1.7.1.2: Practice Mole Calculations

Molar Mass, Gram to Mole, Mole to Gram

Exercise 1.7.1.2.1

How many moles of $Ca_3(PO_4)_2$ are in 57.82 grams?

Molar Mass

$$Ca_3(PO_4)_2 = \frac{310.18g}{mol}$$

Answer

0.1864 moles

How many grams of $Zn(OH)_2$ are in 3.67 moles?

Molar Mass

$$Zn(OH)_2 = \frac{99.41g}{mol}$$

Answer

365 grams

How many moles of $Mg(NO_3)_2$ are in 487.6 grams?

Molar Mass

$$Mg(NO_3)_2 = \frac{148.33g}{mol}$$

Answer

3.287 moles

Using Avogadro's Number

Exercise 1.7.1.2.1

How many molecules of H_2O are in 0.0643 grams of H_2O?

Answer

0.0643 grams of H_2O is equal to 0.00357 moles, which is 2.15 x 10^{21} molecules

How many moles of Au is equal to 4.77 x 10^{27} Au atoms?

Answer

7920 moles

Using Formula Subscripts

Exercise 1.7.1.2.1

How many moles of NH_3 would contain 8.18 moles of H atoms?

Answer

2.73 moles NH_3

How many Br atoms are in 0.453 moles of CBr_4?

Answer

1.09×10^{24} Br atoms

Mixed

Exercise 1.7.1.2.1

How many moles of $Ca(OH)_2$ are in 5.62 g of $Ca(OH)_2$?

Answer

0.0758 mol $Ca(OH)_2$

How many moles of O are in this amount?

Answer

0.152 mol O

How many individual atoms of O are in this amount?

Answer

9.13×10^{22} O atoms

Exercise 1.7.1.2.1

How many moles of $C_4H_8O_2$ can be made with 18.5 mol C?

Answer

4.63 moles of $C_4H_8O_2$

Exercise 1.7.1.2.1

How many grams of $C_4H_8O_2$ can be made with 2.86×10^{21} C atoms? (Hint: how many moles of C is this?)

Hint

0.00475 mol C

Answer

0.00119 mol $C_4H_8O_2$ which is 0.105 g $C_4H_8O_2$

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