Internet Assignment: How Meiosis Makes Gametes

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: 1 2 3 4 5 6 7

**Background Information to Orient Yourselves. Read this 1st!**

**Meiosis** is a process used by living things to create sex cells (eggs and sperm) for sexual reproduction. It uses cells called **Germ Line Cells** found in the testes (if you are a boy) or ovaries (if you are a girl) to create 4 gametes. It does this by dividing each germline twice. First it divides 1 germ line cell into 2, and then divides each of those 2 cells again to form 4 cells. These cells are called **gametes**. During the 2 divisions, there are several ways the cells increase genetic variation. The 1st way is called **crossing over**, and the second way is called **independent assortment**. The animation will briefly show you what both of these look like. Watch the animation below to see how this process works. Respond to the prompts using the information in the animation.

<http://highered.mcgraw-hill.com/sites/0072495855/student_view0/chapter28/animation__how_meiosis_works.html>

1. Meiosis is the process that results in what 2 types of cells?
2. Where are cells that undergo meiosis typically found in women? In men?
3. According to the animation, germline cells are **Diploid / Haploid**
4. According to the animation, gametes (sperm and eggs) are **Diploid / Haploid**
5. According to the animation, what does the word haploid mean?
6. For each of the cells depicted below during the different stages of meiosis, use 2 different colored pencils or markers to draw in what the chromosomes look like.

------------------------------------------------------------Chromosome Duplication-------------------------------------------------------

---------------------------------------------------------------------Meiosis 1----------------------------------------------------------------------

--------------------------------------------------------------------Meiosis 2-----------------------------------------------------------------------

1. Chromosomes consist of identical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ joined at the centromeres.
2. Use the internet to write a definition for the following term: **Homologous Chromosome**

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1. Crossing over is when 2 homologous chromosomes lined up next to each other do what?

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1. Will sister chromatids be identical after crossing over has occurred?
2. Draw what the cell looks like during Metaphase 1 below. And later when it shows you draw what it looks like during metaphase 2. Make sure to use 2 different colors to show the chromosomes

Metaphase 1 Metaphase 2

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1. Based on the animation, what is the job of the spindle fibers?

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1. During Anaphase 1 of Meiosis 1 we are separating which of the following: homologous chromosomes / sister chromatids?
2. How many cells are created at the end of meiosis 1?
3. During Anaphase 2 of Meiosis 2 we are separating which of the following: homologous chromosomes / sister chromatids?
4. At the end of Meiosis, the 4 cells that are created will be genetically identical or genetically different?

**Tying it all together**

Thinking about how you are creating your Designer Dogs, explain the role meiosis plays in making your puppies. Please write at least 2 complete sentences. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Thinking about the Designer Do activity, explain how we modeled the process of crossing over.

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