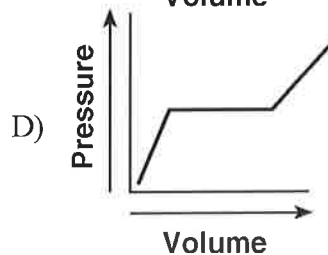
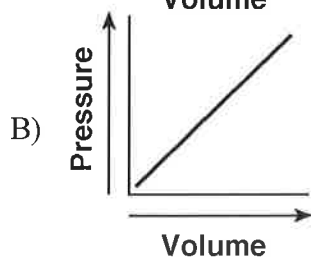
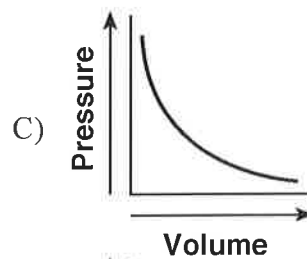
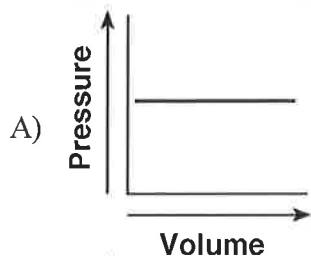




- \_\_\_ 7) Which of the following graph represents the relationship between pressure and volume for a sample of an ideal gas at constant temperature?



- \_\_\_ 8) A cylinder with a movable piston contains a sample of gas having a volume of 6.0 liters at 293 K and 1.0 atmosphere. What is the volume of the sample after the gas is heated to 303 K, while the pressure is held at 1.0 atmosphere?

A) 9.0 L                      B) 4.0 L                      C) 5.8 L                      D) 6.2 L

- \_\_\_ 9) What is the chemical formula of iron(III) sulfide?

A)  $\text{Fe}_2(\text{SO}_3)_3$                       C) FeS  
B)  $\text{Fe}_2\text{S}_3$                       D)  $\text{FeSO}_3$

- \_\_\_ 10) Which formula represents lead(II) chromate?

A)  $\text{Pb}_2(\text{CrO}_4)_3$                       C)  $\text{PbCrO}_4$   
B)  $\text{Pb}(\text{CrO}_4)_2$                       D)  $\text{Pb}_2\text{CrO}_4$

- \_\_\_ 11) Which balanced equation represents a single replacement reaction?

A)  $\text{MgCl}_2 + 2\text{AgNO}_3 \rightarrow 2\text{AgCl} + \text{Mg}(\text{NO}_3)_2$   
B)  $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$   
C)  $\text{Mg} + 2\text{AgNO}_3 \rightarrow \text{Mg}(\text{NO}_3)_2 + 2\text{Ag}$   
D)  $\text{MgCO}_3 \rightarrow \text{MgO} + \text{CO}_2$

- \_\_\_ 12) According to the electron-cloud model of the atom, an orbital is a

A) region of the most probable proton location  
B) circular path traveled by an electron around the nucleus  
C) spiral path traveled by an electron toward the nucleus  
D) region of the most probable electron location

- \_\_\_ 13) Which of the following phrases describes an atom?

A) a negatively charged electron cloud surrounding a negatively charged nucleus  
B) a negatively charged electron cloud surrounding a positively charged nucleus  
C) a positively charged electron cloud surrounding a positively charged nucleus  
D) a positively charged electron cloud surrounding a negatively charged nucleus

- \_\_\_ 14) The isotopes K-37 and K-42 have the same
- A) mass number for their atoms  
B) decay mode  
C) bright-line spectrum  
D) total number of neutrons in their atoms
- \_\_\_ 15) Which subatomic particles are located in the nucleus of a carbon atom?
- A) protons and neutrons  
B) neutrons, only  
C) protons and electrons  
D) protons, only
- \_\_\_ 16) What subatomic particle is negatively charged?
- A) positron  
B) proton  
C) neutron  
D) electron
- \_\_\_ 17) Which element has an atom in the ground state with a total of three valence electrons?
- A) scandium  
B) aluminum  
C) lithium  
D) phosphorus
- \_\_\_ 18) Which Lewis electron-dot diagram represents an atom in the ground state for a Group 13 element?
- A)  $X:$   
B)  $:\ddot{X}:$   
C)  $\ddot{X}\cdot$   
D)  $\cdot\ddot{X}:$
- \_\_\_ 19) Which one of the following Group 15 elements exists as diatomic molecules at STP?
- A) nitrogen  
B) arsenic  
C) phosphorus  
D) bismuth
- \_\_\_ 20) Which two substances are covalent compounds?
- A) KI(s) and NaCl(s)  
B)  $C_6H_{12}O_6(s)$  and KI(s)  
C) NaCl(s) and HCl(g)  
D)  $C_6H_{12}O_6(s)$  and HCl(g)
- \_\_\_ 21) As a bond between a hydrogen atom and a sulfur atom is formed, electrons are
- A) shared to form a covalent bond  
B) shared to form an ionic bond  
C) transferred to form an ionic bond  
D) transferred to form a covalent bond
- \_\_\_ 22) Given a formula for oxygen:  $:\ddot{O}=\ddot{O}:$
- What is the total number of electrons shared between the atoms represented in this formula?
- A) 1  
B) 2  
C) 8  
D) 4
- \_\_\_ 23) What is the decay mode of  $^{37}\text{K}$ ?
- A)  $\alpha$   
B)  $\gamma$   
C)  $\beta^+$   
D)  $\beta^-$
- \_\_\_ 24) When 5 grams of KCl are dissolved in 50. grams of water at  $25^\circ\text{C}$ , the resulting mixture can be described as
- A) homogeneous and supersaturated  
B) homogeneous and unsaturated  
C) heterogeneous and supersaturated  
D) heterogeneous and unsaturated
- \_\_\_ 25) Which compound becomes *less* soluble in water as the temperature of the solution is increased?
- A) HCl  
B)  $\text{NH}_4\text{Cl}$   
C) KCl  
D) NaCl