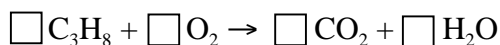


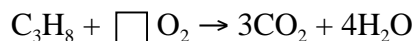
**Guided Responses to TAKS Self-Check Exam Practice IPC TEKS 8A and 8C  
TX BDOL p TX20**

**1.** The reaction equation below shows the oxidation of propane gas ( $C_3H_8$ ) to form carbon dioxide ( $CO_2$ ) and water. Balance the equation by calculating the coefficients. **(IPC 8C)**

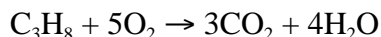


C) 1, 5, 3, 4

**Solution** There are 3 carbons on the left side of the equation, so by making the coefficient of  $CO_2$  equal 3, the number of carbon atoms are balanced. By making the coefficient of  $H_2O$  equal 4, there are 8 hydrogen atoms on each side. The equation has become:



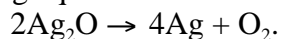
On the left side of this equation there are 10 oxygen atoms. There will be 10 oxygen atoms on the left side if the coefficient of  $O_2$  equals 5. The balanced equation is



**2.** Which of the following is an example of a physical change? **(IPC 8A)**  
**F)** melting ice

**Solution** A physical change only alters a material's physical properties. When a chemical change occurs, new compounds are produced. Melting ice changes only the physical state of the ice, from solid to liquid, but not its chemical properties.

**3.** Silver oxide ( $Ag_2O$ ) decomposes into silver ( $Ag$ ) and oxygen gas ( $O_2$ ) according to the following equation:



If you begin with 8.2 grams of silver oxide and end with 7.6 grams of silver, how much oxygen gas is released? **(IPC 8C)**

**D)** 0.6 g

**Solution** According to the law of conservation of mass, the mass of the reactants equals the mass of the products:

$$\text{mass of } Ag_2O = \text{mass of } Ag + \text{mass of } O_2$$

Solve this equation for the mass of  $O_2$ :

$$\begin{aligned} \text{mass of } O_2 &= \text{mass of } Ag_2O - \text{mass of } Ag \\ &= 8.2 \text{ g} - 7.6 \text{ g} = 0.6 \text{ g} \end{aligned}$$

**4.** Distilled water is prepared by the following process. Water is boiled and the vapor is passed through a tube that is cooled with a water jacket. The vapor condenses and the liquid is collected. What type of changes have occurred in this process? **(IPC 8A)**

**H)** physical changes only

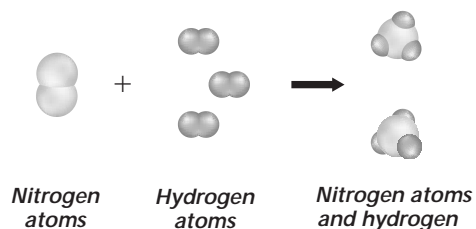
**Solution** The distillation process involves boiling the water and condensing the vapor that is formed. When boiling occurs, a material changes from a liquid to a gas. When condensation occurs, a material changes from a gas to a liquid. Both of these changes are physical changes. The physical state of the water changes, but no new chemical compounds are produced.

**5.** A piece of wood burns and leaves behind a pile of ash. Which of the following is not a true statement about the chemical reactions that occurred? **(IPC 8C)**

**B)** Some of the atoms in the wood have become different atoms.

**Solution** According to the law of conservation of mass, the mass of the products equals the mass of the reactants. If some of the original mass of the wood were converted into heat and light, then the mass of the products would be less than the mass of the reactants. Statement **B)** is false because it violates the law of conservation of mass.

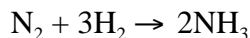
**Guided Responses to TAKS Self-Check Exam Practice IPC TEKS 8A and 8C  
TX BDOL p TX20**



6. What is the balanced chemical equation for the reaction shown above? (IPC 8C)



**Solution** On the left, the diagram shows 1 molecule of nitrogen composed of 2 nitrogen atoms. This molecule would have the formula  $N_2$ . This molecule reacts with 3 molecules of hydrogen, each composed of 2 hydrogen atoms. Each of these molecules has the formula  $H_2$ . On the right, there are 2 molecules, each composed of 1 nitrogen atom and 3 hydrogen atoms. These molecules have the formula  $NH_3$ . The balanced equation is:

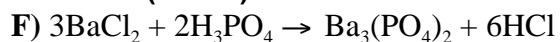


7. Which of the following is an example of a chemical change? (IPC 8A)

**D)** baking a cake

**Solution** Boiling, dissolving, and expanding or shrinking are all examples of physical changes. The chemical behavior of a substance doesn't change when these changes occur, and no new compounds are produced. Baking a cake causes chemical changes to occur. New chemical compounds are produced, such as the gases that cause the cake to rise.

8. Which of the following equations is balanced? (IPC 8C)



**Solution** Look to see if there is one type of atom whose numbers aren't balanced on

each side of the given chemical equations. For **J)** there are 2 Ba atoms on the left side and 6 Ba atoms on the right side. For **H)** there is 1 Ba atom on the left side and 3 Ba atoms on the right. For **G)** there are 3 Ba atoms on each side, but 6 Cl atoms on the left and only 3 on the right. So none of these reactions are balanced. For **F)** there are 3 Ba atoms, 6 Cl atoms, 6 H atoms, 2 P atoms, and 8 O atoms on each side. This reaction is balanced.