



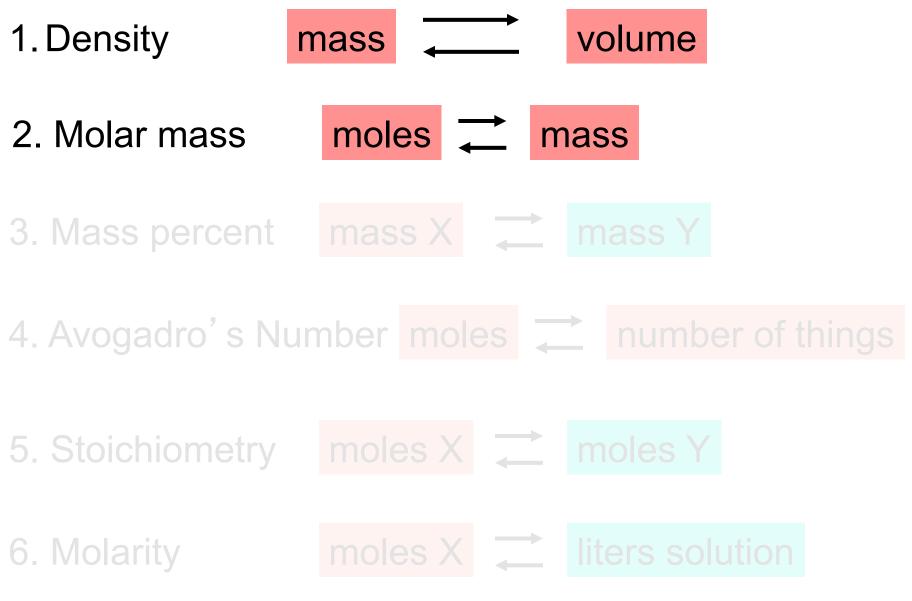
- convert from mass to volume
- Example: What is the volume of 6.54 g of a material that has a density of 0.7857 g/cm³?

6.54 g
$$\left(\frac{1 \text{ cm}^3}{0.7857 \text{ g}}\right) = 8.32 \text{ cm}^3 = 8.32 \text{ mL}$$

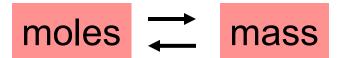
convert from volume to mass

Example: Determine the mass of 28.56 cm³ of a liquid that has a density of 0.7857 g/cm³.

$$28.56 \text{ cm}^3 \left(\frac{0.7857 \text{ g}}{1 \text{ cm}^3} \right) = 22.44 \text{ g}$$



2. Molar mass

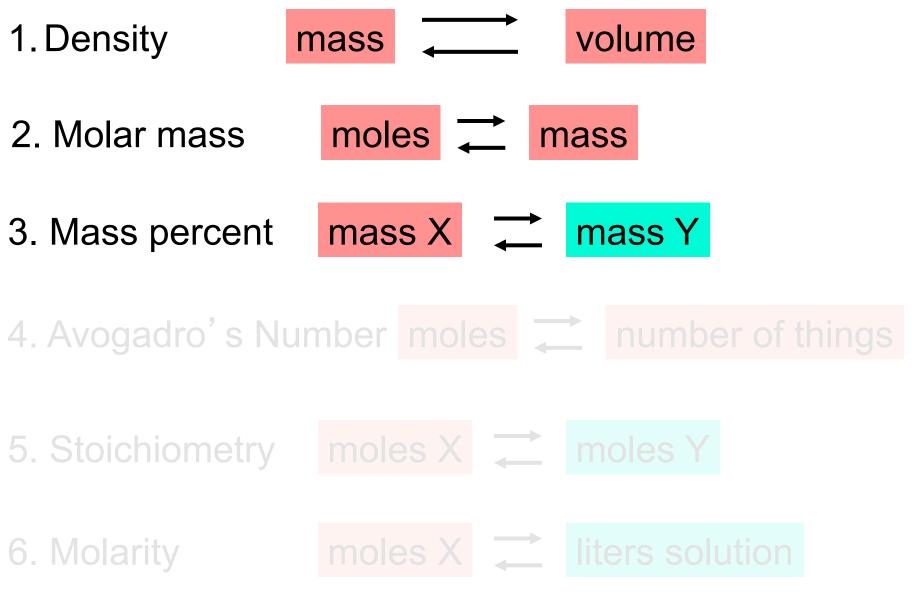


moles to mass Prob. 4 p 74

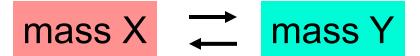
3.00 mole C
$$(12.01 \text{ g})$$
 = 36.0 g C (1 mot C)

