**8. Meiosis homework problems**

Name and date submitted (3 pts):

Instructions

Using this handout as a TEMPLATE, create space in between questions below and write or type your answers. Turn in your completed work as an email attachment.

Carefully watch the “Meiosis Made Super Easy” video which is posted at the top of Unit 8. The questions come from that video.

(15 questions, 100 points)

Background

1. Gametes, or the sperm and ova, are formed through the process called \*
2. The cells that undergo meiosis (to form the gametes) are known as \*
3. In \* cells (such as humans), cells have 2 copies of each chromosome.
4. The gametes (sperm/ova), by comparison, only have 1 copy of each chromosome and are known as \* cells.
5. The gametes fuse into a diploid \* , which grows into an adult organism.
6. Carefully review 1:20-1:48, and then summarize Meiosis I and Meiosis II in your own words. Explain to your colleagues at the Royal Academy of Science, around the year 1800.
7. What does Meiosis I do, and what does it result in?
8. What does Meiosis II do, and what does it result in?

Meiosis I

1. Prophase I
2. The DNA condenses to form \*
3. These stay fused together at their \*
4. What is synapsis? Summarize.
5. What happens during recombination or ‘crossing over’? Summarize.
6. After crossing over, the sister chromatids are no longer \*
7. Why does ‘recombination’ lead to siblings not being identical?
8. The 2 centrosomes migrate to opposite ends of the cell, and \* extend inwards towards the chromosomes.
9. Metaphase I
10. The synapsed chromosomes align \*
11. What causes ‘different combinations’ each time meiosis occurs? \*
12. Anaphase I
13. In this phase, \* chromosomes separate and migrate apart.
14. The sister chromatids remain attached at their \*
15. Telephase I/Cytokinesis
16. Here, the cell divides into two \* cells.
17. Each of these two cells then undergoes \*

Meiosis II

1. Prophase II
2. Chromosomes \* , the nuclear membrane \* , and the \* apparatus forms.
3. Here, the daughter cells only have one copy of each \* chromosome.
4. True/False: In prophase II, there is no synapsis or crossing-over of chromosomes.
5. Metaphase II
6. Again this time, when the sister chromatids line up at the equator, they line up randomly. How does this lead to even more genetic diversity between siblings? Explain this to your spellbound colleagues at the Royal Academy of Science assuming it is 1800 A.D.
7. Anaphase II
8. The sister chromatids are pulled apart by what mechanism?\*
9. The new cells are pushed apart by what mechanism?\*
10. Telephase II
11. The two cells divide into four \* daughter cells.
12. The division of cytoplasms is called \*
13. Meiosis summary
14. The end result of Meiosis I and II is that the original germ cell has now produced four, unique \* cells.
15. These four cells are called \*
16. One from father and one from mother fuse to form an \* , which then develops into an adult fruit fly, corn plant, mouse, or human.