



# Standardized Test Prep

Answer the following items on a separate piece of paper.

## MULTIPLE CHOICE

1. A chemical compound always has the same elements in the same proportions by mass regardless of the source of the compound. This is a statement of
  - A. the law of multiple proportions.
  - B. the law of isotopes.
  - C. the law of definite proportions.
  - D. the law of conservation of mass.
2. An important result of Rutherford's experiments with gold foil was to establish that
  - A. atoms have mass.
  - B. electrons have a negative charge.
  - C. neutrons are uncharged particles.
  - D. the atom is mostly empty space.
3. Which subatomic particle has a charge of +1?
  - A. electron
  - B. neutron
  - C. proton
  - D. meson
4. Which particle has the least mass?
  - A. electron
  - B. neutron
  - C. proton
  - D. All have the same mass.
5. Cathode rays are composed of
  - A. alpha particles.
  - B. electrons.
  - C. protons.
  - D. neutrons.
6. The atomic number of an element is the same as the number of
  - A. protons.
  - B. neutrons.
  - C. protons + electrons.
  - D. protons + neutrons.

7. How many neutrons are present in an atom of tin that has an atomic number of 50 and a mass number of 119?
  - A. 50
  - B. 69
  - C. 119
  - D. 169
8. What is the mass of 1.50 mol of sodium, Na?
  - A. 0.652 g
  - B. 0.478 g
  - C. 11.0 g
  - D. 34.5 g
9. How many moles of carbon are in a 28.0 g sample?
  - A. 336 mol
  - B. 72.0 mol
  - C. 2.33 mol
  - D. 0.500 mol

## SHORT ANSWER

10. Which atom has more neutrons, potassium-40 or argon-40?
11. What is the mass of  $1.20 \times 10^{23}$  atoms of phosphorus?

## EXTENDED RESPONSE

12. Cathode rays emitted by a piece of silver and a piece of copper illustrate identical properties. What is the significance of this observation?
13. A student believed that she had discovered a new element and named it mythium. Analysis found it contained two isotopes. The composition of the isotopes was 19.9% of atomic mass 10.013 and 80.1% of atomic mass 11.009. What is the average atomic mass, and do you think mythium was a new element?

### Test TIP

Choose the best possible answer for each question, even if you think there is another possible answer that is not given.