

# MOLES!

- 1) Understand what a mole represents
- 2) Convert between moles, atoms/molec, and mass
- 3) VA SOLs:

Lesson objectives

Teachers' notes

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A mole in chemistry represents a specific number.

**1 mole =  $6.02 \times 10^{23}$  particles**

A particle can be an atom (element) or molecule (compound)

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A mole of...	Would...

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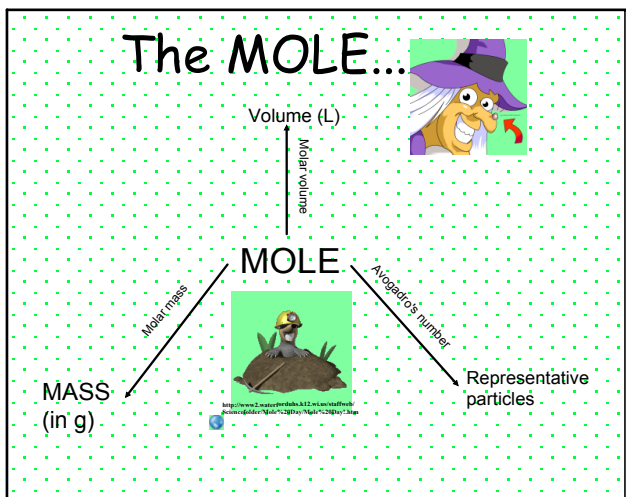
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Drag the conversion factors to the proper place. Then calculate the answer

$6.02 \times 10^{23}$  atoms = 1 mole

(x) atoms Na =  $0.34$  moles Na | \_\_\_\_\_ =

(x) moles Na =  $5.1 \times 10^{21}$  atoms Na | \_\_\_\_\_ =

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Drag the conversion factors to the proper place. Then calculate the answer

$6.02 \times 10^{23}$  molec = 1 mole

(x) mol  $\text{FeCl}_3$  =  $1.25 \times 10^{26}$  molec  $\text{FeCl}_3$  | \_\_\_\_\_ =

(x) molec  $\text{AgNO}_3$  =  $0.23$  mol  $\text{AgNO}_3$  | \_\_\_\_\_ =

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Use molar mass to convert between moles and mass (g)

To get molar mass, add atomic masses on periodic table



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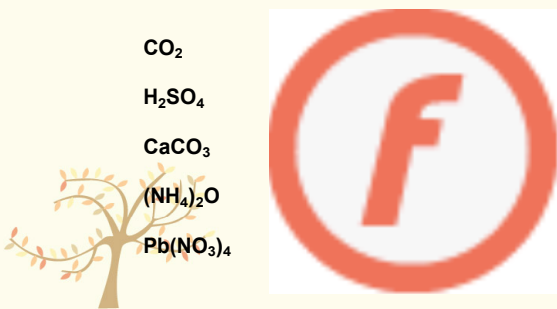
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Calculate the molar masses of these compounds:



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How many moles are in 70.0 g Na<sub>3</sub>PO<sub>4</sub>?

How many grams are in 0.6 mol HF?

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## MOLAR VOLUME

$$1 \text{ mol} = 22.4 \text{ L}$$

What is the volume of 2.0 moles of  $\text{CO}_2$  gas at STP?

$$(x) \text{ L CO}_2 = \frac{2.0 \text{ mol CO}_2}{1 \text{ mol}} \times 22.4 \text{ L}$$

A 2.0 L sample of HCl is at standard temperature and pressure. How many moles is this?

$$(x) \text{ mol HCl} = \frac{2.0 \text{ L HCl}}{22.4 \text{ L}} \times 1 \text{ mol}$$

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Just for fun...



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<http://www.2-waterfor.dubs.k12.wa.us/staff/wcb/ScienceFolder/Mole%20Day/Mole%20Day1.htm>

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