

## Agenda

### 1. Word of the day tragedy.

Main Entry: **trag·e·dy**

Pronunciation: 'tra-j&-dE

Function: *noun*

Inflected Form(s): *plural -dies*

Etymology: Middle English *tragedie*, from Middle French, from Latin *tragoedia*, from Greek *tragOidia*, from *tragos* goat (akin to Greek *trOgein* to gnaw) + *aeidein* to sing -- more at

**TROGLODYTE, ODE**

Date: 14th century

**1 a** : a medieval narrative poem or tale typically describing the downfall of a great man **b** : a serious drama typically describing a conflict between the protagonist and a superior force (as destiny) and having a sorrowful or disastrous conclusion that excites pity or terror **c** : the literary genre of **tragic** dramas

**2 a** : a disastrous event : **CALAMITY** **b** : **MISFORTUNE**

**3** : **tragic** quality or element

**prolegomenon** \proh-lih-GAH-muh-nahn\ *noun*

: prefatory remarks; *specifically* : a formal essay or critical discussion serving to introduce and interpret an extended work

**burgundy**

Inflected Form(s): *plural -dies*

Etymology: *Burgundy*, region in France

Date: 1668

**1** *often capitalized* : a red or white unblended wine from Burgundy; *also* : a blended red wine produced elsewhere (as California)

**cappuccino.**

Etymology: Italian, literally, Capuchin; from the likeness of its color to that of a Capuchin's habit

Date: 1948

: espresso coffee mixed with frothed hot milk or cream and often flavored with cinnamon

- **Latin/French expression of the day**

*Pro Patria* “for the country”

*belle epoch* “beautiful era”

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- 1) **Your comments**
- 2) **pH: neutralization,  
Buffer solutions  
How to make acids?**

- 3) **chemical Equilibrium:**

Neutralization: problem 14.120

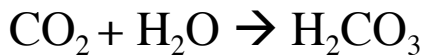
**Buffers:** A buffer is a solution that resists changes in pH when an acid or base is added. A buffer consists of a mixture of a weak acid and its conjugate base or a weak acid and its conjugate acid.

e.g., a 1:1 molar mixture of acetic acid and sodium acetate.

How to make acids? Oxides of S, N and C:

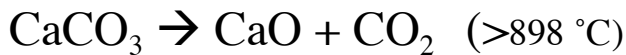


A very common acid...carbonic acid:



How to make a base?

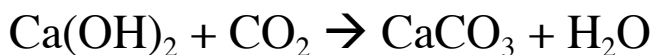
Take limestone, calcium carbonate, and heat it:



(If CaO, quicklime, is heated in a hydrogen-oxygen flame, it gives off a brilliant white light, which was called “lime light” and used in theaters).



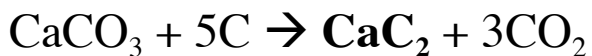
Before the invention of Portland Cement, brick mortar consisted of slaked lime and sand.



Such mortar could take centuries to completely cure.

## Making Calcium Carbide

Heat limestone with charcoal.



Calcium Carbide plus water yields *acetylene*, used for welding and early illumination.



What is the difference between equilibrium and nonequilibrium?

- a) dead battery vs. freshly charged battery
- b) cannon demonstration.

What is the difference between **kinetics** and chemical equilibrium? (one word: time)

Kinetics is the study of how fast chemical reactions occur, the molecular processes involved and the factors that affect them.

Chemical equilibrium is the ultimate state of a chemical reaction in which the concentrations of reactions and products do not vary with time.

## Kinetics

Molecules are in constant motion. Molecules can sometimes react when they collide. A chemical reaction means chemical bonds are broken and new ones formed.

What affects how rapidly a chemical reaction will proceed?

- a) concentration: rate is often proportional to concentration of the reactants
- b) temperature: the rate almost always increases with temperature because molecules collide more often and with more energy.
- c) Catalysts: allow molecules to react more easily.