

Name: _____

Name:
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Chemistry: Molar Mass and Percentage Composition

Calculate the molar masses and percentage composition of each of the following compounds. Show your work and always include units.

1. CaCO_3

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 $\text{Ca} = 40.08$
 $\text{C} = 12.01$
 $\text{O} = 16.00 \times 3 = 48.00$
 $\text{Molar Mass} = 40.08 + 12.01 + 48.00 = 100.09 \text{ g/mol}$
 $\text{Ca} = \frac{40.08}{100.09} \times 100 = 40.03\%$
 $\text{C} = \frac{12.01}{100.09} \times 100 = 12.00\%$
 $\text{O} = \frac{48.00}{100.09} \times 100 = 48.00\%$

2. Ca(OH)_2
 $\text{Ca} = 40.08$
 $\text{O} = 16.00 \times 2 = 32.00$
 $\text{H} = 1.01 \times 2 = 2.02$
 $\text{Molar Mass} = 40.08 + 32.00 + 2.02 = 74.10 \text{ g/mol}$
 $\text{Ca} = \frac{40.08}{74.10} \times 100 = 54.10\%$
 $\text{O} = \frac{32.00}{74.10} \times 100 = 43.19\%$
 $\text{H} = \frac{2.02}{74.10} \times 100 = 2.71\%$

3. $\text{Ca}_3\text{P}_2\text{O}_8$
 $\text{Ca} = 40.08 \times 3 = 120.24$
 $\text{P} = 30.97 \times 2 = 61.94$
 $\text{O} = 16.00 \times 8 = 128.00$
 $\text{Molar Mass} = 120.24 + 61.94 + 128.00 = 310.18 \text{ g/mol}$
 $\text{Ca} = \frac{120.24}{310.18} \times 100 = 38.76\%$
 $\text{P} = \frac{61.94}{310.18} \times 100 = 19.97\%$
 $\text{O} = \frac{128.00}{310.18} \times 100 = 41.27\%$

2. Ca(OH)_2