28 Atoms and Isotopes Practice. Name: _____

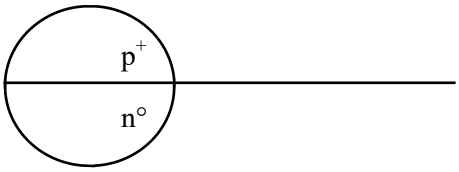
Fill in each box completely with the atom symbol and name, then do the math with the rounded to the nearest whole number mass to calculate the number of neutrons. Fill in the number of protons & electrons.
Show the electron configuration for the ground state – unless it says excited state.

1 – ____ – _____

At. Mass =
– # p^+ =

nº =

#e^- =

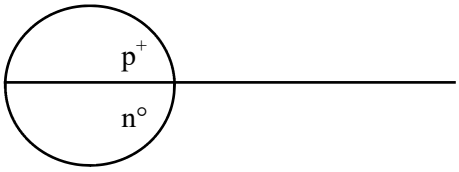


5 – ____ – _____

At. Mass =
– # p^+ =

nº =

#e^- =



Hydrogen is the only atom on the periodic table that has

NO _____

The electron configurations on the periodic table are always shown in the

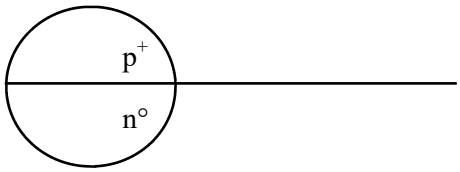
_____ state.

9 – ____ – _____

At. Mass =
– # p^+ =

nº =

#e^- =

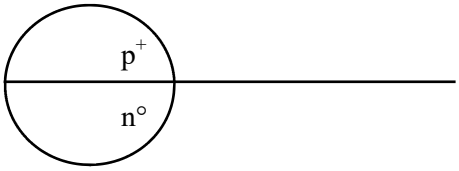


10 – ____ – _____

At. Mass =
– # p^+ =

nº =

#e^- =

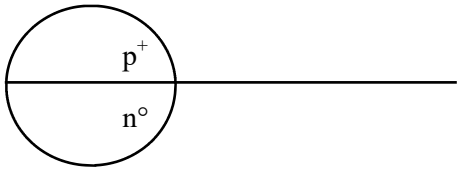


12 – ____ – _____ SHOW excited state!

At. Mass =
– # p^+ =

nº =

#e^- =

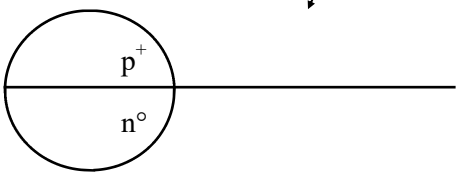


14 – ____ – _____ SHOW excited state!

At. Mass =
– # p^+ =

nº =

#e^- =

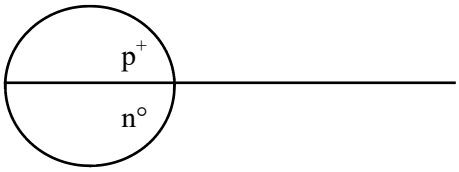


16 – ____ – _____

At. Mass =
– # p^+ =

nº =

#e^- =

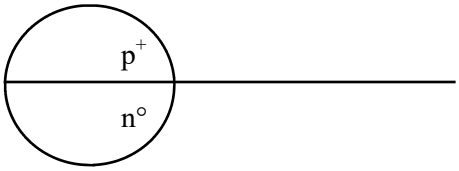


17 – ____ – _____

At. Mass =
– # p^+ =

nº =

#e^- =



Group 18 elements are known as the...

