different energies given by the formula: E=hf  where h=  f | Different size balls, beach ball more E than a marble  Beach ball higher frequency, higher energy, lowest wavelength,  Marble, higher wavelength, lower energy, lowest frequency,  h= Planck’s constant 6.63 ×10-34 Js  f=frequency (Hz) |
| Electrons have negative energy when they are bound by the nucleus. | Students have negative energies when on the ground or on the ladder (0J at the very top platform) |
| Electrons can gain their energy in two ways   * Collision with another electron * Absorption of a photon | Rory colliding with another student (Keir), one of the students would need to be free.  Catching a ball of a specific size! |
| Absorption spectra are examples of photons being absorbed by electrons to excite them to a higher energy level | Students catching a ball and getting excited! |
| Emission spectra are examples of photons being emitted when electrons move to a lower energy level | Student throwing away a ball and moving to a lower rung on the ladder |
| Electrons have kinetic energy when they are free from the influence of nucleus | Students have Ek when they get enough energy to take them beyond the top platform of the ladder |
| A photon will not be absorbed if it is the wrong energy to move the electron to a specific energy level | Balls are no good if they don’t provide the right energy to move the electron to another rung of the ladder or give it sufficient energy to free it |