MODELING MEIOSIS

In meiosis, the parent cell undergoes two series of cell division which result in the production of four haploid daughter cells. Each of these daughter cells is unique and has half the number of chromosomes as the original parent cell. Meiosis takes place in the testes and ovaries and results in the production of **gametes**.

Cells which have half the normal number of chromosomes (i.e. there are 23 chromosomes in a human ova or sperm cell) are called **haploid** or n.

During meiosis, a process called **crossing over** happens which allows chromosomes to be genetically diverse. Chromosomal crossover (or crossing over) is the exchange of genetic material between homologous chromosomes that results in recombinant chromosomes. This step happens during prophase I.

Procedure
1. Select two different colors of playdoh. One color will represent the chromosomes of the mother and the other color will represent the chromosome of the father.

Mother's color_____   Father's color_____

2. Use the play doh to make chromosomes (sister chromatids joined by a centromere) for a diploid cell (2n) where n is 3.

Number of mother's chromosomes constructed = _____
Number of father's chromosomes constructed = _____
3. Use the play doh to make 2 centrioles.

4. Use the string to represent the plasma membrane. Do not make spindle fibers but imagine that they are present.

5. Use the pieces constructed to illustrate the phases of meiosis.
      a. Meiosis I
            i. Prophase I (show tetrads and crossing-over)
            ii. Metaphase I
            iii. Anaphase I
            iv.Telophase I
      b. MeiosisII
            i. Prophase II
            ii. Metaphase II
            iii. Anaphase II
            iv. Telophase II
      c. show all 4 daughter cells.
6. Use tape to secure your play doh pieces to the sheet of paper.

Results

In the following chart, briefly describe what is happening in each phase of meiosis:

Prophase I	Prophase II
Metaphase I	Metaphase II
Anaphase I	Anaphase II
Telophase I	Telophase II

Marking Scheme

Diagram correctly labels each phase	0	1	2			
Chromosome and spindle fibre position	0	1	2	3	4	5
Crossing over represented correctly	0	1	2	3		
Description of each phase in results chart	0	1	2	3	4	5
Clean-up	0	1	2			

Total **/17**