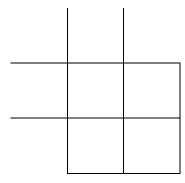
Extra Review Practice – Biology Test Genetics

Mendel fill in the blanks:

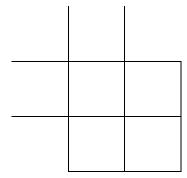
Mendel was an Austrian	monk who studied gen	etics primarily u	sing plants.	He started with plants
that produced offspring	with only one from of a	trait; these wer	e called true or	breeding plants.
Through breeding two p	oure plants with differen	t phenotypes, li	ke tall and short, h	e discovered how
traits could skip and how alleles could get masked.				
One of the things Mend	el discovered was the La	aw of	. This	law states that alleles
of a gene separate from				
eachc			my one unere for a	particular gene is in
Another thing Mendel n	oticed is that when he	crossed peas wit	h two contrasting f	forms of the trait, for
example tall vs. short an				
inheritance of the other				
This law states that the				ait of another, for
example his tall pea plar	nts didn't always have to	o have round see	eds also.	
Generations	Pea	Recessive	Pure	
	Meiosis	Gamete	Independ	lent Assortment
Monohybrid Crosses an	d Basics			
Fill in the blanks below:				
Every person has ch	romosomes that contai	n many genes		are different versions
of a gene and based on	which ones you inherit	certain traits wil	be expressed. The	e of an
organism represents its'	genetic composition (tl	ne alleles you ac	tually inherit), the	of an
organism reflects all the				
for each trait, if you hav				
recessive alleles you are	!	ر if you have tw	o different alleles y	ou are
In s	simple genetic problems	someone who i	s heterozygous wil	I show the
trait beca	ause it masks the recess	ive allele. When	studying the inher	ritance of alleles a
cross inv	olves one trait or gene,	while a	cross involv	es studying two genes
or traits at the same tim	e.			
Homozygous Dominant	Alleles		Phenotype	Heterozygous
Dihybrid	Homozygous Re	ecessive	Genotype	Dominant
Monohybrid	46			

Create monohybrid crosses that study height in pea plants. Tall pea plants (T) are dominant to short (t) pea plants.

1. Set up a cross between two heterozygous parents. Show the Punnett square below then answer the following questions:



- a. What is the genotypic ratio:
- b. What is the phenotypic ratio:
- c. What percent chance will the offspring be tall?
- d. What percent chance would the offspring be homozygous dominant?
- e. What percent change would the offspring be heterozygous?
- 2. Set up a cross between a heterozygous parent and a homozygous recessive parent. Show the Punnett square below then answer the following questions:



- a. What is the genotypic ratio:
- b. What is the phenotypic ratio:
- c. What percent chance will the offspring be tall?
- d. What percent chance would the offspring be homozygous dominant?
- e. How many different phenotypes are possible between these parents?
- f. How many different genotypes are possible between these parents?

3. If two parents are carriers for a disorder, what does that mean about their genotype? What does it mean about the disorder? What is the likelihood that even though they don't express the disorder their child would?

Dihybrid Crosses and Exceptions to Mendel

- 1. When creating a dihybrid cross you are actually studying two traits at once, however offspring will only inherit one allele from each parent. If a parent has the following genotype, what are the different combinations of that could be passed on to their offspring: DdGg
- 2. If tall is dominant (T) over short (t) and Yellow (Y) is dominant over green (y), examine the following cross:

Parental Generation: Male - TtYy x Female - TtYy

	TY	Ту	tΥ	ty
TY				
Ту	А			
tΥ			В	
ty				

- a. What do the parents look like?
- b. What is the phenotypic ratio of the offspring?
- c. What is the genotype of the box with an "A" in it?
- d. What is the genotype of the box with a "B" in it?
- 3. Match the following using the word bank below:
 - a. When organisms who are heterozygous show a blended phenotype the trait is
 - b. When organisms who are heterozygous show both forms of a trait
 - c. Controlled by multiple alleles in humans
 - d. Color blindness and hemophilia are caused by genes on the X chromosome, so they are
 - e. Sex linked traits are more likely to be found in what gender
 - f. Carriers are people who have this genotype
 - g. If someone is a carrier for a disease, the disease must be
 - h. When more than one gene controls a trait it is

Co-dominant	Blood type	Sex linked	Polygenetic
Heterozygous	Recessive	Male	Incomplete Dominant

Mutations

- 1. Mark the following as true or false:
 - a. Mutations can be inherited, environmentally caused or happen during replication
 - b. Everyone has lots of hidden recessive mutations that are not always expressed or harmful
 - c. Cells have efficient systems for correcting errors to prevent mutations (think G1 and G2 check points in mitosis)
 - d. Hemophilia, cystic fibrosis and sickle cell anemia are all caused by genes that code for defective proteins

Pedigrees

- 1. If a trait shows up equally in males and females on a pedigree that means it is most likely what type of trait?
- 2. If a trait shows up more often in males than in females on a pedigree that means it is most likely what type of trait?
- 3. If everyone who shows a trait on a pedigree has a parent who also shows it, it is most likely what type of trait?
- 4. If a child has a trait on a pedigree but their parents don't or are only half shaded in, it must be what type of trait?
- 5. In a pedigree where a circle of square is half shaded on that person is a ______, and if it is fully shaded in that person actually _____ the disorder or trait.
- 6. Don't forget to practice using the pedigree on the review sheet!

<u>Vocabulary</u>	
	This is the study of heredity, aka the unit we are studying
	This is the passing of traits from parents to offspring
	This is a segment of DNA that carries the instructions for a specific gene/protein

 A change in a gene due to damage or being copied incorrectly
 This is the process of creating sex cells, it is also when alleles separate to be passed on to offspring