Assignment:____

Name: PILARZ-KEY Hour:_____

# Genetics – Review Sheet

## Vocabulary

*make sure you know/can use all these terms!)

| | | |
|---|---|---|
| Meiosis | Hybrid | Heterozygous |
| Genetics | Phenotype | Gene |
| Heredity | Genotype | Homologous Chromosomes |
| Pure breeding | Homozygous | Mutation |

## Monohybrid Crosses

1. What is the difference between a genotype and phenotype?
   genotype - genetic combination of an organism (letters/genes)
   phenotype - is what gets expressed, what it physically looks like
2. What is the difference between being heterozygous and homozygous?
   heterozygous - alleles are different, Tt
   homozygous - alleles are the same, TT or tt
3. In the heterozygous genotype, which allele masks the other?
   Tt, dominant masks the recessive
4. What does it mean to be a carrier?
   heterozygous for a recessive trait, they don't have it but could pass it on
5. If hairy toes is dominant to un-hairy toes, show a Punnett square below that shows the cross between two heterozygous parents: T t Tt

| | T | t |
|---|---|---|
| T | TT | Tt |
| t | Tt | tt |

   a. What is the genotypic (letters) ratio of the cross? 1:2:1
   b. What is the phenotypic (look like) ratio of the cross? 3:1
6. Use the same traits from #4, but cross parents who are heterozygous and homozygous recessive: Tt tt

| | t | t |
|---|---|---|
| T | Tt | Tt |
| t | tt | tt |

   a. What is the genotypic ratio of the cross? 2:2 or 1:1
   b. What is the phenotypic ratio of the cross? 2:2 or 1:1
7. Use the same traits from #4, but cross parents who are heterozygous and homozygous dominant: Tt TT

| | T | T |
|---|---|---|
| T | TT | TT |
| t | Tt | Tt |

   a. What is the genotypic ratio of the cross? 2:2
   b. What is the phenotypic ratio of the cross? 4:0

## Dihybrid Crosses (25-29)

1. What is the difference between a monohybrid and dihybrid cross?
   mono - studies 1 trait di - studies 2 traits 
2. If a parent has the following genotype, GgTt, how many different combinations of alleles could be present in its gametes?
   4, GT, Gt, gT, gt

If A is a dominant allele for blue eyes and a is recessive allele for green eyes, B is the dominant allele for tall and b Is the recessive allele for short, examine the following cross.

AaBb

| AaBb | AB | Ab | aB | ab |
|---|---|---|---|---|
| AB | | | | |
| Ab | | AAbb | | |
| aB | | | | X. aaBb |
| ab | AaBb | | | |

3. Describe the phenotype of the parents in the cross.
   AaBb... so Blue eyes and Tall
4. What is the phenotypic ratio of the offspring in the cross?
   9:3:3:1
5. What is the probability of having blue eyed short child?
   dominant recessive
   3/16 19%

**Mendel's Experiments**

1. Describe both of Mendel's Laws.
   Law of Segregation - alleles seperate during meiosis and you only inherit one allele from each parent
   Law of independent Assortment - the inheritance of one trait does not determine the inheritance of another

**Exceptions to Mendel**

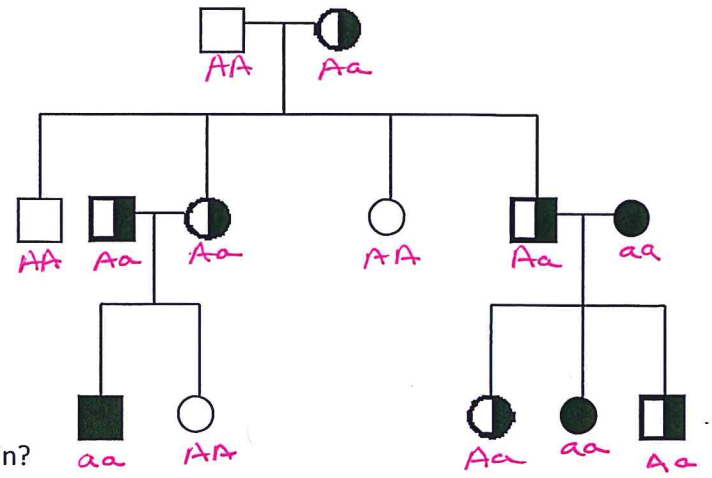
1. Describe what is different about the following crosses and list an example of each:
   a. Co-dominant the heterozygous individual expresses both traits... Red + white Parents... child who is red with white dots
   b. Incomplete Dominant the heterozygous individual expresses a blend of the two traits.. red + white parent = pink
   c. Multiple Alleles more than two alleles exist for the gene,.. blood types ($I^A, I^B, i$)
   d. Polygenetic more than one gene controls the trait... skin color height
   e. Sex-linked travels on the X or Y chromosomes... colorblindness

2. Who is more likely to have a sex-linked trait and why?
   males... they have XY chromosomes so if there is a recessive trait on one they automatically express it

**Mutations**

1. How can you "get" mutations?
   inherit, error in replication, environment
2. What kind of effect could mutations have on a person?
   helpful, harmful, no effect

**Pedigree**




1. How many generations are show? 3
2. Is this autosomal or sex-linked? autosomal
3. Is this dominant or recessive? recessive
4. What does it mean if the circles/squares are half shaded in?
5. What does it mean if the circles/squares are totally shaded in?
   they have/Show the trait
6. Use the letter A to fill in the genotypes of the pedigree.

They are carriers, but don't have it, they are heterozygous and could pass it to their offspring