

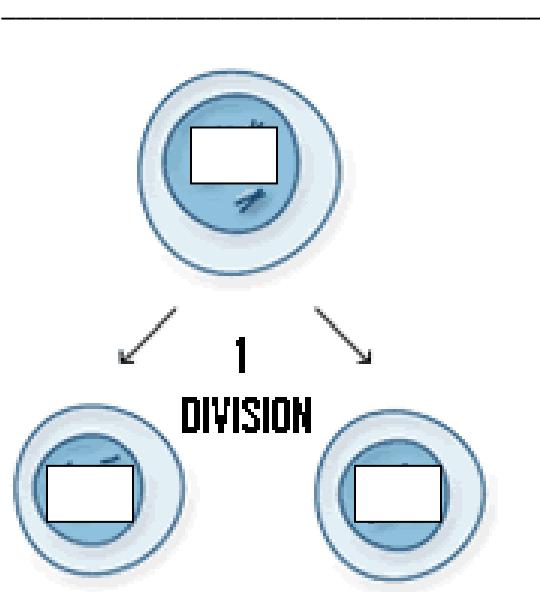
## Unit #6 Genetics Test Review

### Part I: Vocabulary (Some words will be used more than once!)

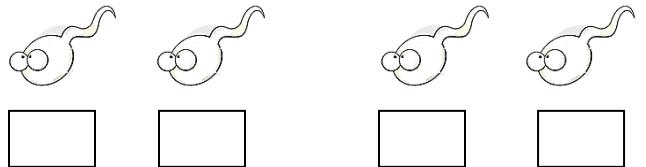
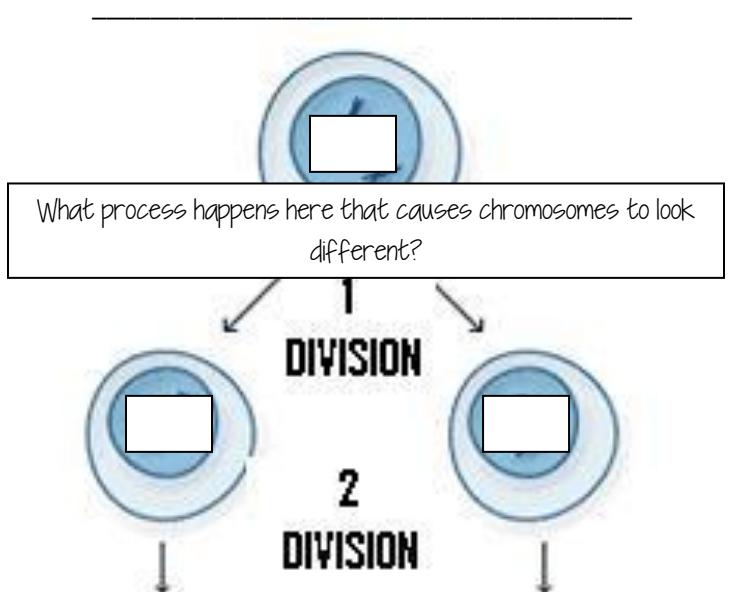
		Word Bank
1.	_____ A picture of an organism's paired chromosomes.	a) Diploid
2.	_____ The first 22 pairs of chromosomes.	b) Haploid
3.	_____ The full, paired up, number of chromosomes in a cell (ex: $2n$ )	c) Gamete
4.	_____ A "family tree" that can be used to trace a trait through a family.	d) Somatic
5.	_____ A genotype that has two of the SAME alleles. (ex: TT or tt).	e) Karyotype
6.	_____ The passing of traits from parents to offspring.	f) Pedigree
7.	_____ Meiosis event in which chromosomes "swap parts" with each other to create genetic variability.	g) Homozygous
8.	_____ A gardening monk who work with pea plants, also known as the Father of Genetics.	h) Heterozygous
9.	_____ A trait that is only carried on the X chromosome.	i) Crossing Over
10.	_____ Term that means "body cell".	j) Mendel
11.	_____ The unpaired, single chromosome number in a cell (ex: n)	k) Sex-linked Trait
12.	_____ XX or XY	l) Polygenic Trait
13.	_____ Hemophilia, Color Blindness, & Balding, for example.	m) Autosomes
14.	_____ Egg and Sperm	n) Sex Chromosomes
15.	_____ A genotype that has two DIFFERENT alleles (ex: Tt)	o) Allele
16.	_____ A trait that is carried on several genes and therefore has a wide range of possible outcomes.	p) Traits
17.	_____ An individual's options for a gene (ex: blue, brown, green, hazel eye color)	q) Heredity
18.	_____ Hair Color, Skin Color, Eye Color, Height, for example.	
19.	_____ The physical expression of a genotype.	
20.	_____ The last pair of chromosomes on a karyotype	

## Part 2: Mitosis Vs. Meiosis

In the small boxes below, put the number of chromosomes present in each cell, then answer the questions.



