Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DOC #: 44

ORHS LEVEL BIOLOGY 2016

**Meiosis and Monohybrids Review Sheet**

**PART 1: MEIOSIS**

1. For each statement state whether it describes MITOSIS, MEIOSIS or BOTH

\_\_\_\_\_\_\_\_\_\_\_\_\_ Creates 4 daughter cells

\_\_\_\_\_\_\_\_\_\_\_\_\_ Creates IDENTICAL daughter cells

\_\_\_\_\_\_\_\_\_\_\_\_\_ Undergoes DNA Replication prior to division

\_\_\_\_\_\_\_\_\_\_\_\_\_ Creates Gametes

\_\_\_\_\_\_\_\_\_\_\_\_\_ Creates cells with the SAME chromosomes number as the parent

\_\_\_\_\_\_\_\_\_\_\_\_\_ Cytokinesis divides the Cytoplasm

\_\_\_\_\_\_\_\_\_\_\_\_\_ Creates Diploid Cells

\_\_\_\_\_\_\_\_\_\_\_\_\_ Crossing Over occurs during it

|  |  |  |  |
| --- | --- | --- | --- |
| **PICTURE** | **D or H?** | **PICTURE** | **D or H?** |
| Image result for mitosis |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Image result for animal specialized cells |  |  |  |

2. For each picture in the chart, does it describes/shows a DIPLOID Cell (D) or a HAPLOID CELL (H)?

3. Meiosis produces non-identical gametes. This feature, and the nature of fertilization, can improve the survival and success of a species because of the increase in:

a) similarity between individuals

b) number of somatic cells

c) genetic variability (differences) between offspring

d) random mutations

4. Complete each statement with the correct Chromosome Number

1. If a hamster has 42 chromosomes in its liver cells, it will have \_\_\_\_\_\_\_ chromosomes in its sperm cells
2. If a robin has 18 chromosomes in an egg cell, it will have \_\_\_\_\_\_\_ chromosomes in its brain cells
3. If a gorilla has 56 chromosomes in a heart cell, it will have \_\_\_\_\_\_ chromosomes in its skin cells
4. When a fish with 14 chromosomes in its egg cells reproduces with another fish of the same species, the zygote formed will have \_\_\_\_\_\_\_ chromosomes
5. When a pig with 22 chromosomes in its lung cells reproduces with another pig of the same species, the zygote formed will have \_\_\_\_\_\_\_ chromosomes
6. If a male zebra has 40 chromosomes in a sperm cell, a male zebra of the same species will have \_\_\_\_\_\_\_\_ chromosomes in a uterine cell
7. If a mealworm has 7 chromosomes in its somatic cells, it will have \_\_\_\_\_\_\_\_\_ in its gametes

**WORD BANK:**

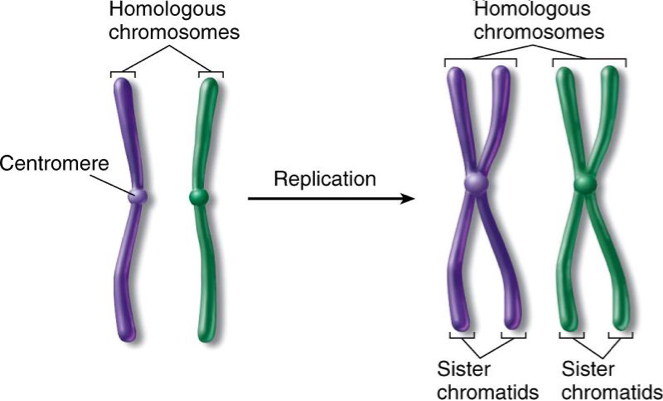
- Homologous Chromosomes (used twice)

-Sister Chromatids

(used twice)

-Centromere

5. Label the picture with the terms in the word bank to the side:



6. For each statement, say whether it is TRUE or FALSE. For False Statements, **CORRECT the mistake** by crossing out the incorrect word/s and replacing with the correct word/s.

