Challenge Problem 7

The two naturally occurring isotopes of nitrogen have masses of 14.0031 & 15.0001 respectively. Determine the percent of ^{15}N naturally occurring in nature. Draw a Bohr model of both isotopes of nitrogen.

Avg. AtomicMass = (%)(mass) + (%)(mass) ...

N avg mass = 14.00674 (from P.T.)

$$14.00674 = (x)(15.0001) + (1-x)(14.0031)$$

$$14.00674 = (x)(15.0001) + 14.0031 - (x)(14.0031)$$
$$-14.0031 \qquad -14.0031$$

$$0.00364 = (x)(15.0001) - (x)(14.0031)$$

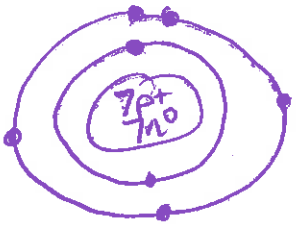
$$0.00364 = (x)(15.0001 - 14.0031)$$

$$\frac{0.00364 = (x)(0.997)}{0.997}$$

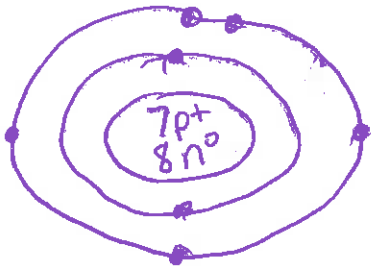
$$X = 0.00365$$

% N-15 in nature = 0.365%

N-14



N-15



only difference is # of n°