Chapter 1, THE ORGANIZATION OF MATTER

-Matter is anything that has _____ and _____

-_____ is based on the idea that matter is made up of small particles.

-Phases of Matter:

- Solid _____ have a _____ force of attraction. They have a definite _____and _____
- Liquid _____ have a _____ force of attraction. They have a definite _____ but no definite _____.
- Gaseous _____ are not bound by a _____. They don't have any definite _____ or _____.

-Mixtures contain 2 or more different _____ or _____.

- Heterogeneous VS Homogeneous (colloids or solutions)
  _____ _____ (_____ _____)
- Solutions (Solute vs. Solvent)
  - Concentration, C (units: ____ or _____ or _____ or _____) (FORMULA C=)
  - Dilution (____ C by by adding solvent and_____ total Volume of solution) (FORMULA)
  - Solubility: Saturation is the maximum _____ of _____ in solution. If more sulute is added, a _____ will be seen. For solids (like salt), increasing the temperature will _____ the solubility (_____ saturation conc.). For gases, increasing the temperature will _____ the solubility (_____ saturation conc.)
  - _____ is a substance that is soluble in water, while _____ is a substance that is soluble in oil.
- Separating Mixtures
  - Decant:_____
  - Centrifuge_____
  - Filtration _____
  - Evaporation _____
  - Distillation _____
  - Chromatography _____

-Pure Substances contain only one _____.

- Elements can be ATOMS, such as _____ or MOLECULES such as_____

- Characteristic Physical Properties:
    - _____,_____,_____,_____
- Characteristic Chemical Properties
    - Litmus paper:
    - Cobalt chloride paper
    - Limewater
    - glowing splint,
    - burning splint
    - open flame

Chapter 2, THE POWER OF ENERGY

-Energy is the capacity to do _____ or produce _____. The unit of measurement of energy we use is the _____.

-Forms of Energy...

- Give an example for each:

Solar	Elastic	Electrical
Thermal	Radiant	Chemical
Mechanical	Wind	Sound
Hydraulic	Nuclear	

- **Thermal Energy** is energy that comes from the _____ motion of the _____ that make up a substance.
- **Radiant Energy (light)** is contained and transported in _____ waves (shorter wavelength → _____ energy)
- **Chemical Energy** is stored in the _____ of a molecule.
- **Mechanical Energy** is the _____and mass of an object in its surroundings.

-Energy Transformation means a change of FORM.

- Example, a baseball pitcher: The _____ energy in the muscles of the pitcher's body is **transformed** into _____ energy in the movement of his/her body.

-Energy Transfer is the same but a different PLACE or OBJECT

- Example 1, the same baseball pitcher: The mechanical energy in the movement of his/her body is **transferred** to the _____ that is thrown.
- Example 2: The thermal energy (heat) from a stove is **transferred** to the pot of water heating up to a boil.

-Physical Changes (phase change)

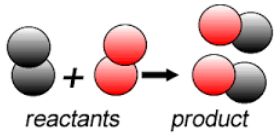
_____is solid to liquid and energy is _____.	_____ is solid to gas and energy is _____.	_____ is liquid to gas and energy is _____.
_____ is gas to liquid and energy is _____.	_____ is gas to solid and energy is _____.	_____ is liquid to gas and energy is _____.

- **Dissolution** is the creation of a _____ by a _____ dissolving in a _____.
    - Some solutes need energy to be dissolved into a solvent, other solutes release energy when dissolved. When dissolution releases E, temperature _____. When dissolution absorbs E, temperature _____.

- **Deformation** means changing the _____ of a material.

-**Chemical Changes** changes the _____ and _____ of matter.

- **Synthesis** reactions(like photosynthesis) make _____ molecules from atoms or simpler molecules. These reactions usually _____ energy but can also sometimes _____ energy.
- **Decomposition** makes _____ molecules or atoms from more complex molecules (breaks them apart). These reactions usually release energy.
- **Oxidation** (ex: rusting metal) is a chemical reaction involving oxygen.
- **Precipitation** is the formation of a solid following the mixing of two solutions. (Ex: vinegar mixed with milk causes solid curds to form).



-Chemical Equations

- The total # of atoms from each element need to be the same in the _____ as in the _____ (Rule of conservation of mass)

  Ex: $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$ see if this obeys the Rule.

-Electromagnetic Spectrum

- _____, _____,_____,Visible light,_____, _____,_____ _____ _____ _____

Chapter 3, THE BEHAVIOUR OF FLUIDS

-**A Fluid** is a substance that has the capacity to _____ and assume the _____ of the container into which it has been poured.

