# Transmutation

Name: _____

Part 1: Fill in the blank in each transmutation reaction with the correct particle, and label each particle as the target, projectile, product, or ejected particle.

1) $\_\_\_\_\_ + {}^{239}_{92}U \rightarrow {}^{238}_{93}Np + 2\ {}^{1}_{0}n$

2) ${}^{98}_{42}Mo + {}^{1}_{0}n \rightarrow {}^{0}_{-1}\beta + \_\_\_\_\_$

3) ${}^{1}_{0}n + \_\_\_\_\_ \rightarrow {}^{1}_{1}H + {}^{40}_{19}K$

4) ${}^{2}_{1}H + \_\_\_\_\_ \rightarrow {}^{1}_{1}p + {}^{4}_{2}He$

Part 2: Rewrite the following reactions in symbol form:

5) An iron-58 is hit by a bismuth-209 nucleus to form meitnurium-266 and a neutron.

6) A molybdenum-96 atom is hit by deutrium (hydrogen-2) to form technetium-97 and a neutron.

7) When californium-249 is collided with an oxygen-18, the products are seaborgium-263 and several neutrons.

8) Hitting plutonium-239 with an alpha particle will make americium-241, a proton and a neutron.

9) A lead-218 atom decomposes by alpha decay to produce what new nucleus?

10) A neutron is fired at a uranium-235 atom, where the atom splits apart into what product atom along with zirconium-97 and 2 neutrons?

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Part 1: Fill in the blank in each transmutation reaction with the correct particle, and label each particle as the target, projectile, product, or ejected particle.

1) $^{13}_{6}C + \_\_\_\_\_ \rightarrow {}^{262}_{104}Rf + {}^{1}_{1}p$

2) $^{290}_{115}Mc \rightarrow \_\_\_\_\_ + {}^{4}_{2}\alpha$

3) $^{272}_{110}Ds + {}^{18}_{8}O \rightarrow 2{}^{1}_{0}n + \_\_\_\_\_$

4) $^{47}_{22}Ti + \_\_\_\_\_ \rightarrow {}^{56}_{26}Fe + {}^{1}_{0}n$

Part 2: Rewrite the following reactions in symbol form:

5) Write the reaction that shows the formation of copenicium-285 and 3 neutrons by colliding uranium-238 with a projectile. Determine the projectile.

6) A tungsten-184 atom is hit by tritium (hydrogen-3) to form rhenium-185 and 2 neutrons.

7) A possible fusion reaction collides helium-5 with lithium-8 to form boron-11 and 2 neutrons.

8) Hitting plutonium-239 with an alpha particle will make americium-241, a proton and a neutron.

9) Write the alpha decay reaction of polonium-210.

10) A neutron is fired at a plutonium-239 atom, where the atom splits apart into what product atom along with molybdenum-98 and 3 neutrons?