Are these two daughter cells identical to each other? \_\_\_\_\_



Are these cells identical to each other? \_\_\_\_\_

How many cells are produced at the end of mitosis? \_\_\_\_\_

How many chromosomes are in your cell at the beginning of mitosis? \_\_\_\_\_

How many chromosomes are in your cell at the end of mitosis? \_\_\_\_\_

How many cells are produced at the end of meiosis? \_\_\_\_\_

How many chromosomes are in your cell at the beginning of meiosis? \_\_\_\_\_

How many chromosomes are in your cell at the end of meiosis? \_\_\_\_\_

How many cell divisions occur in mitosis? \_\_\_\_\_

How many cell divisions occur in meiosis? \_\_\_\_\_

What type of cell is produced in mitosis? \_\_\_\_\_

What type of cell is produced in meiosis? \_\_\_\_\_

Which form of cell division above produces genetic variability? \_\_\_\_\_

### Part 3: Punnett Squares

Jack and his wife Lori have three daughters. Lori is currently pregnant and the family is hoping for a son. What is the probability that Lori will give birth to a son? \_\_\_\_\_

Hemophilia is a dominant sex-linked trait. A woman who has hemophilia marries a man who does not have hemophilia. (Use the letter H)

What is the woman's genotype? \_\_\_\_\_

What is the man's genotype? \_\_\_\_\_

What is the genotypic ratio of their offspring? \_\_\_\_\_

What is the phenotypic ratio of their offspring? \_\_\_\_\_


Explain why males are more likely to have a sex-linked trait.

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Sickle cell anemia is a recessive disorder which affects the shape of the red blood cell. Jackie is a carrier of sickle cell anemia and her husband Bob does not have sickle cell anemia. (Use the letter A)

What is Jackie's genotype? \_\_\_\_\_

What is Bob's genotype? \_\_\_\_\_

What is the genotypic ratio of their offspring? \_\_\_\_\_

What is the phenotypic ratio of their offspring? \_\_\_\_\_


Bubba was born last week at Wake Med in Cary. At the hospital, Billy and Bucky both showed up with flowers for Belinda, Bubba's mother. Both men claim that Bubba is their baby! A blood test will need to be done to determine who is Bubba's daddy!! Use the information to fill in the table and complete the punnett square.

Person	Blood Type	Possible Genotype(s)
Bubba	O blood	
Belinda	B blood	
Billy	AB blood	
Bucky	A blood	


\_\_\_\_\_, YOU ARE THE FATHER!

## Part 4: Dominance

What is incomplete dominance? \_\_\_\_\_

What is codominance? \_\_\_\_\_

## Part 5: Blood Types

List the possible genotypes for each blood type

Blood Phenotype	Blood Genotype(s)	Antigens Present	Antibodies Present	Can donate to	Can receive from:
A	I <sup>A</sup> I <sup>A</sup> or I <sup>A</sup> i	I <sup>A</sup>	I <sup>B</sup>	A, AB, O	A, B, AB, O
B	I <sup>B</sup> I <sup>B</sup> or I <sup>B</sup> i	I <sup>B</sup>	I <sup>A</sup>	B, AB, O	B, A, AB, O
AB	I <sup>A</sup> I <sup>B</sup>	I <sup>A</sup> and I <sup>B</sup>	None	A, B, AB, O	A, B, AB, O
O	i i	None	I <sup>A</sup> and I <sup>B</sup>	B, AB, O	B, A, AB, O

A woman, who is homozygous for type A blood marries a man who is type AB blood.

What is the chance they will have a child with type O blood? \_\_\_\_\_

Can they have a child who is homozygous for type A blood? \_\_\_\_\_


Suzy wants to give blood but the blood bank is only accepting type O blood. She knows her father is heterozygous for type A blood type and her mother is type O blood type.

Can Suzy give blood at the blood bank? \_\_\_\_\_


## Part 6: Genetic Disorders

Huntington's disease is a dominant genetic disorder. A man who is affected by Huntington's disease marries a woman who is not affected. (Use the letter H)

What is the woman's genotype? \_\_\_\_\_


What is the man's genotype? \_\_\_\_\_

What is the probably they will have a child with Huntington's Disease? \_\_\_\_\_


What information can be determine by looking at a karyotype? \_\_\_\_\_

Put a check next to each genetic disorder that you can identify using a karyotype.

Hemophilia

Colorblindness

Turner Syndrome

Down Syndrome

Sickle Cell Anemia

Klinefelter's

Cystic Fibrosis

**Part 7: Pedigrees** Using the genotypes HH, Hh and hh, write the genotypes for each person on the pedigree.

Is the pedigree showing a dominant or recessive trait? \_\_\_\_\_

Explain how you got your answer to the question above  
\_\_\_\_\_

What is the genotype of Individual I-2? \_\_\_\_\_

What is the genotype of Individual III-1? \_\_\_\_\_

Is the pedigree showing a dominant or recessive trait? \_\_\_\_\_

Explain how you got your answer to the question above  
\_\_\_\_\_

What is the genotype of Individual I-3? \_\_\_\_\_

What is the genotype of Individual II-6? \_\_\_\_\_

What is the probability of Individuals II-1 and II-2 having a child with the traits? \_\_\_\_\_

This is a sex-linked pedigree.

Explain what that means:  
\_\_\_\_\_

What do you notice about who is afflicted with the disorder?  
\_\_\_\_\_

Fill in the genotypes on this pedigree:

