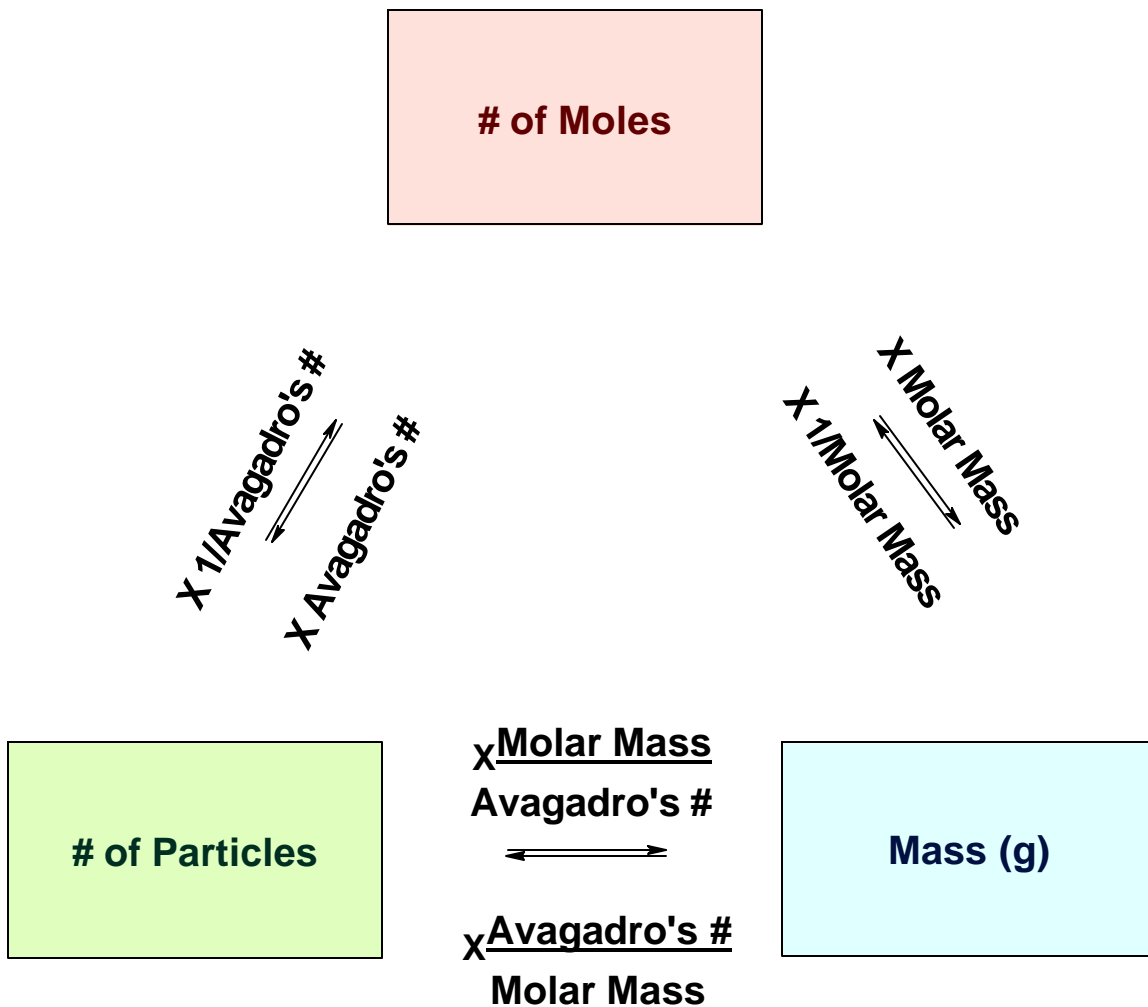
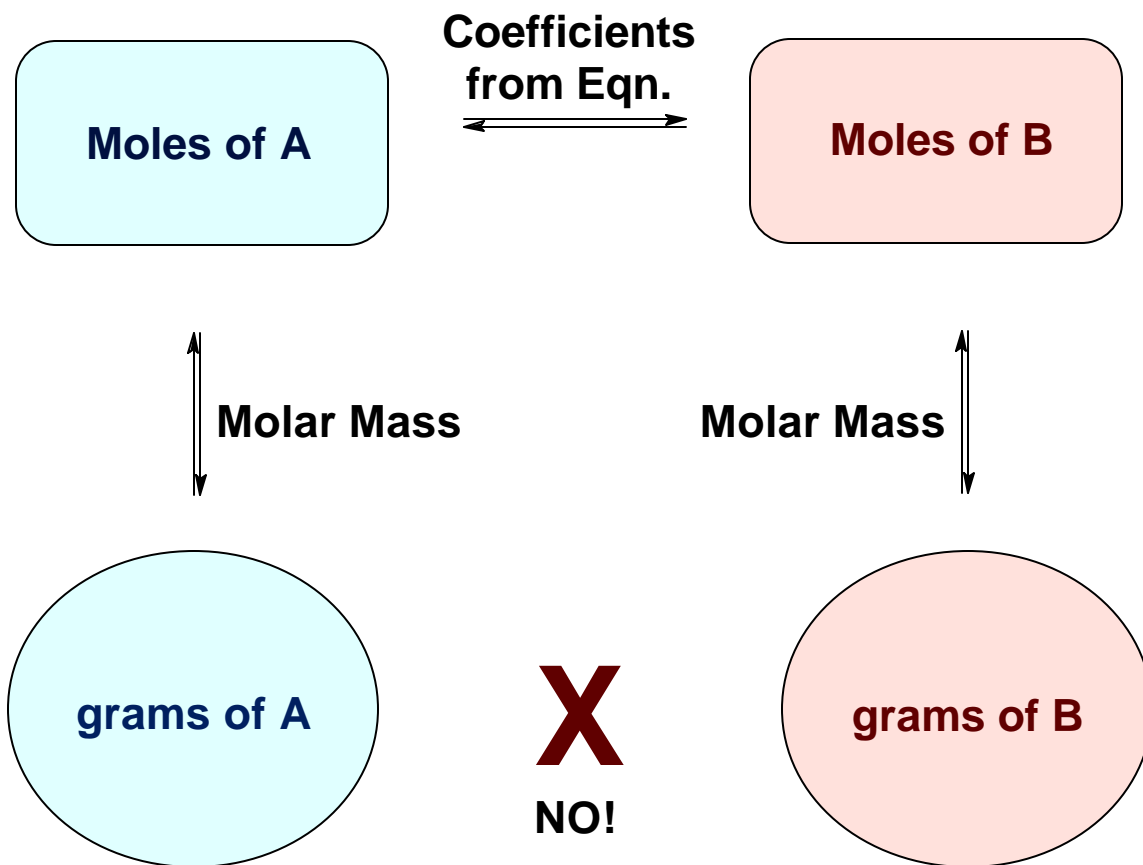