• mass to moles Prob. 6 p 75

28.01 g CO
$$\left(\frac{1 \text{ mol CO}}{18.01 \text{ g CO}}\right)$$
 = 1.555 mol CO



3. Mass percent



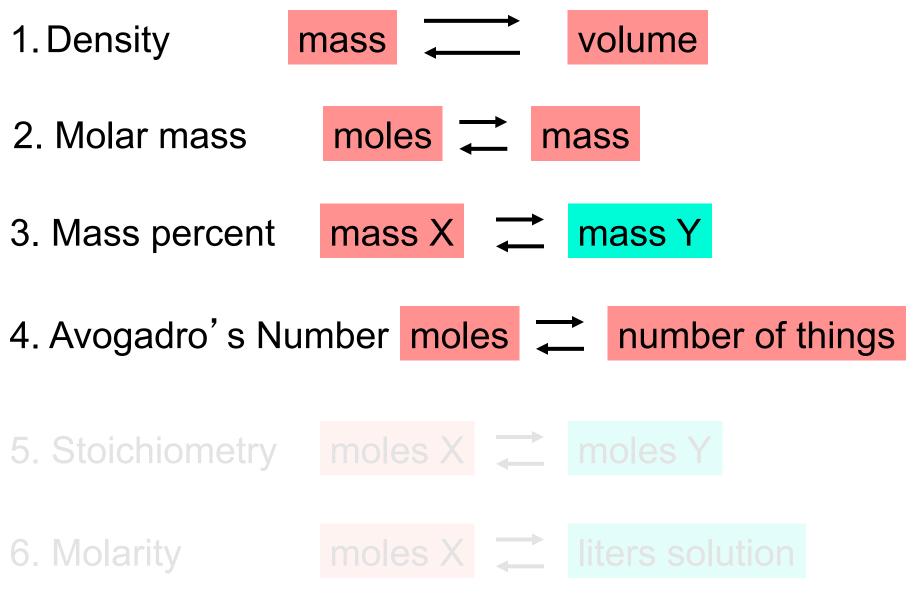
• use mass percent Prob. 1 p 15

2.50 g of chemical
$$10.0 \text{ g C}$$
 = 0.250 g C
100 g chemical

• find mass percent Prob. 3 p 19

 1.0 g of H
 x 100 = 25% H (by mass)

