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Name _____ Date _____

Genetics Vocabulary Review

Match the correct term to the definitions below.

| | | |
|--------------|-----------|-------------------------------|
| genotype | phenotype | Law of Segregation |
| homozygous | allele | Law of Independent Assortment |
| heterozygous | gene | heredity |
| dominant | recessive | dihybrid |

- _____ Mendel's conclusion that during gamete formation, each gamete only gets 1 allele for each trait
- _____ Physical characteristic; like flower color
- _____ Inheritance of traits from generation to generation
- _____ Different versions of a gene
- _____ Organism with 2 different alleles
- _____ Trait that overpowers the other and will be expressed if the allele is present
- _____ Mendel's conclusion that traits separate independently of each other
- _____ Genetic makeup; Gg
- _____ Section of DNA on a chromosome
- _____ Organism with 2 of the same alleles
- _____ Trait that can only be expressed if an organism has two copies of the gene
- _____ Cross involving two traits, like flower color and pea color at the same time

BONUS:

_____ What is another word for homozygous?

_____ What is another word for heterozygous?

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BONUS:

_____ What is another word for homozygous?

_____ What is another word for heterozygous?

Name _____ Date _____

Monohybrid Cross Bellringer

Mark out each genotype that does not follow the allele rules.

Ab CC Gg bB rr
2G HW Tt yy eE

Circle each genotype that is homozygous. Underline the heterozygous genotypes.

AA Bb cc Dd Ee
ff GG Hh ii JJ

Write the phenotypes for the genotypes below.

Yellow peas (Y) are dominant to green peas (y).

YY _____ Yy _____ yy _____

Write the genotypes for the phenotypes below.

Homozygous yellow peas _____ Green peas _____
Hybrid yellow peas _____ Heterozygous peas _____
Homozygous dominant peas _____ Recessive peas _____

Create a Punnett square to show the following cross: A pea plant that is heterozygous for seed color is crossed with a green seeded pea plant.

Write the possible genotypes:

Write the possible phenotypes

What is the chance of a yellow seeded pea plant?

Name _____ Date _____

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Name _____ Date _____

Mendel's Experiments Bellringer

Mendel experimented on pea plants. He noticed that the plants had _____ (#) versions of several traits. For example, the plant could be tall or _____, the peas could be green or _____, and the flowers could be purple or _____.

Mendel crossed purebred (or _____) plants with different traits. This was the _____ (parent) generation.

All the offspring of the _____ (children) generation had only 1 of the traits. For example, all the plants were _____, had _____ peas, and the flowers were _____. This was because this trait is _____ over the other trait.

Mendel let this generation self-pollinate. In the next generation, the _____ (grandchild) generation, $\frac{3}{4}$ of the offspring had the same traits as the parents, but in $\frac{1}{4}$ of the offspring the missing trait reappeared. This missing trait is the _____ trait. It reappeared because the offspring inherited _____ (#) recessive alleles, or 1 from each parent.

Practice: Show the cross between a purebred tall and short plant.

What is the genotype of all the F_1 offspring? _____

What is the phenotype of all the F_1 offspring? _____

Show the cross between 2 of the offspring from the previous cross.

What are the possible genotypes of the F_2 generation? _____ or _____ or _____

What are the possible phenotypes of the F_2 generation? _____ or _____

Name _____ Date _____

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Show the cross between 2 of the offspring from the previous cross.

What are the possible genotypes of the F_2 generation? _____ or _____ or _____

What are the possible phenotypes of the F_2 generation? _____ or _____

Name _____ Date _____

Dihybrid Cross Bellringer

Write the phenotypes for the genotypes below:

Yellow peas (Y) are dominant to green peas (y) and round seeds (R) are dominant to wrinkled seeds (r).

YYRr _____ yyRr _____

Yyrr _____ yyRR _____

YYRR _____ yyrr _____

Write the genotypes for the phenotypes below:

Homozygous yellow & heterozygous round _____

Hybrid yellow & wrinkled _____

Purebred yellow & round _____

Green & wrinkled _____

Fill out the Punnett square below to answer the questions:

| | YR | Yr | yR | yr |
|----|----|----|----|----|
| yR | | | | |
| yr | | | | |
| yR | | | | |
| yr | | | | |

What is the chance of a plant with yellow & round peas? _____

What is the chance of a plant with both recessive traits? _____

What are the genotypes of parent plants? _____ & _____

What do the combination of alleles on the side of a Punnett square represent?

Name _____ Date _____

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|----|----|----|----|----|
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| yr | | | | |
| yR | | | | |
| yr | | | | |

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Name _____ Date _____

Incomplete Dominance and Codominance Bellringer

Write the phenotypes for the following genotypes:

In snapdragons, flowers can be red (R) or white (W). Crossing a red and white snapdragon will result in pink snapdragons.

RR _____ WW _____ RW _____

What type of inheritance is this an example of? _____

What percentage of the offspring would be pink in a cross between a red and a pink flower? _____

In cows, coat color can be red (R) or white (W). Crossing a red and white cow will result in a roan coat (the cow looks spotted).

RR _____ WW _____ RW _____

What type of inheritance is this an example of? _____

What percentage of the offspring would be roan in a cross between 2 roan cows? _____

Answer the following questions about fuzzles: Fuzzles are creatures that can have yellow fur or blue fur.

