

MOLAR CONVERSIONS

Target: I can perform molar conversions using dimensional analysis

Target:

Molar Conversions

↔ ↔

Moles → Grams
How many grams does _____ moles of NaCl weigh?

Grams → Moles
How many moles are in _____ g of CO₂?

Moles → Molecules
How many molecules are in _____ moles of H₂O?

Molecules → Moles
How many moles are in _____ molecules?

Grams → Molecules
How many molecules are in _____ grams of H₂O?

Molecules → Grams
How many grams are in _____ molecules of CH₄?

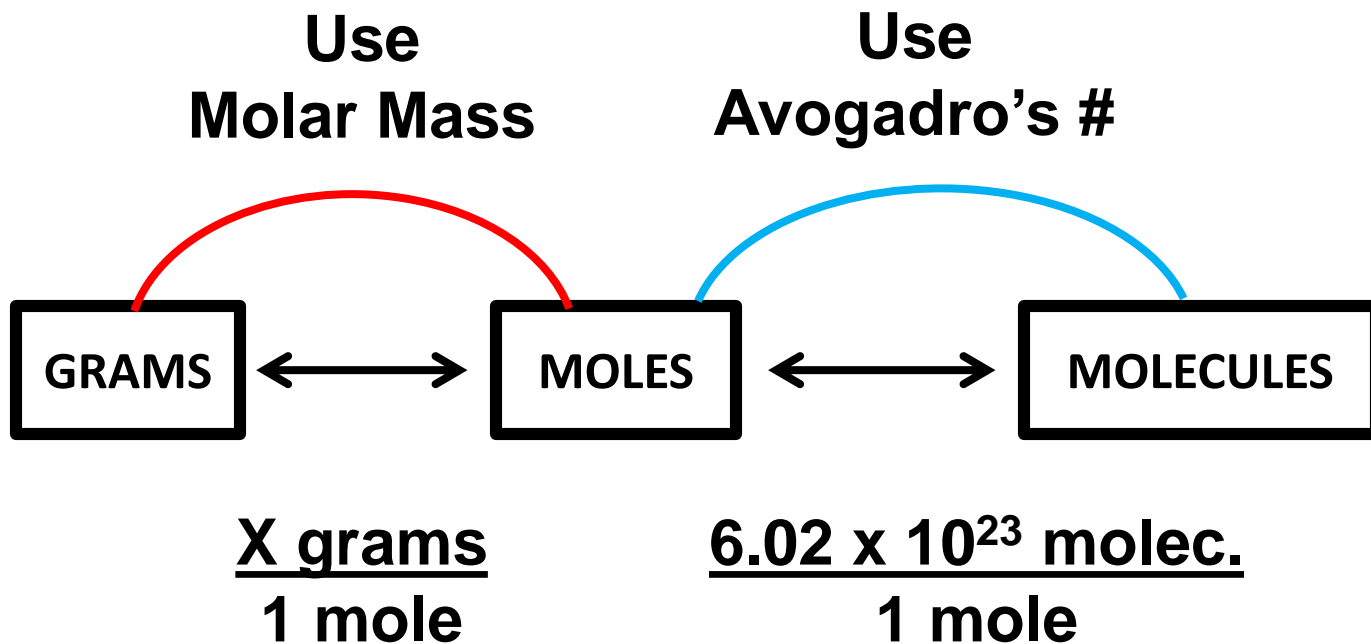
K **C** **Q**

IN
CLASS
TODAY!

HW
TONIGHT

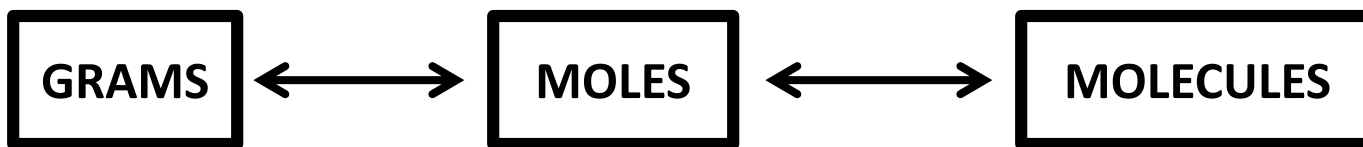
MOLAR CONVERSIONS

Conversions related to moles



Moles → Grams

How many grams does 1.7 moles of NaCl weigh?