 4.0 g sample

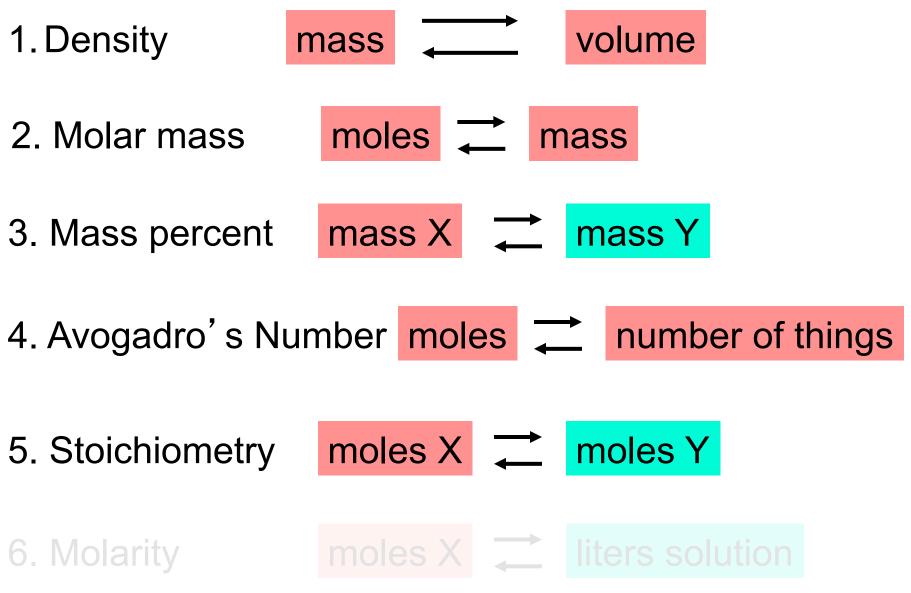


- 4. Avogadro's Number moles number of things
 - moles to number of things Prob. 2a p 83

10.0 mol Ne atoms
$$\left(\frac{6.02 \times 10^{23} \text{ atoms}}{1 \text{ mol}}\right) = 6.02 \times 10^{24} \text{ Ne atoms}$$

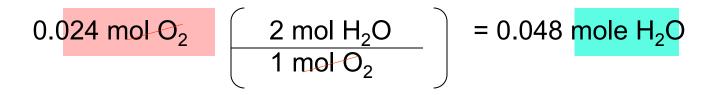
• number of things to moles Prob. 1a p 83

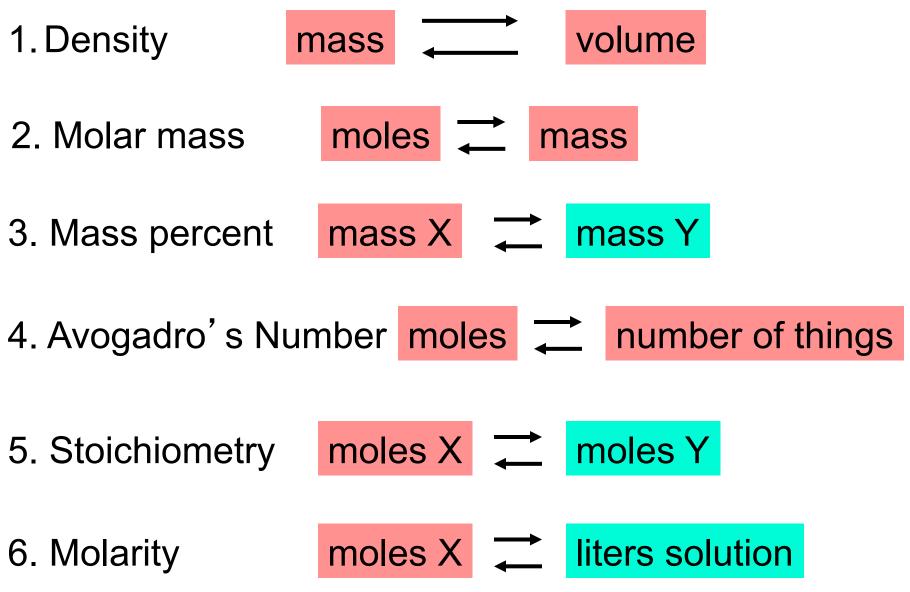
6.02x10²⁰ He atoms $\left(\frac{1 \text{ mol}}{6.02x10^{23} \text{ atoms}}\right) = 0.00100 \text{ mole He atoms}$



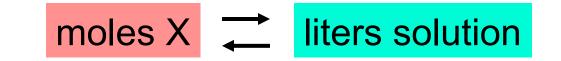


Prob. 4 p 88





6. Molarity



• liters to moles Prob. 10 p 105

10.0 L solution
$$\left(\frac{2.00 \text{ mol NaOH}}{1 \text{ L solution}}\right) = 20.0 \text{ mole NaOH}$$

- moles to liters b. at right
- **58.** What volume of 0.200 M ethanol solution contains each amount in moles of ethanol? **a.** 0.45 mol ethanol

 - c. 1.2×10^{-2} mol ethanol

b. 1.22 mol ethanol

1.22 mol ethanol 1 L solution = 0.610 L of solution 0.200 mol ethanol