-A fluid can be a _____ or a _____.

-**A compressible fluid** is a fluid whose volume _____change. _____ are compressible fluids.
-**An incompressible fluid** is a fluid whose volume _____ change. _____are incompressible fluids

-**Pressure** is a _____ applied _____ to a surface. FORMULA: UNITS:

-If force increases, pressure _____. If force decreases, pressure _____.
-If surface area increases, pressure _____. If surface area decreases, pressure _____.

-The pressure exerted on an object by an incompressible fluid (like water) depends on:

- The _____ of the object in the fluid.
- The _____ of the fluid.

-For a compressible fluid, if pressure _____ volume decreases, and if pressure _____ volume increases.

-3 General Principles

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Chapter 4, THE PERCEPTION OF LIGHT AND SOUND

-**A wave** is a _____that travels through a medium. A wave transports _____; it does not transport _____.

-**Longitudinal Wave**: moves _____ to the motion of it's medium. Example: Sound waves, a slinky.

- Divided into regions of _____ and regions of _____.

-**Sound Waves** are longitudinal waves produced by the _____ of an object and transmitted to the object's environment.

- The Decibel Scale measures the relative intensity of sounds to human ears.
- For every 10dB sound increases _____, not _____
- EX:

- Sounds above _____ are damaging to the human ear.
- Frequency of sound waves (UNIT:_____) determines if we can hear it or not. Humans can hear 20 - 20 000Hz. Sounds under 20Hz are called _____. Sounds over 20 000Hz are called

-**Transverse wave**: moves _____ to the motion of it's medium. Examples: water surface, electromagnetic waves (Radio → Gamma).

- Wavelength:_____ _____ means more energy
- Amplitude:_____
- Frequency:_____ _____means more energy

-Light is an electromagnetic wave that is visible to the human eye. (p.111-116)

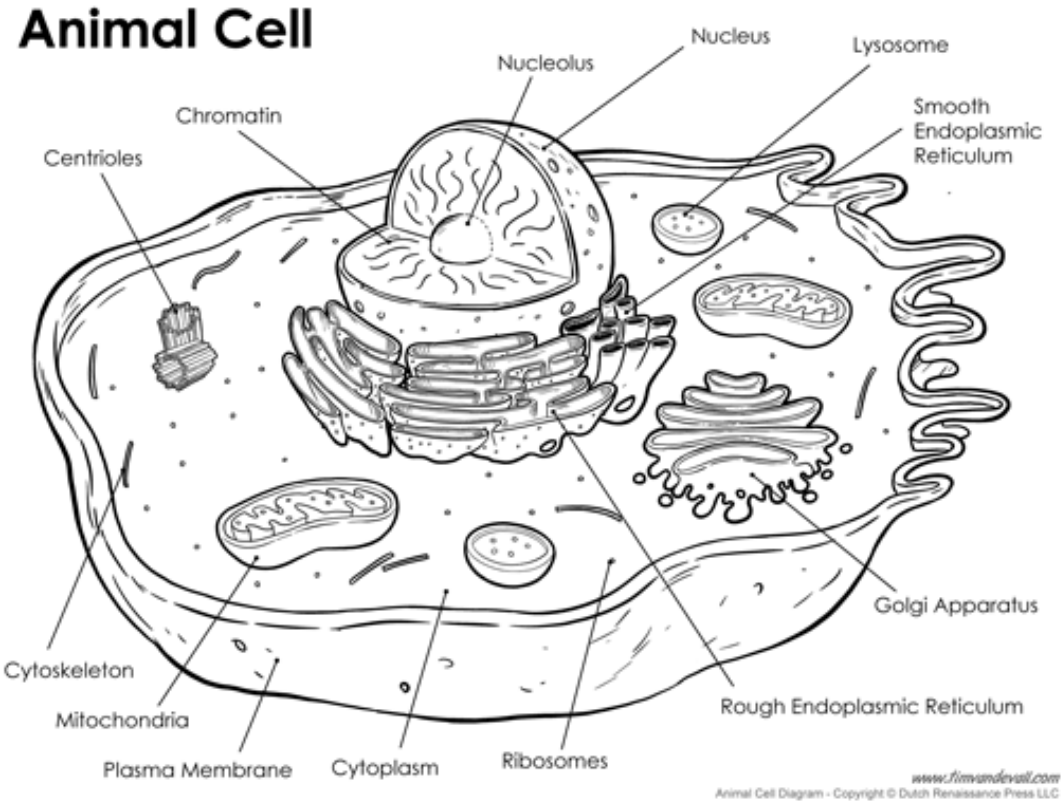
- Lenses refract **light** (cause the wave to deviate or change _____)
- There are 2 types of lenses:
    - **Converging:** lenses that cause light to focus on the other side.
        - Ex:_____, _____
        - Corrects hyperopia (farsightedness) and hyperopia (aging eye muscles)
        - Produces an image that is _____, _____, and _____.
    - **Diverging:** lenses that cause light to separate apart on the other side
        - Corrects myopia (nearsightedness)
        - Produces an image that is _____, _____, and _____.

