

Name

Key

Date

Use with textbook pages 289–293.

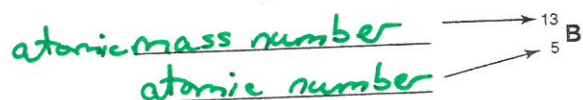
Isotopes

1. What is an isotope?

atoms of the same element with different masses

2. Atomic number + number of neutrons = atomic mass3. Number of protons + number of neutrons = atomic mass4. Mass number – atomic number = number of neutrons

Use the following standard atomic notation of an isotope to answer questions 5 to 7.



5. Label the mass number and the atomic number.

6. What is the name of this isotope? Boron-13

7. Determine the number of subatomic particles for this isotope:

(a) number of protons = 5(b) number of electrons = 5(c) number of neutrons = 8

8. In each of the following cases, what element does the symbol X represent and how many neutrons are in the nucleus?

(a) ${}_{10}^{21}\text{X}$ Element = Neon (Ne)Number of neutrons = 11(b) ${}_{16}^{32}\text{X}$ Element = Sulphur (S)Number of neutrons = 16(c) ${}_{89}^{230}\text{X}$ Element = Actinium (Ac)Number of neutrons = 141(d) ${}_{90}^{234}\text{X}$ Element = Thorium (Th)Number of neutrons = 144

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**Applying
Knowledge**
Section 7.1

9. Complete the following table. The first row has been completed to help guide you.

Isotope	Standard atomic notation	Atomic number	Mass number	Number of protons	Number of neutrons
carbon-14	$^{14}_6\text{C}$	6	14	6	8
cobalt-52	$^{52}_{27}\text{Co}$	27	52	27	25
nickel-60	$^{60}_{28}\text{Ni}$	28	60	28	32
nitrogen-14	$^{14}_7\text{N}$	7	14	7	7
thallium-201	$^{201}_{81}\text{Tl}$	81	201	81	120
radium-226	$^{226}_{88}\text{Ra}$	88	226	88	138
lead-208	$^{208}_{82}\text{Pb}$	82	208	82	126