Biology Portfolio 2
Heredity and Reproduction (3rd Grade)

I. Portfolio on Heredity and Reproduction for the 3rd Grade.

II. State Standards for the 3rd Grade.
    A. **Heredity and Reproduction**:

        a. 3.4.1 Recognize that living things reproduce.

            - Recognize that organisms develop the ability to reproduce as they mature.

        b. 3.4.2 Recognize that offspring tend to resemble their parents.

            - Note similarities and differences between parents and offspring.

        c. 3.4.3 Recognize that the appearance of plants and animals changes as they mature.

            - Describe how an organism (e.g., frog, butterfly) changes as it matures.

III. Detailed topics to cover for State Standards for your specific grade level.
    A. Examples
        i. For the 3rd Grade, the standard lists: 3.4.1 Recognize that living things reproduce.
            1. Why do cells reproduce?
                a. Replenish the population
                b. Pass on its genetic information
            2. How do cells reproduce?
                a. Asexual Reproduction
                    i. Mitosis
                    ii. Binary Fission
                b. Sexual Reproduction
                    i. Outcome = “Unique Individual”

        ii. 3.4.2 Recognize that offspring tend to resemble their parents.
            1. Genetic Information

a. DNA
    i. Made up of (4) nucleotides.
        1. Adenine
        2. Guanine
        3. Cytosine
        4. Thymine
b. Genes
    i. DNA sequences that code for RNA molecules.
    ii. Passed on to the offspring by cell division.
    iii. Two types of cell division
        1. Mitosis (***See Page 4 of Outline for Illustration***)
            a. Produces cells with same number of chromosomes as parent cell.
        2. Meiosis (***See Page 5 of Outline for Illustration***)
            a. Produces cells with half the number of chromosomes as parent cell.

iii. 3.4.3 Recognize that the appearance of plants and animals changes as they mature.
    1. Animals alter their appearance as they grow older by getting bigger in size, having different colored hair, and usually get fatter.
    2. Plants change as they mature by producing more leaves, getting longer and bigger, and sprouting some flowers.
        a. Plants and Animals differ in reproduction
            i. Asexual Reproduction
        b. Technology use in plants is a factor because of genetically enhanced foods.

IV. “Hands-On activities to help understand themes:
    A. Mix and Matching
        1. Make some cut out pictures of certain children and then make some cut out pictures of their parents. Group the kids together in groups of like 3 or 4 and have them work together on trying to match up the children with the right

parents. This shows how genetics are passed down in reproduction.

B. Whose That Baby?

2. Print off some pictures of animal babies when they are very small. See if each kid can determine which animal family the babies come from. This will help show the children another way to put genetic information together.

