

GENETICS REVIEW SHEET

Vocabulary: Define these terms

Phenotype

Genotype

Heredity

Dominant

Recessive

Monohybrid Cross

Dihybrid Cross

Complete Dominance

Incomplete Dominance

Codominance

Sex linked Traits

Heterozygous

Homozygous

Law of segregation

Allele

Gene

Law of independent assortment

Pedigree

Punnett Square

In each blank indicate whether the genotype is heterozygous (HE) or Homozygous dominant (HOD) Homozygous Recessive (HOS)

Dd _____

ff _____

TT _____

Bb _____

tt _____

DD _____

Genetics Problems:

COMPLETE DOMINANCE: One _____ is completely _____ over the other.

In pea plants, green (G) is dominant to yellow (g).

- a. A homozygous yellow plant would have what genes for this trait? _____
- b. What is the phenotype for a plant with the genotype Gg? _____
- c. If a homozygous green plant is crossed with a homozygous yellow plant, what genotypes and phenotypes would you expect the F1 generation to have? _____

A cross between two heterozygous parents, where Blue (B) is dominant to white (b), what are the phenotypic and genotypic ratios of the F1 generation?

Phenotypic Ratio:

Genotypic Ratio:

Cross a homozygous dominant parent with a heterozygous parent. Use genotypes and phenotypes from above.

Phenotypic Ratio:

Genotypic Ratio:

Codominance:

Occurs when both _____ for a gene are expressed in a _____ offspring.

In shorthorn cattle, when a red bull (RR) is crossed with a white cow (WW), all the offspring are roan—a spotted, red and white or milky red color.

- a. What are the chances of the offspring resulting in red cattle, when a roan bull is crossed with a roan cow?

Phenotypic Ratio:

Genotypic Ratio:

Mr. A – Type A	Mr. B – Type B	Baby #1 – Type O
Mrs. A – Type AB	Mrs. B – Type AB	Baby #2 – Type AB

- a. Which baby belongs to Mr. and Mrs. A? _____
- b. Which baby belongs to Mr. and Mrs. B? _____

Incomplete Dominance occurs when the _____ shows a _____ of both traits.

In humans, straight (H) hair and curly (h) hair are incompletely dominant traits.

Cross a straight haired male and curly haired female.

Phenotypic Ratio:

Genotypic Ratio:

Cross a wavy haired man and curly haired woman.

Phenotypic Ratio:

Genotypic Ratio:

Dihybrid Cross: Cross involving _____ traits.

In pea plants, the allele for round seeds (R) is dominant over wrinkled seeds (r), and the allele for yellow seeds (Y) is dominant over the allele for green seeds (y).

a. What are the results of a cross between two heterozygous round, yellow pea plants?

Cross: _____ X _____

Phenotypic Ratio:

b. what are the results when a homozygous round and Heterozygous yellow plant is crossed with a Heterozygous Round and Yellow plant.

Cross: _____ X _____

Phenotypic Ratio:

Genotypic Ratio:

X-Linked Traits: Genes found on the _____ chromosome.

Hemophilia is an X-linked trait. Normal clotting (H) is dominant over hemophilia (h). a. A heterozygous normal (carrier) female is crossed with a male who has hemophilia. What are the results of their offspring?

Phenotypic Ratio:

Genotypic Ratio:

Cross a normal male with a Hemophiliac woman.

Phenotypic Ratio:

Genotypic Ratio:

Cross a normal male and a carrier female.

