Name _____

# Nuclear Balancing

Balance the following nuclear decay equations:

1) Thorium-234 decays by beta emission.
   **Pa-234**
2) Hydrogen-3 decays by beta emission.
   **He-3**
3) Radon-222 decays by alpha emission.
   **Po-218**
4) Thorium-232 decays by alpha emission.
   **Ra-228**
5) Potassium-40 decays by beta emission.
   **Ca-40**
6) Carbon-14 decays by beta emission.
   **N-14**
7) Barium-137 and a beta particle are formed from a decaying element.
   **Cs-137**
8) Radon-222 and an alpha particle are formed from a decaying element.
   **Ra-226**
9) Bismith-210 and a beta particle are formed from a decaying element.
   **Pb-210**
10) Protactinium-234 (Pa) undergoes both alpha and beta decay.
    **Th-230**

Balance the following nuclear transmutation equations:

11) Nitrogen-14 plus an alpha particle produces a proton and another atom.
    **O-17**
12) Uranium-238 is bombarded with an alpha particle producing Plutonium-239 and some neutrons.
    **3 neutrons**
13) Carbon-12 is bombarded by an alpha particle creating another element and a neutron.
    **O-15**
14) Hydrogen-3 is combined with Hydrogen-2 to produce Helium-4 and another particle.
    **neutron**
15) Uranium-235 is bombarded by a neutron and splits into Barium-141, another element, and three neutrons.
    **Kr-92**
16) Sodium-24 is bombarded by a proton creating another element and releasing a neutron.
    **Mg-24**
17) Plutonium-241 and another particle create plutonium-242 and the release of gamma rays.
    **neutron**
18) Plutonium-244 was bombarded with Nitrogen-13 to produce a new element and releasing a neutron.
    **Md-256**
19) Lead-207 is bombarded with an alpha particle creating another element and releasing a proton.
    **Bi-210**
20) Molybdenum-99 is bombarded with a proton and releases a neutron creating a new element.
    **Tc-99**