There are two compounds of Ni and O. The green colored oxide of nickel has a Ni:O mass ratio of 3.67:1 and a Ni:O atom ratio of 1:1. The black colored oxide of nickel has a Ni:O mass ratio of 2.45:1. Which of the following is correct?

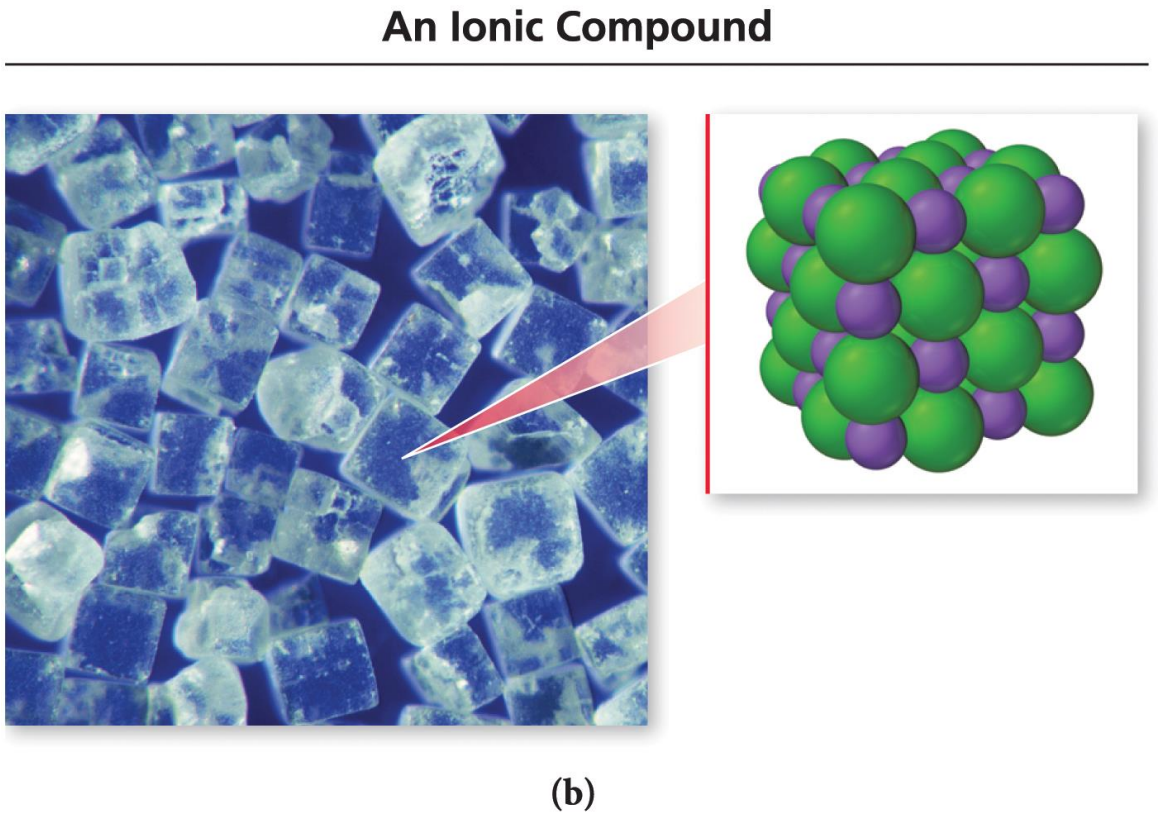
a) The two compounds have different formulas.
b) The two compounds have nickel ions with different charges.
c) The Ni:O atom ratio of the black oxide is 2:3.
d) This is an example of the Law of Multiple Proportions.
e) All of the above are correct.