Chapter 5, THE PERPETUATION OF LIFE

*****study the diagrams in your textbook*****

-The CELL is _____.

-Cell Structures and Organelles:



Nucleus		Mitochondria	
Endoplasmic Reticulum		Golgi Apparatus	
Ribosome		Lysosome	
Cytoplasm		Cell Membrane	

-DNA is a chain of _____ (of nucleotides).

- DNA bases are A (adenine), C (cytosine, G (guanine), and T(Thymine). They are always paired as _____ and _____
- The chain is twisted to have a _____ structure.
- DNA molecules are extremely long and have to be packed as _____ when the cell is dividing.
- Human somatic or body cells have 46 chromosomes (each with a duplicate sister chromatid, connected at the _____), thats 23 from the _____ parent and 23 from the _____ parent. We call these diploid or _____.

-**Cellular Specialization** (tissue → organ → system)

- **Tissues**: _____, _____, _____, _____
- **Oragns** are made of 2 or more tissue types (ex: the stomach uses all 4 types)
- A **system** is a group of organs and tissues with a common function. (Ex: digestive system from the mouth to the esophagus to the stomach etc…)

-**The Cell Cycle** is separated into _____ (most of the cell's life and when normal cell metabolism occurs) and the 4 stages of cell division...

-**Cell Division** (for Mitosis, Meiosis I or Meiosis II)

- _____: DNA is packaged as chromosomes and the nuclear membrane disappears.
- _____: Chromosomes (Mitosis) or homologous pairs of chromosomes (Mitosis I) align at the center of the cell.
- _____: Chromosomes or Homologous pairs are pulled apart by spindle fibres.
- _____: New nuclear membranes are formed and cytokinesis occurs (movement of the cytoplasm into 2 new cells)

-Meiosis produces _____ (n) sex cells. It occurs in the _____ (males) and in the _____ (females). Two cell divisions produce 4 haploid _____ from 1 diploid cell.

- Male gametes are called:_____
- Female gametes are called:_____

-**Stages of Human Development**

Befor Birth_____ → _____ → _____ →

After Birth _____ → early childhood → _____ → adolescence → _____ → old age

-Puberty Hormones

- The pituitary gland of the brain releases FSH and LH
    - Primary Sexual Characteristics (Male): _____

    - Primary Sexual Characteristics (Female):_____
- The Testicles produce testosterone (male) and ovaries produce estrogen and progesterone (female)
    - Secondary Sexual Characteristics (Male):_____
    - Secondary Sexual Characteristics (Female):_____

-Female Reproductive Cycle

- Ovarian Cycle
    a. In the ovaries, inside an ovarian follicle, a _____ oocyte undergoes meiosis I.
    **Hormone: Triggered by FSH, then ovaries produce _____ which stimulate the pitutiutary to produce more FSH and LH
    b. In **"Ovulation":** the _____ovum is expelled into the fallopian tube.
    **Homones: triggered by ___in LH. Accompanied by a surge in ____ and ____.
    c. Ovarian Follicle turns into the **corpus luteum**
    **Hormones: The corpus luteum secretes _____ (the "STOP signal which inhibits FSH and LH at the _____)
    d. As the corpus luteum disintegrates and _____ decreases the pituitary can be produce _____ and _____ again.

- Menstrual cycle
    a. Bleeding occurs do to the expulsion of the _____ and the unfertilized ovum.
    **Hormones: Caused by the _____ in progesterone.
    b. Endometrium Thickens
    **Hormones: Production of _____ by a new ovarian follicle.
    c. Endometrium continue to Thicken.
    **Hormones: Secretion of _____ by the corpus luteum.

-Male Reproductive Cycle:

- Spermatogenesis occurs in the _____ of the _____
- _____ spermatogonium undergo meiosis to produce _____ spermatozoa.
- Sperm then travel to the
    - Epididmis (in the _____)
    - Vas Deferens
    - Ampulla of the Vas Deferens
        - Seminal Vesicle
    - Urethra
        - Prostate gland
        - Bulbourethral gland