Write the genotypes for each phenotype:

Blue _____ Yellow _____

If fur color in fuzzles is incompletely dominant, what color fur would a heterozygous fuzzle have? _____

If fur color in fuzzles is codominant, what color fur would a heterozygous fuzzle have? _____

Find another real-life example of each type of inheritance:

Incomplete dominance: _____

Codominance: _____

Name _____ Date _____

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Name _____ Date _____

Multiple Alleles & Sex-Linked Traits Bellringer

Write the genotypes for the following phenotypes:

In humans, blood type is controlled by A, B, or O alleles. A & B are codominant, O is recessive.

O blood _____ heterozygous A blood _____

AB blood _____ homozygous B blood _____

In a family, 2 siblings have type A blood and 1 has type O blood. Dad also has type A blood. Mom's blood type is unknown. Use the Punnett square to show how it is possible for the 3 kids to have different blood types. Explain.

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| | |

Write the phenotype for the following genotypes:

In humans, baldness is a recessive trait controlled by a gene on the X chromosome.

$X^B X^b$ _____ $X^b Y$ _____ $X^b X^b$ _____

$X^B Y$ _____ $X^B X^B$ _____

If a carrier female and a bald man have children, what are the chances their daughters will go bald? _____ What are the chances their sons will go bald? _____

In cats, coat color is controlled by genes on the X chromosome. Cats can be black (X^B) or orange (X^R). Females with the genotype $X^B X^R$ have a calico or tortoiseshell coat. Males are usually only black or orange.

What chromosomal mutation would lead to a calico male? _____

Name _____ Date _____

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What chromosomal mutation would lead to a calico male? _____

Name _____ Date _____

Epistasis Bellringer

Red hair is an example of epistasis. Brown/blonde hair is caused by different amounts of eumelanin. This is actually a polygenic trait, but for now, we'll just pretend that brown is dominant (B) and blonde is recessive (b).

What are the 2 genotypes for brown hair? _____ or _____

What is the genotype of blonde hair? _____

Red hair is caused by pheomelanin. The production of pheomelanin is controlled by a separate gene, which is recessive. In order to have red pigment produced, an individual must have the genotype rr. This will result in pheomelanin also being produced, so the individuals will have red pigment, in addition to the brown pigment.

Write the genotypes of the following individuals:

Blonde and heterozygous for non-red _____

Hybrid brown and red _____ Blonde and red _____

Homozygous for brown and non-red _____

Practice problem: Show the cross of 2 individuals that are heterozygous for both traits. Cross: _____ x _____;

| | | | |
|--|--|--|--|
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What are the possible genotypes?

What are the possible phenotypes?

What are the chances of reddish hair?

Name _____ Date _____

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Write the genotypes of the following individuals:

Blonde and heterozygous for non-red _____

Hybrid brown and red _____ Blonde and red _____

Homozygous for brown and non-red _____

Practice problem: Show the cross of 2 individuals that are heterozygous for both traits. Cross: _____ x _____;

| | | | |
|--|--|--|--|
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What are the possible genotypes?

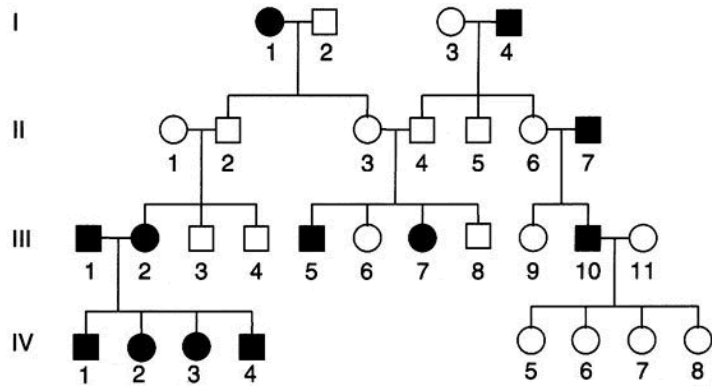
What are the possible phenotypes?

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Name _____ Date _____

Pedigree Chart Bellringer

The pedigree chart shows the inheritance of an autosomal recessive trait. **F** will be used to show the dominant allele and **f** for the recessive.



What is the relationship between individuals 1 & 2 in generation I?

What is the relationship between individuals 3 in generation I & 6 in generation II?

What is the relationship between individuals 3 & 6 in generation III?

What is the genotype of individual 4 in generation I? _____

Explain how you know. _____

What is the genotype of individual 1 in generation II? _____

Explain how you know. _____

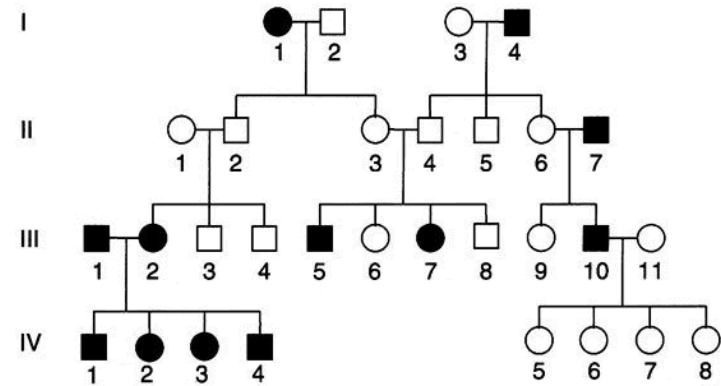
What are the genotypes of all of the children of 10 & 11 in generation III? _____ Explain how you know. _____

Is there any way to know the genotypes of individual 3 & 4 in generation III based on the information available? _____

Name _____ Date _____

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