Use Molar Mass

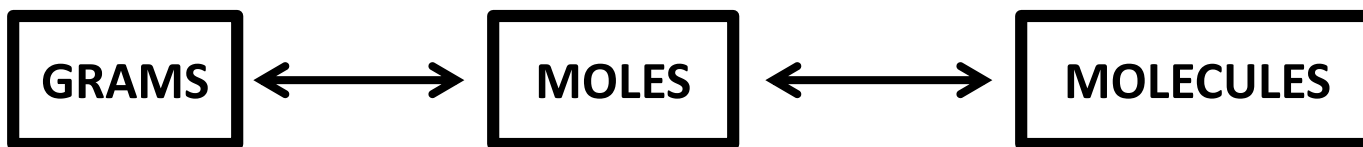
$$\begin{aligned} \text{mm} &= (22.99) + (35.45) \\ &= 58.44 \text{ g/mol} \end{aligned}$$

1.7 moles	58.44 g
	1 mol

$$= 99.35 \text{ g}$$

Grams → Moles

How many moles are in 14 g of CO₂?



Use Molar Mass

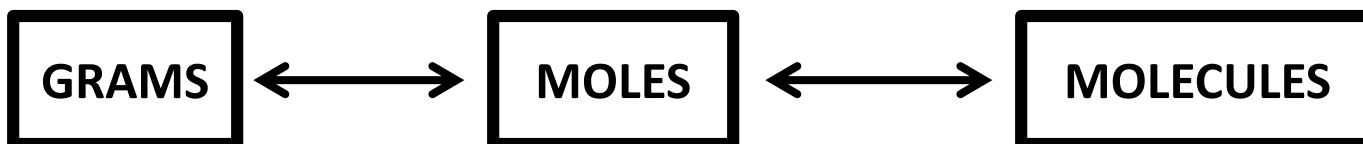
$$\begin{aligned} \text{mm} &= (12.01) + (2 \times 16.00) \\ &= 44.01 \text{ g/mol} \end{aligned}$$

14 grams	1 mol
	44.01 g

$$= 0.32 \text{ mol}$$

Moles → Molecules

How many molecules are in 5.3 moles of H₂O?



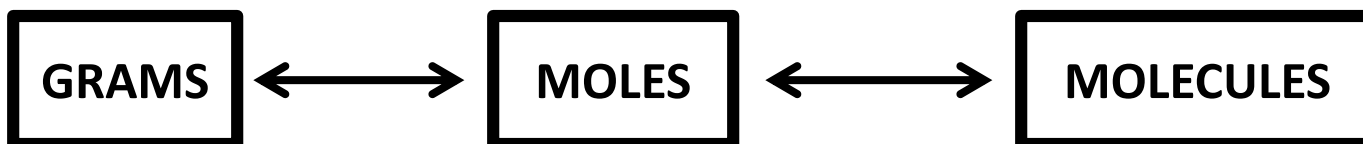
Use Avo.'s # 6.02×10^{23} molec./mol

$$\frac{5.3 \text{ moles}}{1 \text{ mol}} \times \frac{6.02 \times 10^{23} \text{ molec.}}{1 \text{ mol}}$$

**= 3.19×10^{24}
molecules**

Molecules → Moles

How many moles are in 3.17×10^{43} molecules?



Use Avo.'s #

6.02×10^{23} molec./mol

3.17×10^{43}
molec.

1 mol

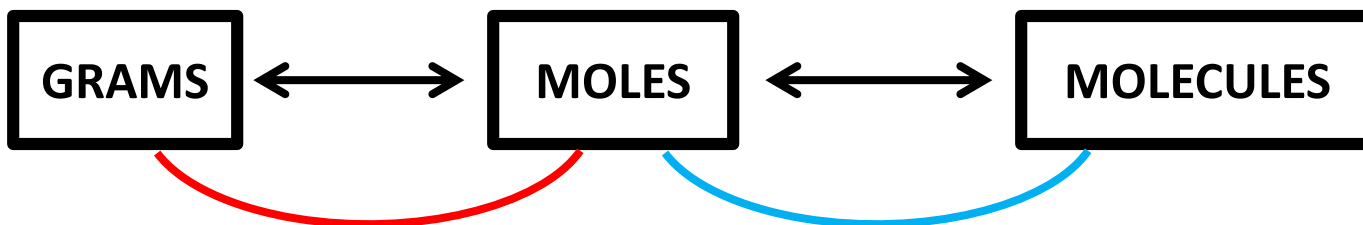
6.02×10^{23}
molec.

