PhET INTERACTIVE SIMULATIONS

Clicker Questions for *Build an Atom*

AUTHORS:
Yuen-ying Carpenter (University of Colorado Boulder)
Trish Loeblein (University of Colorado Boulder)
Robert Parson (University of Colorado Boulder)

COURSE:

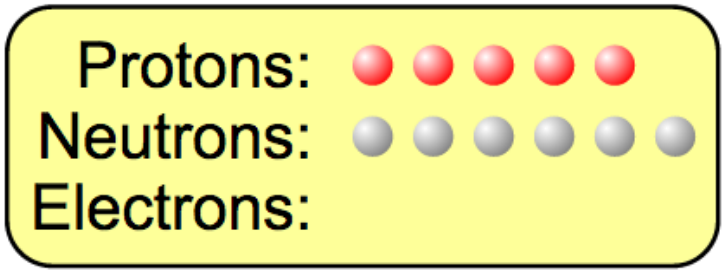
Introductory / Preparatory College Chemistry

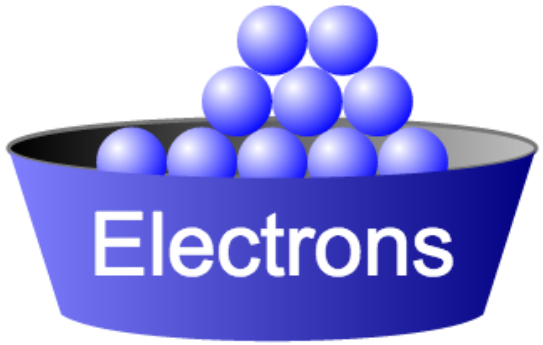
If you have 5 protons and 6 neutrons, how many electrons would you add to make a neutral atom ?

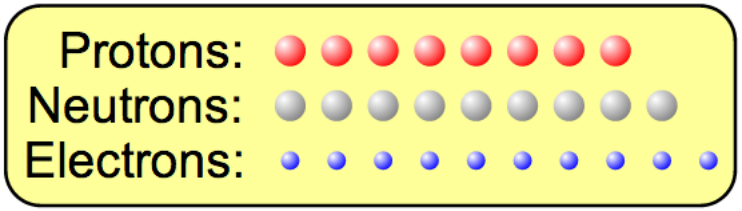
a. 5 electrons

b. 6 electrons

c. 11 electrons

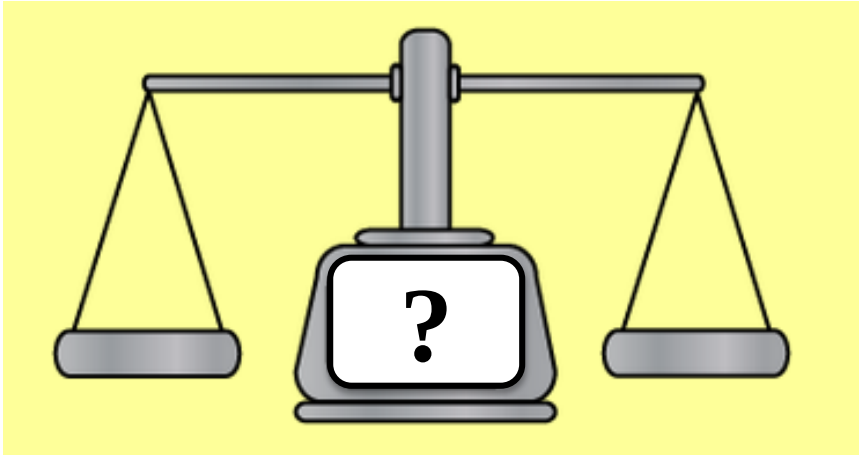


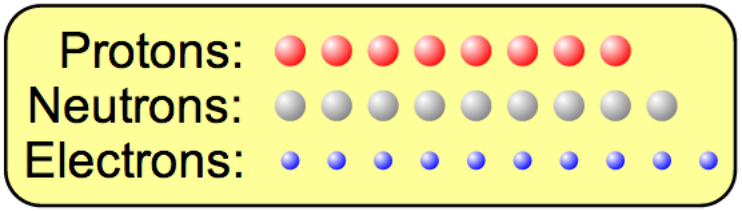




If you have an atom with 8 protons, 9 neutrons and 10 electrons, what is its mass number?