There are two compounds of Ni and O. The green colored oxide of nickel has a Ni:O mass ratio of 3.67:1 and a Ni:O atom ratio of 1:1. The black colored oxide of nickel has a Ni:O mass ratio of 2.45:1. Which of the following is correct?

a) The two compounds have different formulas.
b) The two compounds have nickel ions with different charges.
c) The Ni:O atom ratio of the black oxide is 2:3.
d) This is an example of the Law of Multiple Proportions.
e) All of the above are correct.

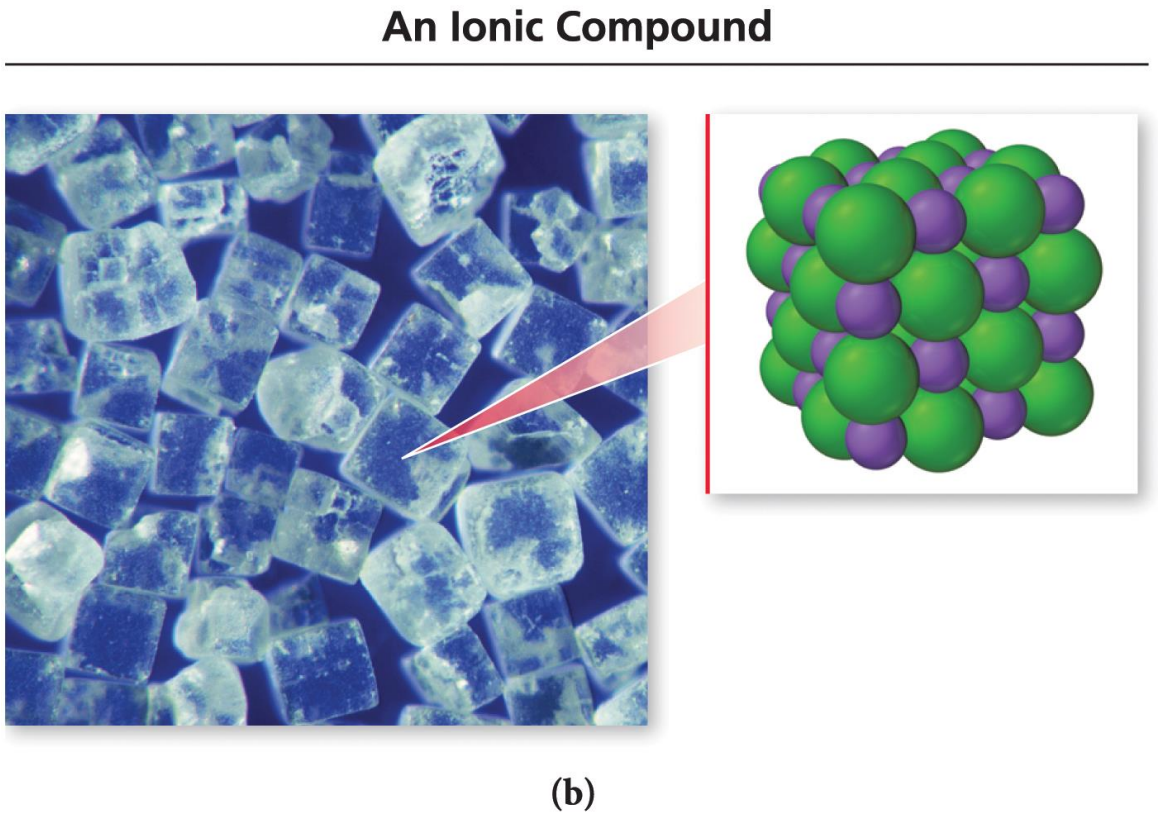
Which of the following compounds exhibits *both* ionic and covalent bonding?