_____ _____

They have ONLY… _____ _____

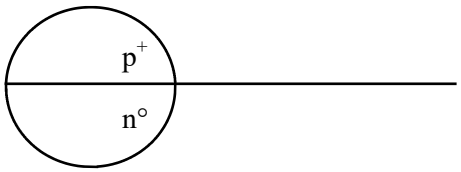
List the 6 symbols: _____

22 – ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =

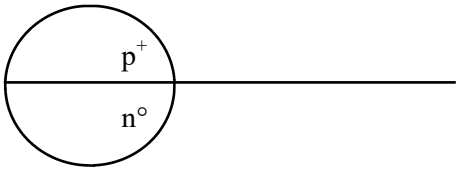


25 – ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =

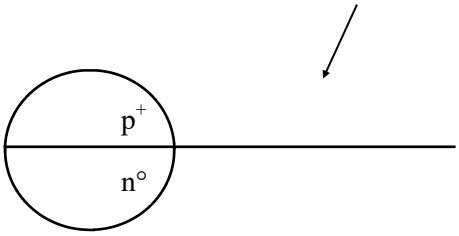


26 – ____ – _____ SHOW excited state!

At. Mass =
– # p^+ =

n^o =

e^- =

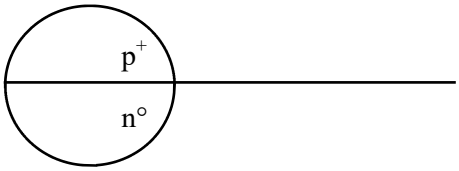


29 – ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =

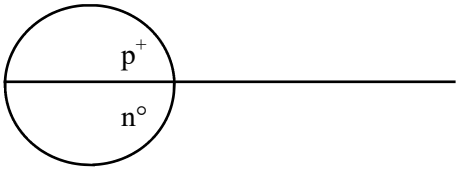


30 – ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =

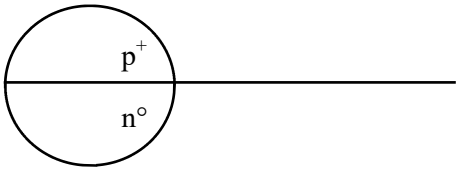


36 – ____ – _____ SHOW excited state!

At. Mass =
– # p^+ =

n^o =

e^- =



Check now…
Does every atom have the same number of protons as electrons? Yes or No

Look at zinc on periodic table. Add up the total number of electrons in the electron configuration = _____

What number does it equal in the Zn box on the periodic table? The _____

Is that ALWAYS true, that the number of electrons equals the atomic number? Yes No

Every atom is electrically neutral because the _____ = _____

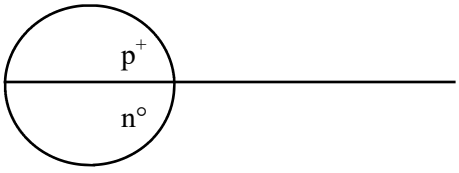
These next 2 are <u>not</u> the most common isotopes, but the mass is provide. They are other isotopes of each of these atoms.
Be careful with the # of protons, neutrons, electrons.

38 – ____ – _____

At. Mass = 89 amu
– # p^+ =

n^o =

e^- =

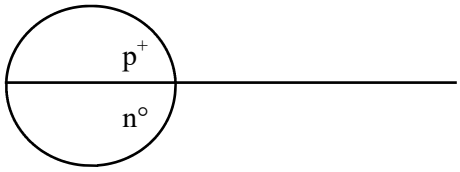


47 – ____ – _____

At. Mass = 109 amu
– # p^+ =

n^o =

e^- =

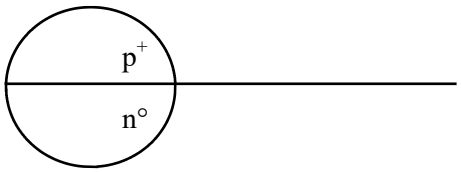


50 – ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =

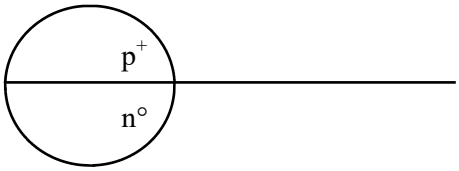


54 – ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =

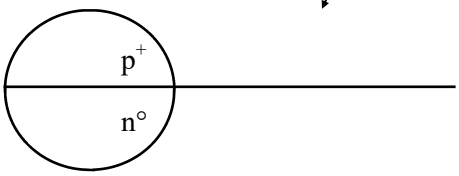


55 – ____ – _____ SHOW excited state!