TRUE FALSE Crossing Over occurs during Metaphase II

TRUE FALSE Meiosis creates 4 non-identical somatic cells

TRUE FALSE Independent Assortment increases genetic diversity between gametes

TRUE FALSE A zygote grows into an embryo using the process of mitosis

TRUE FALSE The daughter cells made in meiosis are identical to the parent cell

TRUE FALSE In meiosis, DNA Replication only happens once before Prophase I

TRUE FALSE The uterus that a fetus grows inside of is made up of haploid cells

7. It is necessary to create cells with \_\_\_\_\_\_\_\_ *(half the/ the full*) number of chromosomes in Meiosis so that the zygote (fertilized egg) will contain \_\_\_\_\_\_\_\_ *(half the / the full)* number of chromosomes.

8. Which of the following is true about a zygote?

a) It is a diploid cell

b) It will begin to grow using the process of mitosis

c) It is the result of the process of fertilization

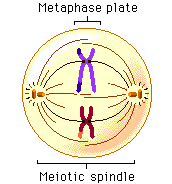
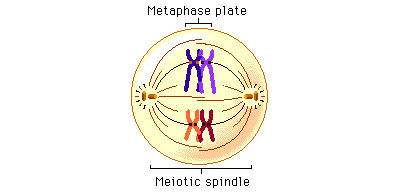
d) All of the above are true

9. Using TWO different colored markers, draw a Tetrad BEFORE Crossing Over and a Tetrad AFTER Crossing Over (**Note:** a tetrad is two replicated homologous chromosomes next to each other)

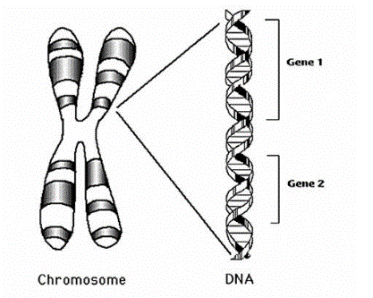
**ONE TETRAD AFTER CROSSING OVER**

**ONE TETRAD BEFORE CROSSING OVER**

10. For the pictures below, which one represents **MEIOSIS I** and which one represents **MEIOSIS II.**



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Label the picture with the labels: **Chromosome, DNA, Gene (used twice)**

**PART 2: MENDEL AND MONOHYBRIDS**

12. The earliest understanding of patterns of inheritance came from the work of a monk named \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. He did most of work studying crosses between \_\_\_\_\_\_\_\_\_ plants.

13. For each of the statements below, write the **GENOTYPE** of the individual described, assuming that right handedness (R) is dominant over left handedness.

\_\_\_\_\_\_\_ Paul is right handed but his mother is left-handed

\_\_\_\_\_\_\_ Jane is a heterozygote for the trait of handedness

\_\_\_\_\_\_\_ Brian is homozygous recessive for the trait of handedness

\_\_\_\_\_\_\_ Marie is right handed but her daughter is left handed

\_\_\_\_\_\_\_ Jack is right handed with no family history of left handedness

\_\_\_\_\_\_\_ Pedro is left handed

14. For a given trait, there is a sequence of DNA that codes for the trait called a \_\_\_\_\_\_\_\_\_. There are two or more possible forms of the gene. These forms are called \_\_\_\_\_\_\_\_\_\_.

15. If you know an organism’s phenotype, will you be able to work out what its genotype is?

a) Yes, the phenotype will always enable you to determine the genotype

b) Sometimes- if the organism shows the dominant phenotype, you can work out its genotype

c) Sometimes- if the organisms shows the recessive phenotype, you can work out its genotype

d) No, you can never know someone’s genotype without genetic screening blood tests

16. Greg has freckles (which is dominant, F) but his mother did not have freckles. His wife Candace does not have freckles and is pregnant with their first child. What are the odds that their baby will have freckles? \_\_\_\_\_\_\_\_ %

17. Mark and Melissa have three boys. Melissa is pregnant with her fourth child. What are the odds that this baby is another boy? \_\_\_\_\_\_ %

18. In dragons, breathing fire (B) is dominant to breathing poison (b). If a purebred female fire breathing dragon mates with a heterozygous fire breathing male, what will be the ratios in the offspring:

Genotype Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phenotype Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19. Sally is highly susceptible to poison ivy (i), which is a recessive trait. She wants to know if her unborn daughter will also have the same recessive trait. Using the punnet squares below, work out which **2** genotypes her husband, George, could have that would result in her daughter showing the recessive trait.



George’s possible genotypes: \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_

George’s possible phenotypes: \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_

20. If George is a carrier of the recessive gene, what is the probability that their daughter will be highly susceptible to poison ivy? \_\_\_\_\_\_\_\_\_