a) SO_2
b) CF_4
c) NaCl
d) Na_2SO_4
e) P_4O_{10}



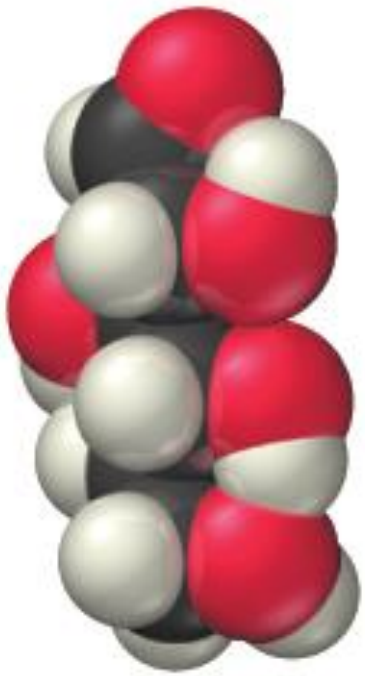
Which of the following compounds exhibits *both* ionic and covalent bonding?

a) SO_2
b) CF_4
c) NaCl
d) Na_2SO_4
e) P_4O_{10}



Which of the following would NOT be classified as a molecular compound?

a) CO
b) C_2H_4
c) $C_6H_{12}O_6$
d) $NH_4C_2H_3O_2$
e) NH_3



Which of the following would NOT be classified as a molecular compound?

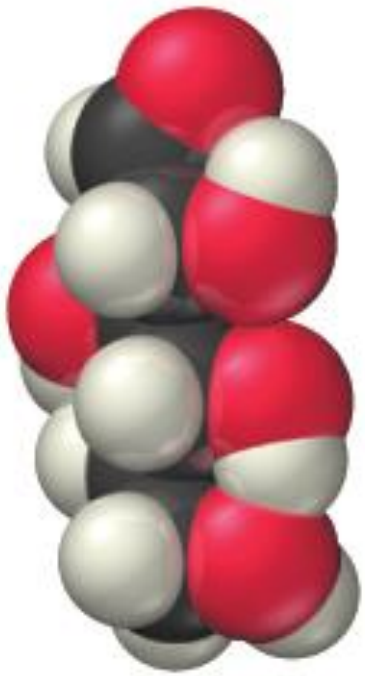
a) CO

b) C_2H_4

c) $C_6H_{12}O_6$

d) $NH_4C_2H_3O_2$

e) NH_3



Which of the following is the correct formula for aluminum bromide?

a) AlBr
b) Al_3Br
c) $AlBr_3$
d) Al_3Br_3

Which of the following is the correct formula for aluminum bromide?

a) AlBr
b) Al_3Br
c) $AlBr_3$
d) Al_3Br_3

What is the IUPAC name for $FeCl_3$?

a) iron chloride
b) iron trichloride
c) iron(III) chloride
d) iron chloride(III)

What is the IUPAC name for $FeCl_3$?

a) iron chloride
b) iron trichloride
c) iron(III) chloride
d) iron chloride(III)

What is the formula for potassium carbonate?

a) KCO_3
b) $K(CO_3)_2$
c) K_2CO_3
d) KCO_6

What is the formula for potassium carbonate?

a) KCO_3
b) $K(CO_3)_2$
c) K_2CO_3
d) KCO_6

A toy used to predict the weather had a picture containing $CoCl_2$. It worked on the following reversible reaction:

$CoCl_2 + 6\ H_2O \rightarrow CoCl_2 \cdot 6\ H_2O$

Which of the following statements is correct?

a) The picture was red on sunny days and blue on rainy days.

b) The picture was blue on sunny days and red on rainy days.

A toy used to predict the weather had a picture containing $CoCl_2$. It worked on the following reversible reaction:

$CoCl_2 + 6\ H_2O \rightarrow CoCl_2 \cdot 6\ H_2O$

Which of the following statements is correct?

a) The picture was red on sunny days and blue on rainy days.

b) The picture was blue on sunny days and red on rainy days.

