

**CHEMICAL CALCULATIONS****Exit Ticket 4**

1. Disilane,  $\text{Si}_2\text{H}_x$ , is analyzed and found to contain 90.28% by weight silicon. What is the value of  $x$ ?
2. You find a compound composed only of element X and chlorine, and you know that the compound is 13.10% X by mass. Each molecule of the compound contains six times as many chlorine atoms as X atoms. What is the identity of X?
3. A compound contains only carbon, hydrogen and oxygen. Combustion of 10.68 g of the compound yields 16.01 g of  $\text{CO}_2$  and 4.37 g of  $\text{H}_2\text{O}$ . Determine the empirical formula for this compound.

- An unknown hydrated crystal was found to have the following percentages by mass: 23% zinc; 11% sulfur; 22% oxygen; 44% water. What is the formula for this hydrate?
- A 5.00 g sample of hydrated barium chloride is heated to drive off the water. After heating, 4.26 g of anhydrous barium chloride remains. What is the formula for this hydrate?
- A 0.77-g sample of nitrogen gas combines with chlorine gas to form 6.61 g of a compound. Determine the empirical formula for this compound.