

Unit 2 Test Review

Unit 2: Electron Behavior & Periodic Table

→ Textbook: Chapter 4 & 5

- The mathematical equation that correlates a wave's frequency to its wavelength is the _____. Its mathematical formula is _____.
- In SI units, how fast does light (all EMR) travel? What letter is used to represent the speed of a wave?
- The mathematical equation that correlates a photon's frequency to the amount of energy it contains is the _____. Its mathematical formula is _____.
- What is the value of Planck's constant? What letter is used to represent this value?
- From diagrams of EM waves, be able to identify the properties of the waves and also be able to compare which wave has the highest energy, highest frequency, and highest wavelength.
- From a wave diagram, be able to calculate the frequency and wavelength of the given wave.
- What are the Greek letters used to represent frequency and wavelength? What are the SI units for energy, wavelength, and frequency, respectively?
- Reading the Periodic Table, how do you calculate the number of valence electrons for a given element? Examples: How many valence electrons do sodium, oxygen, and gallium have?
- Write the electron configuration, orbital diagram and noble gas notation for the following elements: sulfur, titanium, chromium, selenium, molybdenum
- Calculate the amount of energy carried by a photon with a frequency of 6×10^{14} Hz.
- A light wave has a wavelength 700nm. What is its frequency and color?
- Using first the wave-energy equation then the wave-speed equation, calculate the wavelength of a photon carrying 4×10^{-19} J of energy.
- Identify each of these sections of the Periodic Table: metals, nonmetals, noble gases, metalloids. What are the characteristics of the elements that are contained in each section?
- Where are the s-block, p-block, d-block, and f-block located on the Periodic Table?
- Columns of the period table are called _____ or _____.
- Rows of the Period Table are called _____.
- Identify the properties of and locate these families on the Periodic Table: Halogens, Noble Gases, Alkali Metals, Alkaline Earth Metals, Actinide Series, Lanthanide Series.
- _____ and _____ decrease from left to right across a period, and increase as you move down a group.
- Elements within a group have similar _____.
- The energy level that holds an atom's valence electron is equal to its _____ number.
- Define these periodic trends:
 - Electronegativity
 - Ionization Energy
 - Atomic Radii
 - Ionic Radii
- Ionization energies generally _____ from left to right across a period, and _____ are you go down a group.
- Electronegativity generally _____ from left to right across a period, and _____ as you move down a group.
- Because metals _____ electrons, metallic ions are _____ then its elemental counterpart.
- Because nonmetals _____ electrons, nonmetal ions are _____ then its elemental counterpart.

26. List 20 metals.
27. List 10 nonmetals.
28. Which metalloid is used in the production of computer chips?
29. What is the most important characteristic in determining an element's chemical properties?
30. Define the octet rule.
31. Draw the electron-dot structure for these elements: Silicon, Oxygen, Nitrogen, Fluorine, Chlorine, Iodine, Helium, Neon, Bismuth, Carbon, Lithium.