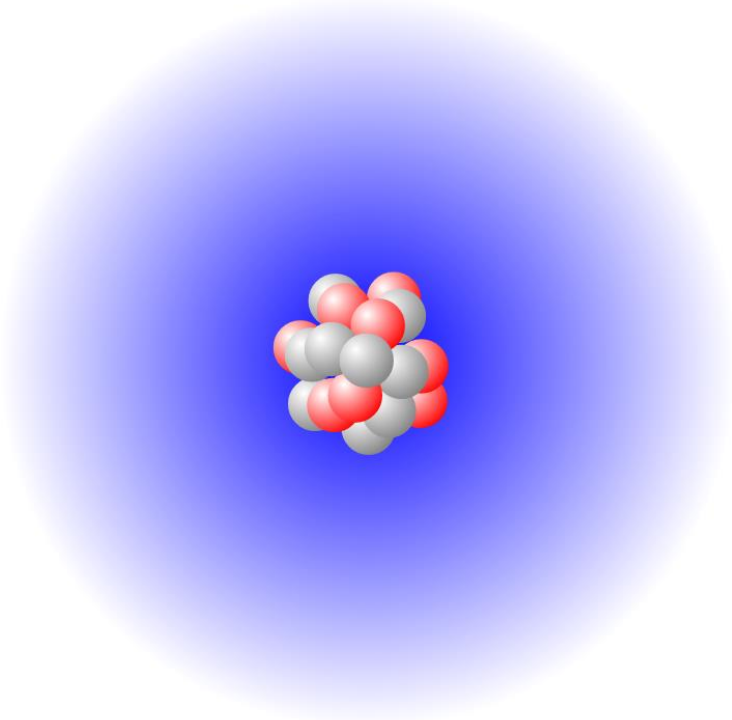
a. Zero
b. 8
c. 16
d. 17
e. 25



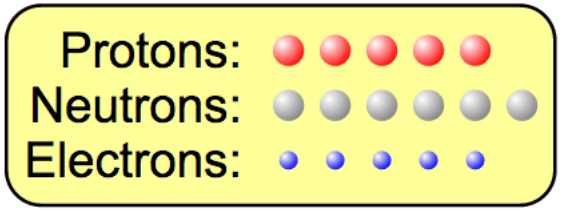


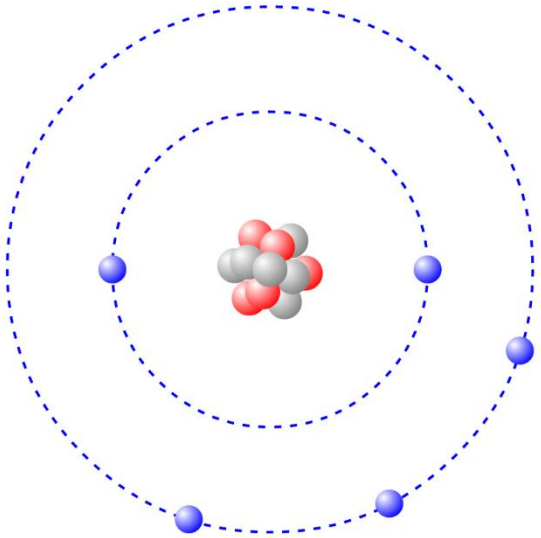
For the same atom, with 8 protons, 9 neutrons and 10 electrons, what type of atom or ion is it?

