

Name: _____

Period: _____ Subject: _____

Date: _____

Law of Definite Proportions

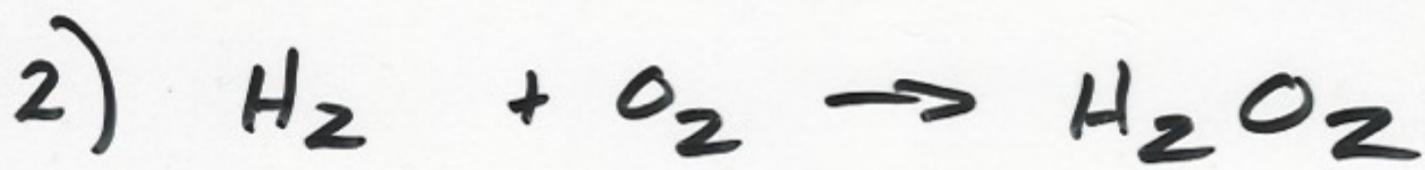
Solve for the appropriate value. Be sure to show your work and remember to use the correct number of significant figures.

1. _____ A 53.0 g sample of an unknown compound contains 13.5 g of oxygen. What is the percent by mass of oxygen in the unknown compound?
2. _____ If 11.1 g of hydrogen reacts completely with 88.6 g of oxygen to form hydrogen peroxide, what is the percent by mass of hydrogen in hydrogen peroxide?
3. _____ A 111.7 g sample of iron reacts with 100.0 g of oxygen to form iron oxide (rust). After the reaction, there is 52.0 g of unreacted oxygen remaining. What is the percent by mass of oxygen in the rust?

4. _____ If a 43.0 g sample of carbon dioxide (CO_2) is found to be 27.3% by mass carbon, then how much oxygen (in grams) is found in a 78.0 g sample of carbon dioxide?

5. _____ A 57.6 g sample of methane (CH_4) is found to contain 43.2 g of carbon. How much hydrogen (in grams) would a 37.8 g sample of methane contain?

$$1) \frac{13.5 \text{ g O}}{53.0 \text{ g sample}} \times 100 = 25.5\% \text{ O}$$



$$11.1 \text{ g} \quad 88.6 \text{ g}$$

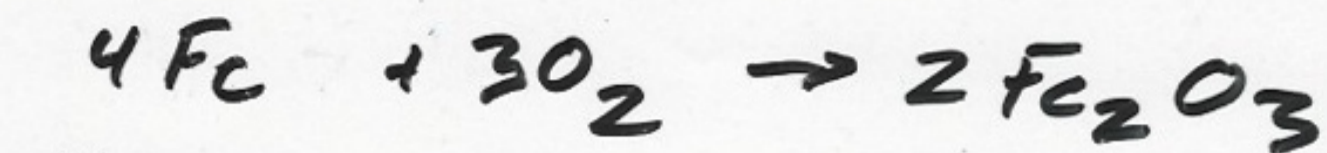
0

0

$$99.7 \text{ g}$$

$$\frac{11.1 \text{ g H}}{99.7 \text{ g H}_2\text{O}_2} \times 100\% = 11.1\% \text{ H}$$

3.



111.7g

100g

0

52.0g

48.0g O + 111.7g Fe

159.7g Fe_2O_3

$$\frac{48\text{g O}}{159.7\text{g Fe}_2\text{O}_3} \times 100\% =$$

30.1% O

4. $78.0\text{g CO}_2 \times 0.273 =$

21.3g C

$$78.0\text{g CO}_2 - 21.3\text{g C}$$

= 56.7g O

$$\begin{aligned} \text{e)} \quad & \frac{43.2 \text{ g C}}{57.6 \text{ g CH}_4} \times 100 \% = \\ & 75 \% \text{ C} \\ & 25 \% \text{ H} \end{aligned}$$

$$\begin{aligned} 37.8 \text{ g CH}_4 \times 0.25 & = \\ & 9.45 \text{ g H} \end{aligned}$$

