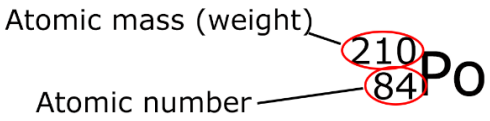
33.



34. It has 86 protons, 86 electrons and 136 neutrons. It is radioactive (because its N:P is 1.581 and all elements with a N:P >1.537 are radioactive).
35.

$$^{232}_{90}Th \rightarrow {}^{228}_{88}Ra + {}^{4}_{2}He$$

36. The symbol for the beta particle is $^{0}_{-1}e$ and it is generated during the beta decay cycle when a neutron loses energy, turns into a proton and releases an electron, ejecting it out of the nucleus. The electron is the beta particle.
37.

$$^{237}_{92}U \rightarrow {}^{237}_{93}Np + {}^{0}_{-1}e$$

Corrected equation.

38. True.
39. 6 half-lives have passed in 84 seconds, so we have 156,250 atoms of ^{50}Ca left at that point: 10,000,000 to 5,000,000 (1st half-life), 5,000,000 to 2,500,000 (2nd), 2,500,000 to 1,250,000 (3rd), 1,250,000 to 625,000 (4th), 625,000 to 312,500 (5th), 312,500 to 156,250 (6th).