

2. We note that the sum of superscripts (mass numbers A) must balance, as well as the sum of Z values (where reference to Appendix F or G is helpful). A neutron has $Z = 0$ and $A = 1$. Uranium has $Z = 92$.

- Since xenon has $Z = 54$, then “Y” must have $Z = 92 - 54 = 38$, which indicates the element Strontium. The mass number of “Y” is $235 + 1 - 140 - 1 = 95$, so “Y” is ^{95}Sr .
- Iodine has $Z = 53$, so “Y” has $Z = 92 - 53 = 39$, corresponding to the element Yttrium (the symbol for which, coincidentally, is Y). Since $235 + 1 - 139 - 2 = 95$, then the unknown isotope is ^{95}Y .
- The atomic number of Zirconium is $Z = 40$. Thus, $92 - 40 - 2 = 52$, which means that “X” has $Z = 52$ (Tellurium). The mass number of “X” is $235 + 1 - 100 - 2 = 134$, so we obtain ^{134}Te .
- Examining the mass numbers, we find $b = 235 + 1 - 141 - 92 = 3$.