Phenotypic Ratio:

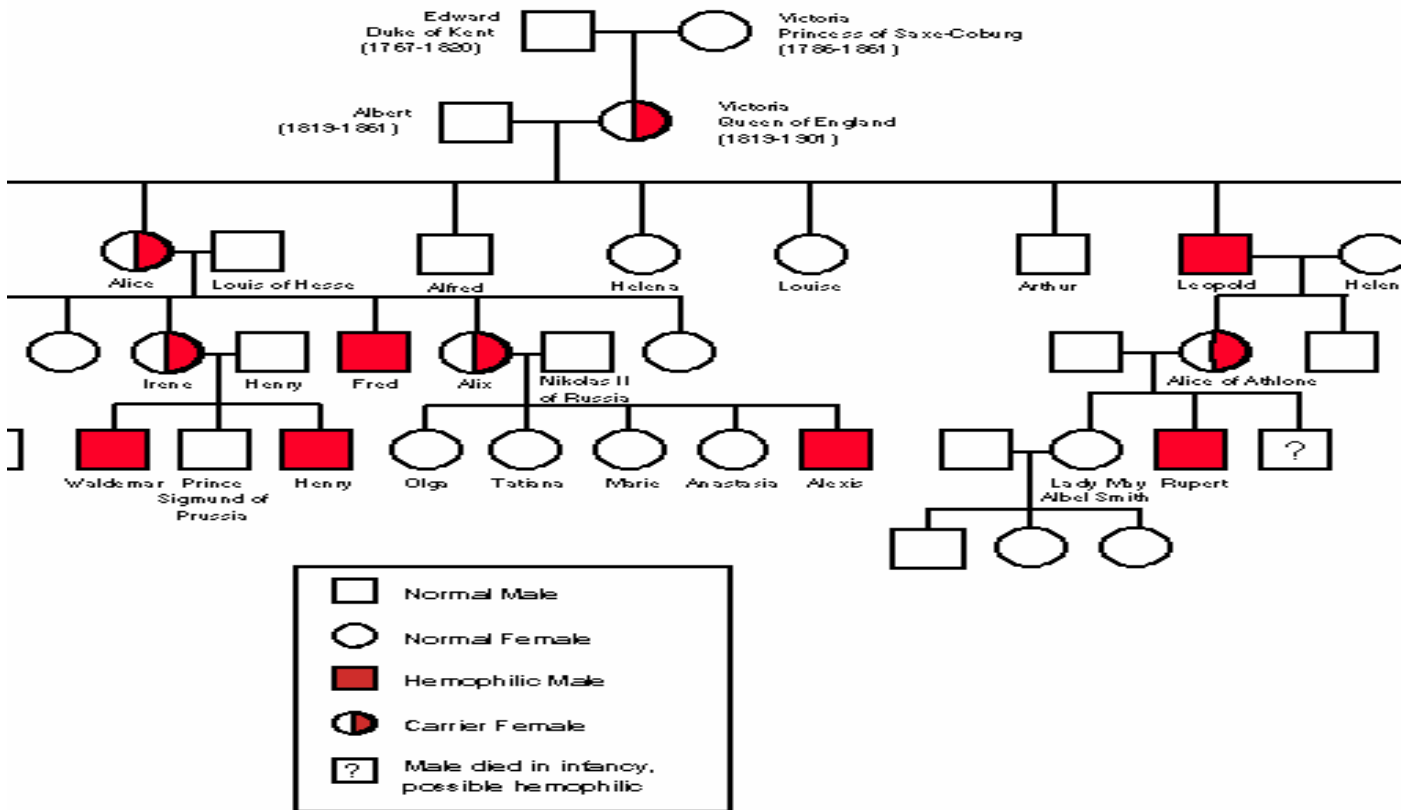
Genotypic Ratio:

Pedigree

A blue-eyed man (1) whose parents were brown eyed (2 & 3), marries a brown eyed woman (4), whose father was brown eyed (5) and whose mother (6) was blue eyed. They have one female child who is blue eyed (7). Blue eyes are recessive.

- Make a pedigree** chart based on the above information.
- Label the genotypes** of the individuals in the chart.

Use the Pedigree below to answer the following questions:



- How are Olga and Louise related? _____
- How are Fred and Prince Sigmund related? _____
- By looking at the pedigree, what do you think the mode of inheritance is? What clues are there to help you see?

- What is Rupert's Genotype? (Remember to use X's and Y's!) _____
- What is Alice of Athlone's genotype? _____
- What is the chance that Alice's second son had hemophilia? (draw a punnett square)