Which of the following correctly matches the formula with its name?

a) P_2O_5, phosphorus pentoxide
b) H_2O, dihydrogen monoxide
c) $NaNO_3$, monosodium nitrate
d) K_2O, dipotassium monoxide
e) Fe_2O_3, iron(II) oxide

Which of the following correctly matches the formula with its name?

a) P_2O_5, phosphorus pentoxide
b) H_2O, dihydrogen monoxide
c) $NaNO_3$, monosodium nitrate
d) K_2O, dipotassium monoxide
e) Fe_2O_3, iron(II) oxide

What is the name of the oxyacid formed from sulfite (SO_3^{2-})?

a) hydrosulfuric acid
b) sulfuric acid
c) hydrosulfurous acid
d) sulfurous acid
e) hydrogen sulfide acid

What is the name of the oxyacid formed from sulfite (SO_3^{2-})?

a) hydrosulfuric acid
b) sulfuric acid
c) hydrosulfurous acid
d) sulfurous acid
e) hydrogen sulfide acid

What is the molar mass of calcium phosphate?

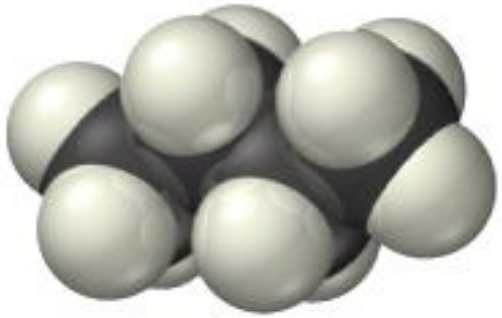
a) 310.18 g/mole
b) 230.02 g/mole
c) 324.99 g/mole
d) 135.05 g/mole
e) 214.18 g/mole

What is the molar mass of calcium phosphate?

a) **310.18 g/mole**
b) 230.02 g/mole
c) 324.99 g/mole
d) 135.05 g/mole
e) 214.18 g/mole

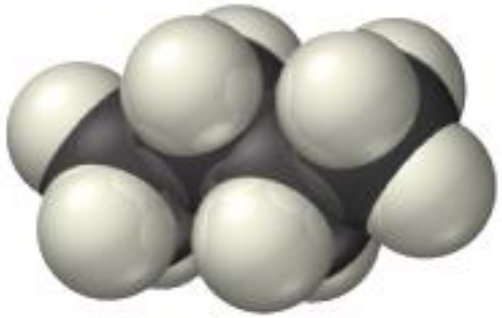
Which sample represents the greatest number of moles?

a) 44.01 g CO_2
b) 1.0 moles C_3H_8
c) 6.022×10^{23} molecules C_4H_{10}
d) 18.02 g H_2O
e) All of the samples have the same number of moles.



Which sample represents the greatest number of moles?

a) 44.01 g CO_2
b) 1.0 moles C_3H_8
c) 6.022×10^{23} molecules C_4H_{10}
d) 18.02 g H_2O
e) All of the sample have the same number of moles.



Which of the following contains the largest number of molecules?