Relating Moles, Mass and Number of particles

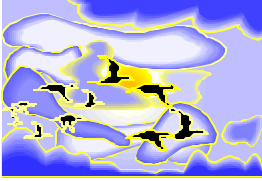


Relating Mass to Moles Stoichiometrically



Problems

- (1) Calcium hydroxide will react with hydrochloric acid, HCl, to form calcium chloride and water. How many grams of HCl would be needed to react completely with 29.05 g calcium hydroxide?
- (2) What mass of sodium hydroxide is needed to make 8.0 g of magnesium hydroxide (milk of magnesia) by reacting magnesium chloride with sodium hydroxide?



Migration



Each year birds fly south for the winter in formation.



Schools of fish travel thousands of miles upstream to return to the same place every year.



Schools of fish move in unison as one.

HOW?

Compound called magnetite, Fe_3O_4

has magnetic properties because of unpaired electrons

particles of magnetite align themselves in formation with the magnetic field of the earth.

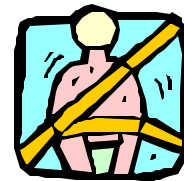
Control bacterial migration

Found in some brain cells of birds, fish, turtles and dolphins!

Can possibly help direct migration!



Air Bags



Front-end collisions are particularly dangerous

Car motion stops but bodies don't

Steering wheel, knobs, rear-view mirror and windshield are suddenly lethal weapons.

Car manufacturers have padded dashboards, safety glass, etc.

Airbags are useful safety device.

Need soft bag to inflate but **ONLY** on impact

Use NaN_3 , sodium azide.

- solid so very dense. Can pack a lot of it into steering wheel or dash board

- impact provides activation energy to allow following reaction to occur:



- once activation energy barrier is overcome, 3 moles of gas (low density, large volume) are instantly produced for every 2 moles of solid NaN_3 .

 **Enzyme Cascade**

