

## Periodic Table

Questions adapted from Chemistry 2e, OpenStax  
available for free at <https://openstax.org/details/books/chemistry-2e>

### Answers

37. Using the periodic table, classify each of the following elements as a metal or a nonmetal, and then further classify each as a main-group (representative) element, transition metal, or inner transition metal:
- (a) uranium – *metal, inner transition metal*
  - (b) bromine – *nonmetal, main-group element*
  - (c) strontium – *metal, main-group element*
  - (d) neon – *nonmetal, main-group element*
  - (e) gold – *metal, transition metal*
  - (f) americium – *metal, inner transition metal*
  - (g) rhodium – *metal, transition metal*
  - (h) sulfur – *nonmetal, main-group element*
  - (i) carbon – *nonmetal, main-group element*
  - (j) potassium – *metal, main-group element*
38. Using the periodic table, classify each of the following elements as a metal or a nonmetal, and then further classify each as a main-group (representative) element, transition metal, or inner transition metal:
- (a) cobalt - *metal, transition metal*
  - (b) europium - *metal, inner transition metal*
  - (c) iodine - *nonmetal, main-group element*
  - (d) indium - *metal, main-group element*
  - (e) lithium - *metal, main-group element*
  - (f) oxygen - *nonmetal, main-group element*
  - (g) cadmium - *metal, transition metal*
  - (h) terbium - *metal, inner transition metal*
  - (i) rhenium - *metal, transition metal*
39. Using the periodic table, identify the lightest member of each of the following groups:
- (a) noble gases - *He*
  - (b) alkaline earth metals - *Be*
  - (c) alkali metals - *Li*
  - (d) chalcogens - *O*

40. Using the periodic table, identify the heaviest member of each of the following groups:
- (a) alkali metals - Fr
  - (b) chalcogens - Po
  - (c) noble gases - Rn
  - (d) alkaline earth metals - Ra
41. Use the periodic table to give the name and symbol for each of the following elements:
- (a) the noble gas in the same period as germanium – *krypton, Kr*
  - (b) the alkaline earth metal in the same period as selenium – *calcium, Ca*
  - (c) the halogen in the same period as lithium – *fluorine, F*
  - (d) the chalcogen in the same period as cadmium – *tellurium, Te*
42. Use the periodic table to give the name and symbol for each of the following elements:
- (a) the halogen in the same period as the alkali metal with 11 protons – *chlorine, Cl*
  - (b) the alkaline earth metal in the same period with the neutral noble gas with 18 electrons – *magnesium, Mg*
  - (c) the noble gas in the same row as an element with 30 neutrons and 25 protons – *krypton, Kr*
  - (d) the noble gas in the same period as gold – *radon, Rn*
43. Write the name and symbol for each of the following elements.
- (a) the alkali metal with 11 protons and a mass number of 23 – *sodium, Na*
  - (b) the noble gas element with 77 neutrons in its nucleus and 54 electrons in the neutral atom – *xenon, Xe*
  - (c) the element with 33 protons and 42 neutrons in its nucleus - *arsenic, As*
  - (d) the alkaline earth metal with 88 electrons and 138 neutrons – *radium, Rd*
44. Write the name and symbol for each of the following elements.
- (a) the chalcogen with a mass number of 128 – *tellurium, Te*
  - (b) the noble gas, used in lighting, with 10 electrons and 10 neutrons – *neon, Ne*
  - (c) the lightest alkali metal – *lithium, Li*