At. Mass =
– # p^+ =

n^o =

e^- =

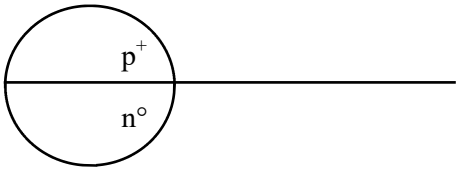


56– ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =



Something "odd" happens with Hafnium, element number 72. Write the ENTIRE electron configuration for Hf?

_____

Does any atom EVER start with 18 electrons in the first orbital? Yes No

How many electrons can fit in the first electron shell of any atom? _____ In the second shell? _____

Write the electron configuration for the first 2 electron shells of gold _____

Write the configuration of the THREE LOWEST ENERGY orbitals of mercury? _____

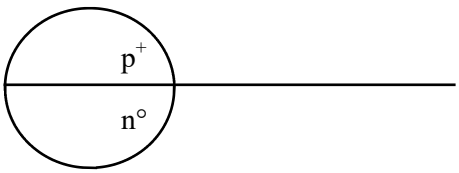
Why does NYS put JUST ONE asterisk into the table?

72 – ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =

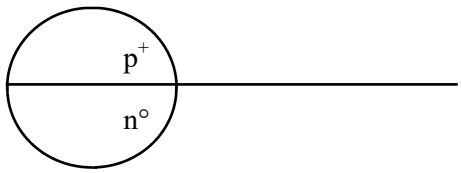


74 – ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =

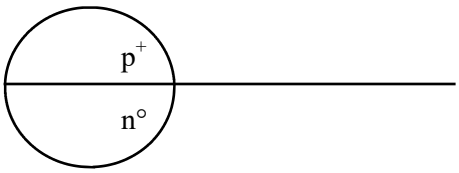


79 – ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =

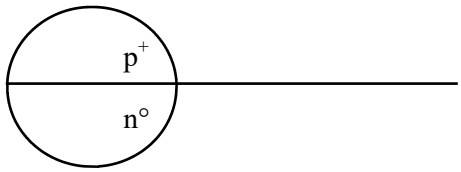


84 – ____ – _____

At. Mass =
– # p^+ =

n^o =

e^- =

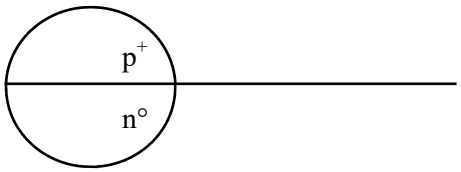


86 – ____ – _____

At. Mass =
– # p^+ =

n^o =

#e^- =

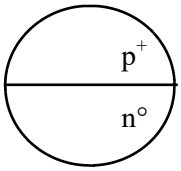


92– ____ – _____

At. Mass =
– # p^+ =

n^o =

#e^- =



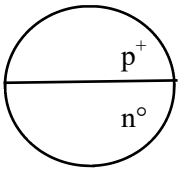
e^- config here

104 – ____ – _____

At. Mass =
– # p^+ =

n^o =

#e^- =



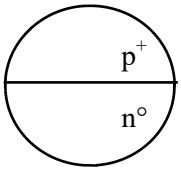
no e^- config here

107– ____ – _____

At. Mass =
– # p^+ =

n^o =

#e^- =



no e^- config here

Isotopes are chemically identical atoms, with different numbers of neutrons. They exist, but for no apparent reason. All atoms are isotopes of an element. An isotope can be in the ground state, or excited state. Calculate the average weighted atomic masses of these "elements", Ao and Bp. Always use the MASS, not the isotope numbers.
SF countDo the math below.

Element Ao

Isotope	Mass	Proportion
Ao–53	53.42 amu	71.33%
Ao–54	54.12 amu	16.93%
Ao–56	56.04 amu	11.74%

Element Bp

Isotope	Mass	Proportion
Bp–43	42.99 amu	76.25%
Bp–44	44.15 amu	12.84%
Bp–46	46.22 amu	10.91 %