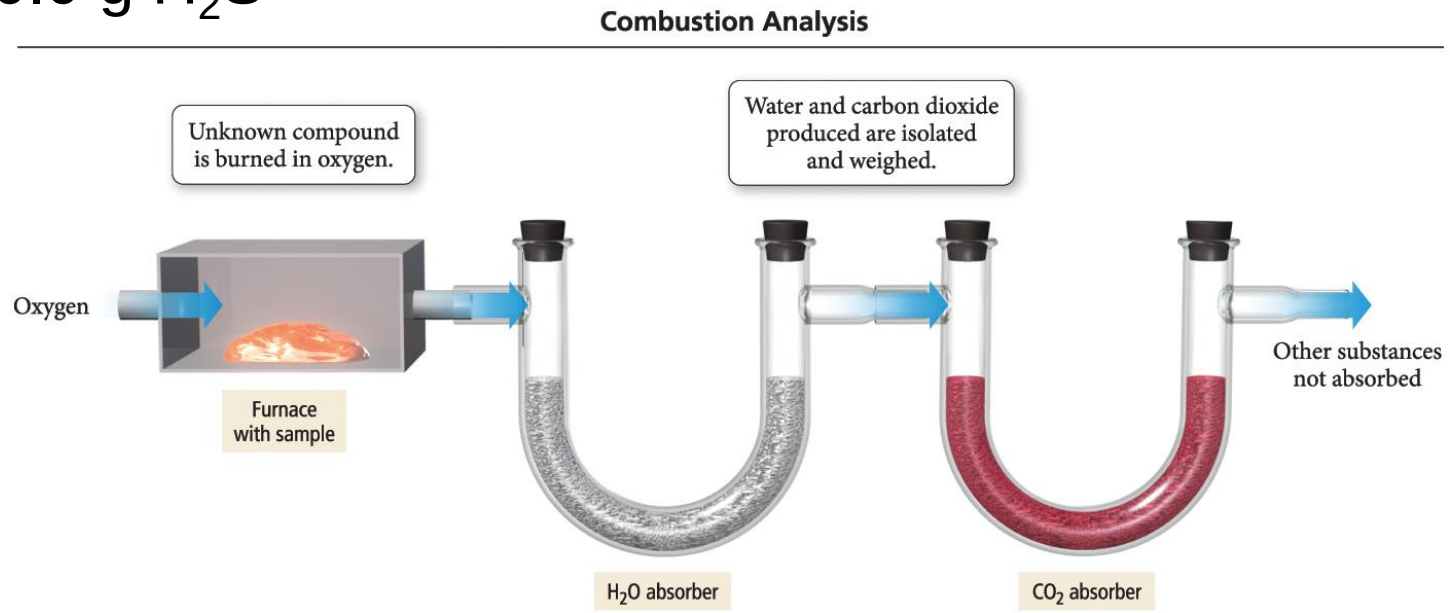
a) 10.0 g CH_4
b) 10.0 g C_2H_6
c) 10.0 g SO_2
d) 10.0 g Xe

Which of the following contains the largest number of molecules?

a) **10.0 g CH_4**
b) 10.0 g C_2H_6
c) 10.0 g SO_2
d) 10.0 g Xe

Which of the following contains the largest mass percent hydrogen?

a) 10.0 g CH_4
b) 10.0 g C_2H_6
c) 10.0 g H_2O
d) 10.0 g H_2S



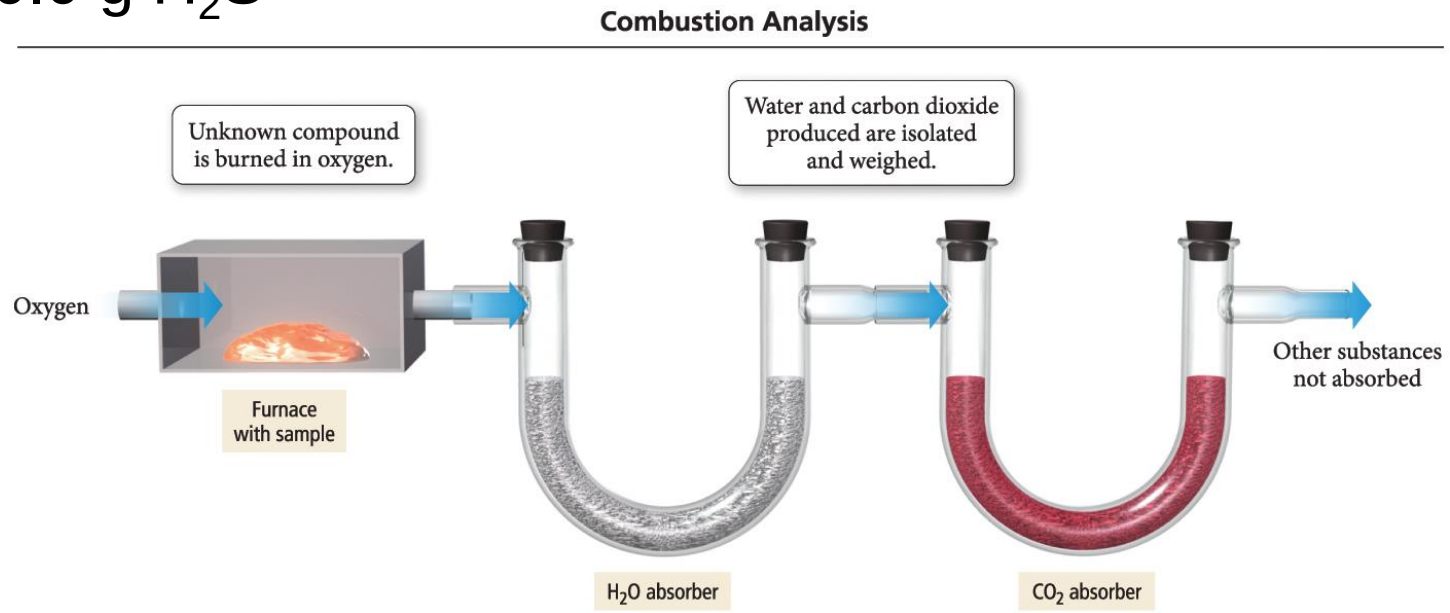
Which of the following contains the largest mass percent hydrogen?