a. Neutral atom
b. +2 ion
c. +1 ion
d. -1 ion
e. -2 ion

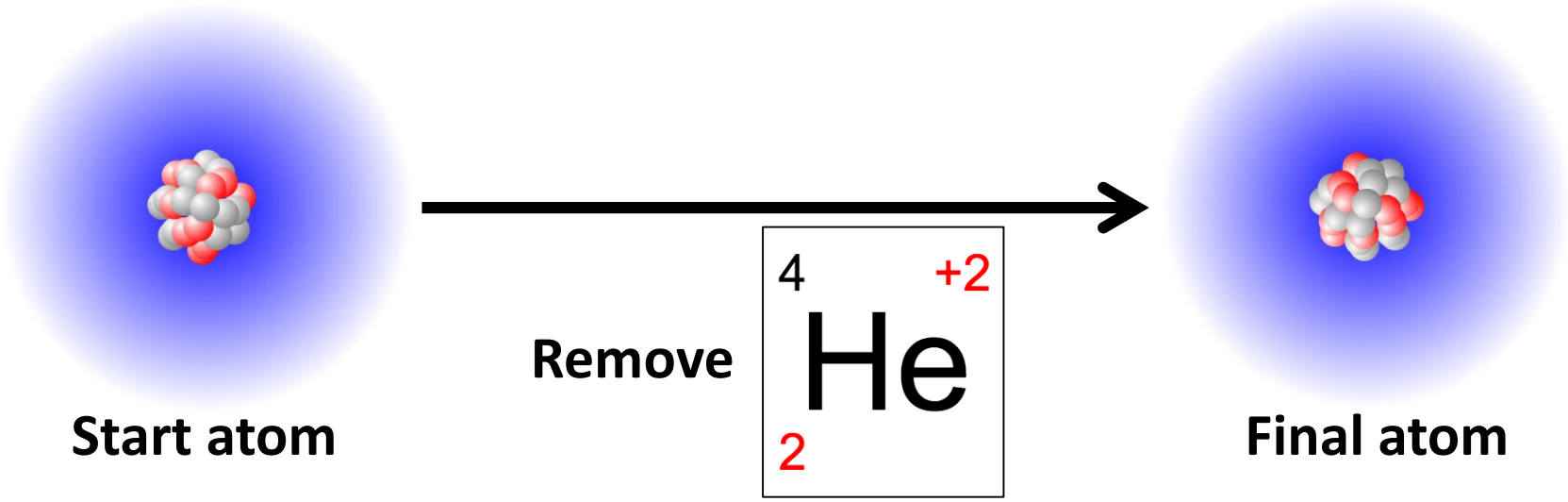


If you have 5 protons, 6 neutrons, & 5 electrons, what would the symbol look like?





A	B	C	D
11 B 5, 0	11 B 5, +1	11 C 6, +1	11 C 6, -1



Which statement is FALSE about the final atom?

a. It is a ***different element*** than the start atom.

b. It has ***4 neutrons less*** than the start atom.

c. It has ***2 protons less*** than the start atom.

d. None of the above.

What is the correct symbol for an isotope of carbon with 7 neutrons?

a. ${}^{7}_{6}C$

b. ${}^{13}_{7}C$

c. ${}^{6}_{13}C$

d. ${}^{13}_{6}C$

What is the correct identity of an element with the following isotopic symbol and how many neutrons does it have?

$$^{79}_{35}X$$

a. Gold, 114 neutrons

b. Bromine, 44 neutrons

c. Gold, 44 neutrons

d. Bromine, 114 neutrons

Which are isotopes?

I

II

III

a. I and II

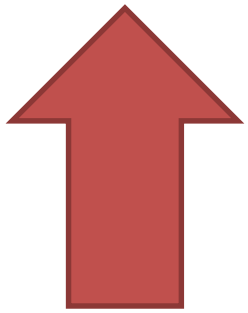
b. II and III

c. I and III

d. I, II and III

Which of these pairs of atoms are isotopes?

	Pair A		Pair B		Pair C	
# of protons	6	8	5	2	12	12
# of neutrons	8	8	5	3	13	14



Which of these is **not** an isotope of $^{14}_{6}C$?

a. An atom with 6 protons and 7 neutrons.

b. The atom $^{12}_{6}C$

c. An atom with 8 protons and 6 neutrons.

d. The ion $^{13}_{6}C^{+2}$

Suppose you built a scale model of the atom the same width as a football field (100 m).

What could you use to represent the nucleus in your model?

A. A marble (1 cm)
B. A golf ball (4 cm)
C. A soccer ball (20 cm)
D. A yoga/exercise ball (50 cm)