**Most of What You Need to Know For the Science 8 Final**

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| Scientific Method   1. **Contro**l= Group used for comparison 2. **Constant=** Anything that stays the same between groups 3. **Independent Variable**= The change you make between test groups 4. **Dependent** **Variable**= The difference measured in the results of an experiment 5. **Hypothesis=** What you predict the results of the experiment will show 6. **Observation=** Anything that can be seen or measured 7. **Inference=** A possible explanation or conclusion from an observation |
| Cells   1. All living things are unicellular (single celled) or multicellular.  * Single celled: Paramecium, ameba, bacteria * Multicellular: Plants, animals, mushrooms, most fungi  1. Cells are only found in living things. 2. Cells are living and perform all the characteristics of life. 3. Cells **have specialized structures** that perform life functions. 4. All cells have certain parts like the **cytoplasm (goo)**  and a cell membrane. 5. Plant cells have **cell walls and chloroplasts,** which animal cells do not. 6. Most cells have a **nucleu**s, which holds genes, chromosomes, DNA. 7. The **chloroplasts** of plant cells perform a function called **photosynthesis.** 8. **Photosynthesis** is when a chloroplast makes **sugar and oxygen**. 9. **Tissues**: More than one identical cells working together. 10. **Organs**: **More than one tissue working together** 11. System:  **More than one organ working together.** 12. When **cells divide**, it allows an organism to grow or heal. 13. **Abnormal cell division**= cancer |
| Plants   1. Plants are multicellular living things with specialized structures. 2. **Roots=** Absorb water 3. **Stem=** Support 4. **Leaves=** Photosynthesis 5. **Flowers**= Sexual reproduction 6. **Seeds**=  * Produced by **sexual reproduction and fertilization** * Contain food for developing plant * Have a protective seed coat * Developing plant= embryo  1. **Photosynthesis=**  * Plants make food in their leaves using **light, co2, and h20** * Food= Sugar |
| Human Body Systems  Study the excretory, respiratory, digestive, circulatory and endocrine systems.  There is a whole section on this in the NYS Review book I laboriously copied for you. |
| Ecology:   1. **Populations:** Group of all one species 2. **Community:**  All the different populations (plants, animals, etc.) 3. **Ecosystem:**  All the communities AND the non-living factors (water, air, light) 4. **Producers:**  * Make their own sugar. Plants are producers. * **Must have chlorophyll** * Begin food webs and chains for entire community * **Use energy of sunlight to produce food**  1. **Consumers:**  * Must take in food from outside their cells (eat) * Different types: **Herbivores, carnivores, omnivores, decomposers** * **Herbivores:** Eat plants / producers * **Carnivores:** **“Meat Eaters” ;** eat other consumers * **Omnivores:** Eats producers, consumers * **Decomposers**: Usually bacteria and fungi. They feed on dead or decaying matter to recycle it  1. **Food webs/ Chains:**  * Arrows represent **energy flow** * All energy comes from **the sun** * If a population is increased or decreased, other populations will be affected.  1. **Relationships:**  * **Beneficial:** Two different species help each other out * **Predator/ Prey: Nom nom nom** * **Competition**: Two organisms need the same limited resource. Competition can occur between different species OR members of the same species.  1. **Succession:**   Over time, one type of community is replaced by another. For example, an empty field will first have weeds, then grasses, then small trees, and then large trees. After a natural disaster, the organisms in the area may have been destroyed. Over time, new types of plants and animals will recolonize. |
| Genetics:   1. **DNA=** The hereditary instructions for the traits of an organism 2. **Chromosomes**: Strands of DNA found in the nucleus. Different species have different numbers. For example , humans have 46 chromosomes in every body cell. 3. **Genes**: **Look like bands on chromosomes.** Each gene carries instructions for one specific trait. 4. **Offsrping=** New organisms created in reproduction 5. **Asexual Reproduction**:  * Only one original parent * Offspring have 100% identical genes and chromosomes of the one parent  1. **Sexual reproduction**  * **DNA comes from two parent organisms** * **Each parent gives ½ of their chromosomes** * **Creates LOTS of VARIATION in offspring** * **Offspring only has 50% of chromosomes from each parent**  1. **Fertilization:** Sperm and egg cells combine chromosomes  * **Internal----**Occurs inside the body of the female * **External---** Occurs outside the body of the female (fish, amphibians)  1. **Development:** The first new cell of the organism divides repeatedly to form tissues,   organs, systems before birth   1. **Pedigree:** Chart that shows a trait being passed on through generations of a family   See the source image   1. **Punnett Square:** Used to predict probability (25% chance, 50% chance, 75% chance, etc.) of the genes an offspring may inherit. BASED ON DOMINANT AND RECESSIVE GENES.   http://elementalblogging.com/wp-content/uploads/2015/03/punnett-square.png |