a) 10.0 g CH_4

b) 10.0 g C_2H_6

c) 10.0 g H_2O

d) 10.0 g H_2S



Calculate the number of carbon atoms in 25.0 grams of isopropyl alcohol (C_3H_8O).

a) 1.25 C atoms
b) 15.0 C atoms
c) 2.51×10^{23} C atoms
d) 7.52×10^{23} C atoms
e) 2.07×10^{-24} C atoms

Calculate the number of carbon atoms in 25.0 grams of isopropyl alcohol (C_3H_8O).

a) 1.25 C atoms

b) 15.0 C atoms

c) 2.51×10^{23} C atoms

d) 7.52×10^{23} C atoms

e) 2.07×10^{-24} C atoms

An unknown compound contains the following percents by mass: C: 60.86%, H: 5.83%, O: 23.16%, and N: 10.14%. Find the empirical formula.

a) $C_6H_8O_2N_2$
b) $C_7H_8O_2N$
c) $C_6H_8O_2N$
d) $C_8H_8O_2N$
e) C_8H_8ON

An unknown compound contains the following percents by mass: C: 60.86%, H: 5.83%, O: 23.16%, and N: 10.14%. Find the empirical formula.

a) $C_6H_8O_2N_2$

b) $C_7H_8O_2N$

c) $C_6H_8O_2N$

d) $C_8H_8O_2N$

e) C_8H_8ON

What is the empirical formula of a compound containing C, H, and O if combustion of 3.69 g of the compound yields 5.40 g of CO_2 and 2.22 g of H_2O?

a) CH_3O
b) C_2H_3O
c) CHO
d) $C_2H_3O_2$
e) CH_2O

What is the empirical formula of a compound containing C, H, and O if combustion of 3.69 g of the compound yields 5.40 g of CO_2 and 2.22 g of H_2O?

a) CH_3O
b) C_2H_3O
c) CHO
d) $C_2H_3O_2$
e) CH_2O

What are the coefficients for the decomposition of nitroglycerin?

__ $C_3H_5N_3O_9$ → __ N_2 + __ CO_2 + __ H_2O + __ O_2

a) 2,3,6,2,1
b) 2,3,6,5,1
c) 4,6,12,10,12
d) 4,3,12,10,1
e) 4,6,12,10,1

What are the coefficients for the decomposition of nitroglycerin?

__ $C_3H_5N_3O_9$ → __ N_2 + __ CO_2 + __ H_2O + __ O_2

a) 2,3,6,2,1

b) 2,3,6,5,1

c) 4,6,12,10,12

d) 4,3,12,10,1

e) 4,6,12,10,1

Which of the following statements is true about a balanced chemical reaction?