= 5.27×10^{19}
moles

Use
parenthesis!!!!

Grams → Molecules

How many molecules are in 45 grams of H₂O?



Use Molar Mass
= 18.02 g/mol

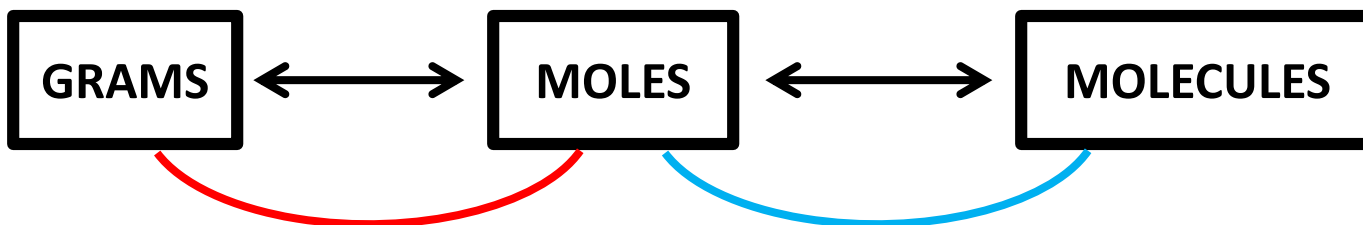
Use Avogadro's #

$$\frac{45 \text{ g}}{18 \text{ g}} \times \frac{1 \text{ mol}}{1 \text{ mol}} \times \frac{6.02 \times 10^{23} \text{ molec.}}{1 \text{ mol}}$$

$$= 1.51 \times 10^{24} \text{ molecules}$$

Molecules → Grams

How many grams in 2.6×10^{25} molecules of CH_4 ?



Use Molar Mass
= 16.05 g/mol

Use Avogadro's #
= 6.02×10^{23} molec./mol

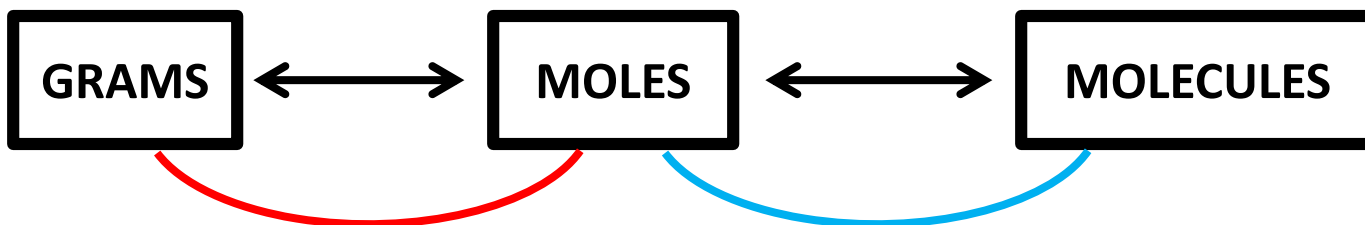
$$\begin{array}{c} 2.6 \times 10^{25} \\ \text{molec.} \end{array} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ molec.}} \times \frac{16.05 \text{ g}}{1 \text{ mol}}$$

$$= 693.19 \text{ grams}$$

Use
parenthesis!!!!

REMEMBER!

You can use “particles” instead of molecules to be generic! Counting atoms? Use atoms! Still 6.02×10^{23}



Use Molar Mass
= 16.05 g/mol

Use Avogadro's #
= 6.02×10^{23} molec./mol

“PARTICLES”

ATOMS

SODA CANS

ANYTHING!!!

YOUTUBE LINK FOR PRESENTATION

<https://youtu.be/XLXV-Cre-50>