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| **Lesson 1** | |
| \_\_\_\_ \_\_\_\_ 1. Know which cells form haploid cells, and which cells form diploid cells | Sex cells (sperm and egg) form haploid cells. Every other cell are diploid |
| 2. after fertilization, a zygote goes through **Mitosis** in order to form an embryo, and then a baby. Why not through **Meiosis**? | Meiosis ends up with half the normal number of chromosomes. |
| 3. we inherit how many copies of each chromosome from each parent? | We inherit one set from out mother, the other set from out father |
| 4. Know the phases of meiosis and what happens in each stage  Prophase I: Nucleus breaks down and DNA forms chromosomes  Metaphase I: Homologous Chromosomes bunch up at the center of cell with spindle fibers attaching to centromeres  Anaphase I: Homologous chromosomes are pulled away from each other  Telophase I: cell splits into two, with nuclear membrane re-forming  Prophase II: Nucleus breaks down and DNA forms chromosomes  Metaphase II: Chromosomes line up at center of cell with spindle fibers attaching to centromeres  Anaphase II: Chromatids are pulled apart to opposite ends of cell  Telophase II: Cells split in two, forming four cells with half the normal DNA |  |
| 5. Meiosis starts with one diploid cell and ends up with \_\_\_\_\_ haploid cells | Four |
| 6. What are the advantages of meiosis in sexual reproduction? | A lot of genetic variation |
| 7. a cell that has two copies of every kind of chromosome is \_\_\_\_\_\_\_\_ | Diploid |
| 8. Remember and understand the following figure: | Homologous pairs means two copies of each chromosome (one from mom, the other from dad)  Eg: fruit flies have 8 chromosomes total, 4 came from its mom, 4 came its dad. |
| 9. How do you find the number of homologous pairs when you only have the total number of chromosomes? | Divide the total number by two |
| 10. What plants, through selective breeding, are descended from a wild mustard plant? How does meiosis help in selective breeding | Kale, Kohlrabi, Cabbage, Broccoli.  Selective breeding allowed for a lot more variation to show up. |
| **Lesson 2** |  |
| 11. Know what happens in binary fission. In what organisms does this occur? | This occurs in prokaryotes (bacteria) DNA is copied, then pulled to opposite ends of the cell, which then grows bigger. Finally, the cell splits in two |
| 12. What happens in vegetative reproduction? In what organisms does this occur? | This occurs in plants. You take a cutting (either a stem or a root) and plant it. This cutting will eventually grow into a full plant. |
| 13. What is budding? How does this occur? | a new organism develops from an outgrowth or bud due to cell division at one particular site.  Occurs in yeast and hydra |
| 14. Know the phases of mitotic cell division and what happens in each stage. | PMAT. |
| 15. Give two examples of organisms that reproduce through regeneration | Planarian flatworms  Hydra  Starfish |
| 16. What two forms of asexual reproduction that occurs in a lab? | Tissue Culture and Cloning |
| 17. What is an advantage of asexual reproduction? | A lot of offspring  There is no need to waste energy and resources making sperm and eggs |
| 18. What is a disadvantage of asexual reproduction? | Higher risk of mutation  No genetic variation |