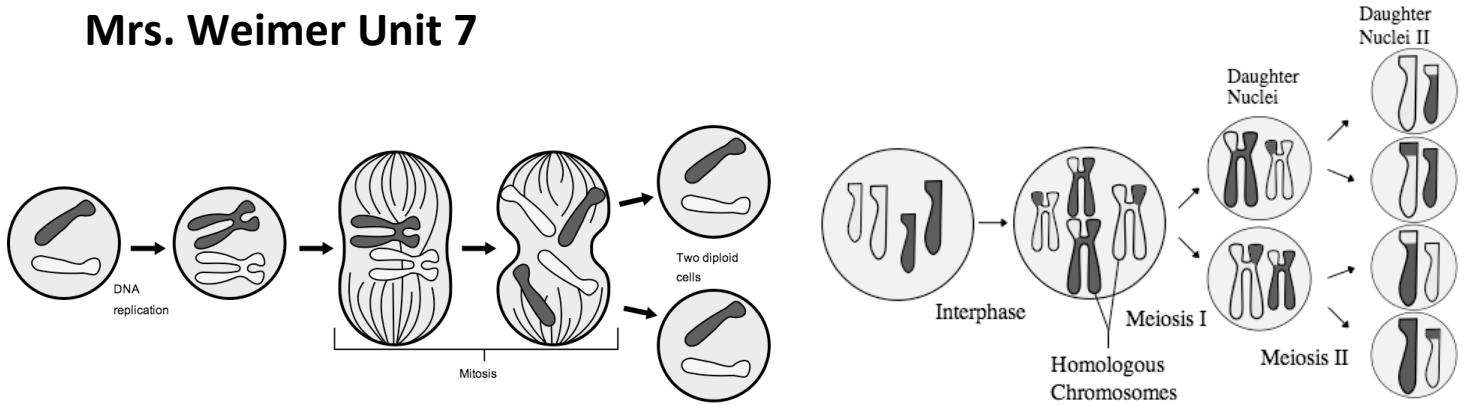


NAME _____ HW-Compare & Contrast Mitosis & Meiosis
Mrs. Weimer Unit 7



		MITOSIS	MEIOSIS
1	Function		
2	Type of cells that undergo this process		
3	Location in Body		
4	Number of Daughter Cells Produced		
5	Change in Chromosome Number		
6	Number of Divisions in the Nucleus		

7	Difference in DNA Between Parent Cell & Daughter Cells		
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Mitosis & Meiosis: Thinking Scientifically

It takes 15 minutes for certain embryo cells to divide. How many cells would be produced from one cell after four hours? *Hint:* Start with one cell at time zero, so after 15 minutes you would have 2 cells, etc.

Answer:

Show your work:

Look at the body cell in figure 1 below to answer the questions.

- 1) How many chromosomes are in the body cell of the organism?
- 2) How many chromosomes would be in each gamete?
- 3) How many chromosomes would be in the fertilized egg of this gamete?
- 4) How many chromosomes would come from each parent?
- 5) Will every gamete contain identical chromosomes? Explain.



Figure 1: Example Cell

Fill in the blanks based on your knowledge of mitosis and meiosis.

1. A human has 46 chromosomes in each body cell. How many chromosomes would be found in its daughter cells after mitosis?
2. A yeast cell has 32 chromosomes. How many chromosomes would be found in its daughter cells after meiosis?
3. A fruit fly's gametes have ___ chromosomes, because its body cells have 4 chromosomes.
4. A kangaroo's somatic cells have 12 chromosomes, so that means its sex cells have ___ chromosomes.
5. If cabbage plant has 9 chromosomes in its reproductive cells, then it means that it has 18 chromosomes in its _____ cells.
6. A fern has 600 chromosomes in its gamete cells. How many chromosomes would be found in its regular body cells? _____

Bikini Bottom Genetics

Name _____

Scientists at Bikini Bottoms have been investigating the genetic makeup of the organisms in this community. Use the information provided and your knowledge of genetics to answer each question.

1. For each genotype below, indicate whether it is a heterozygous (He) OR homozygous (Ho).

TT _____ Bb _____ DD _____ Ff _____ tt _____ dd _____
 Dd _____ ff _____ Tt _____ bb _____ BB _____ FF _____

Which of the genotypes in #1 would be considered purebred? _____

Which of the genotypes in #1 would be hybrids? _____

2. Determine the phenotype for each genotype using the information provided about SpongeBob.

Yellow body color is dominant to blue.

YY _____ Yy _____ yy _____

Square shape is dominant to round.

SS _____ Ss _____ ss _____

3. For each phenotype, give the genotypes that are possible for Patrick.

A tall head (T) is dominant to short (t). Tall = _____ Short = _____

Pink body color (P) is dominant to yellow (p). Pink body = _____ Yellow body = _____

4. SpongeBob SquarePants recently met SpongeSusie Roundpants at a dance. SpongeBob is heterozygous for his square shape, but SpongeSusie is round. Create a Punnett square to show the possibilities that would result if SpongeBob and SpongeSusie had children. HINT: Read question #2!

A. List the possible genotypes and phenotypes for their children.

B. What are the chances of a child with a square shape? ____ out of ____ or ____%

C. What are the chances of a child with a round shape? ____ out of ____ or ____%

5. Patrick met Patti at the dance. Both of them are heterozygous for their pink body color, which is dominant over a yellow body color. Create a Punnett square to show the possibilities that would result if Patrick and Patti had children. HINT: Read question #3!

A. List the possible genotypes and phenotypes for their children.

B. What are the chances of a child with a pink body? ____ out of ____ or ____%

C. What are the chances of a child with a yellow body? ____ out of ____ or ____%

6. Everyone in Squidward's family has light blue skin, which is the dominant trait for body color in his hometown of Squid Valley. His family brags that they are a "purebred" line. He recently married a nice girl who has light green skin, which is a recessive trait. Create a Punnett square to show the possibilities that would result if Squidward and his new bride had children. Use B to represent the dominant gene and b to represent the recessive gene.

- A. List the possible genotypes and phenotypes for their children.
- B. What are the chances of a child with light blue skin? ____%
- C. What are the chances of a child with light green skin? ____%
- D. Would Squidward's children still be considered purebreds? Explain!

7. Assume that one of Squidward's sons, who is heterozygous for the light blue body color, married a girl that was also heterozygous. Create a Punnett square to show the possibilities that would result if they had children.

- A. List the possible genotypes and phenotypes for their children.
- B. What are the chances of a child with light blue skin? ____%
- C. What are the chances of a child with light green skin? ____%

8. Mr. Krabbs and his wife recently had a Lil' Krabby, but it has not been a happy occasion for them. Mrs. Krabbs has been upset since she first saw her new baby who had short eyeballs. She claims that the hospital goofed and mixed up her baby with someone else's baby. Mr. Krabbs is homozygous for his tall eyeballs, while his wife is heterozygous for her tall eyeballs. Some members of her family have short eyes, which is the recessive trait. Create a Punnett square using T for the dominant gene and t for the recessive one.

- A. List the possible genotypes and phenotypes for their children.
- B. Did the hospital make a mistake? Explain your answer.