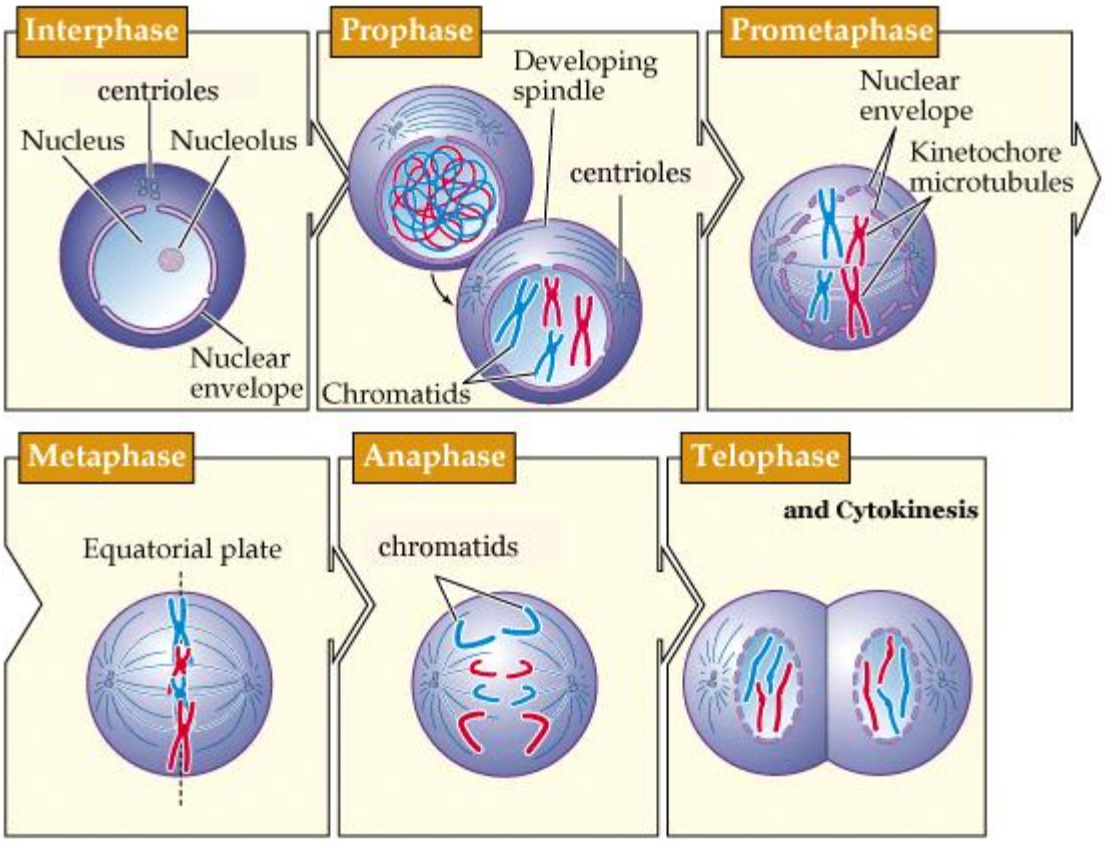
C. Creative Drawing

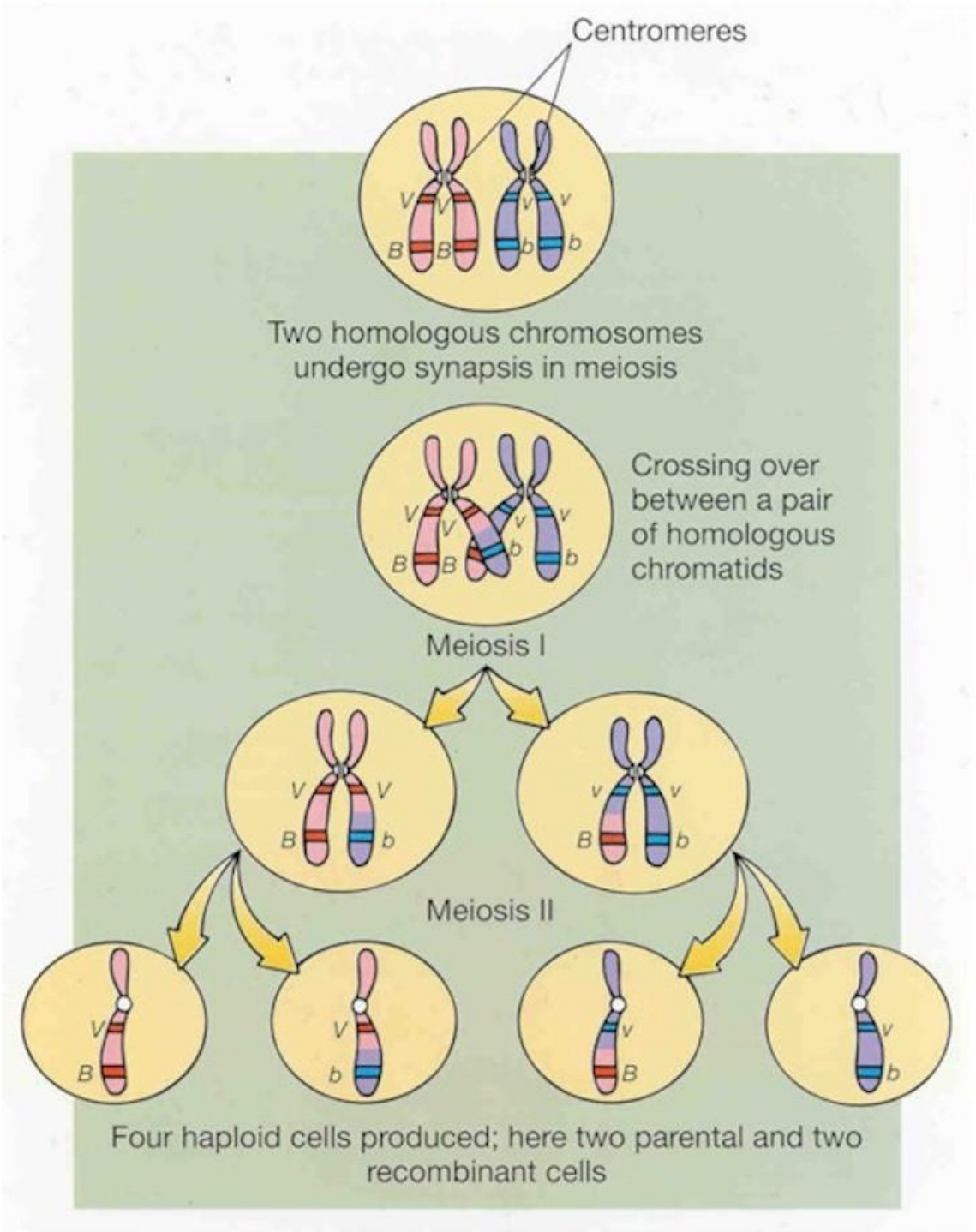
3. Give all the students a picture of a certain animal or plant and tell them to draw what they think it would look like as it grew older and matured. Then compare it with the real picture of the animal/plant matured and show them the difference.

V. Resources very helpful in Heredity and Reproduction for 3rd grade.

A. Websites Available Online:

1. http://www.sofweb.vic.edu.au/STEPS/STUDENTS/1-2Years/life/mother.htm
2. http://www.mattwolf.com/zoo1.htm
3. http://www.enchantedlearning.com/subjects/animals/Animalbabies.shtml
4. http://www.agr.state.il.us/kidspage/babies.html
5. http://biology.usgs.gov/features/kidscorner/quizzes/bbynme.html
6. http://www.cellsalive.com




Centromeres
V
V
B
B
v
v
b
b
Two homologous chromosomes undergo synapsis in meiosis
Crossing over between a pair of homologous chromatids
Meiosis I
Meiosis II
Four haploid cells produced; here two parental and two recombinant cells