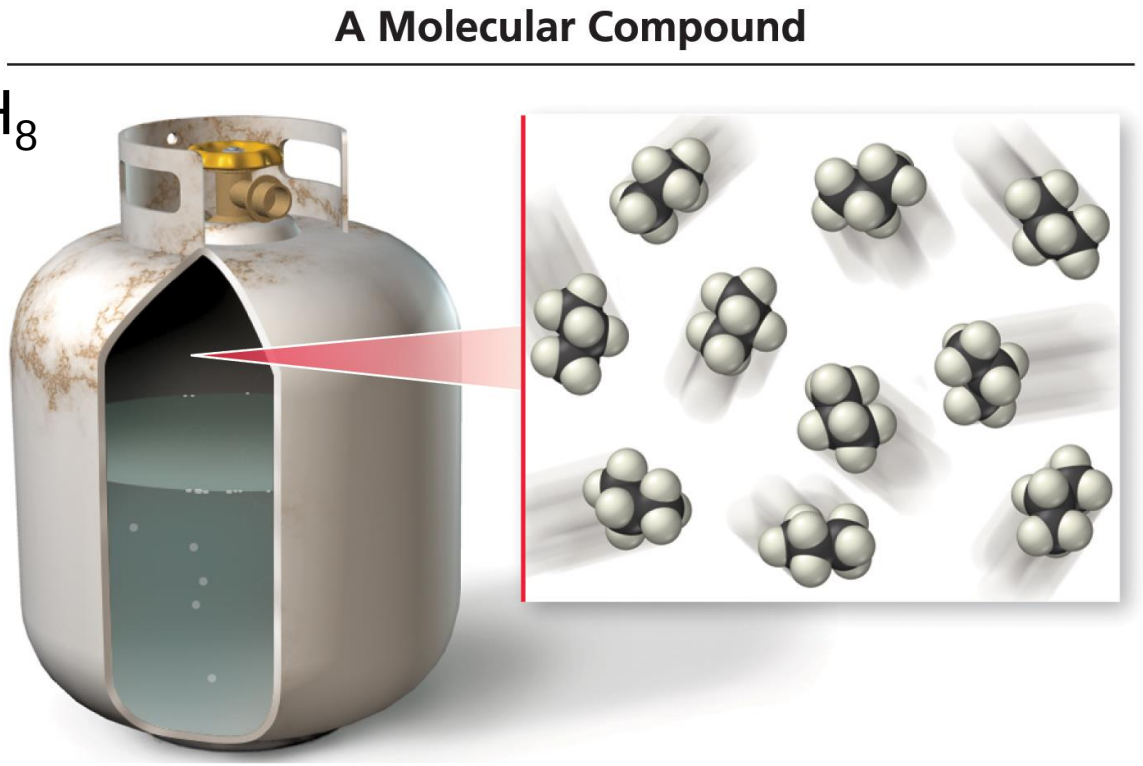
a) The mass of the reactants is equal to the mass of the products.
b) The number of each type of atom is the same in the reactants and in the products.
c) The moles of each type of atom is the same in the reactants and in the products.
d) All of the above.

Which of the following statements is true about a balanced chemical reaction?

a) The mass of the reactants is equal to the mass of the products.
b) The number of each type of atom is the same in the reactants and in the products.
c) The moles of each type of atom is the same in the reactants and in the products.
d) All of the above.

Hydrocarbons are composed of just the elements carbon and hydrogen. Which of the following compounds has all single bonds?

a) naphthalene, $C_{10}H_8$
b) propane, C_3H_8
c) ethyne, C_2H_2
d) ethene, C_2H_4



Hydrocarbons are composed of just the elements carbon and hydrogen. Which of the following compounds has all single bonds?

a) naphthalene, $C_{10}H_8$

b) propane, C_3H_8

c) ethyne, C_2H_2

d) ethene, C_2H_4