

## Notes: Monohybrid Cross (One-Trait)

### Genetics:

Study of heredity.

### Heredity:

Transmission of characteristics from parent to offspring.

Genes: Sections of DNA that code for specific traits.

Traits: Specific characteristics that vary from one individual to another.

### Examples:

Hair Color  
Eye Color

Texture of Hair

Alleles: Different expressions of a particular trait.

### Examples:

Red Hair, Brown Hair

Blue Eyes, Brown Eyes

Curly Hair,  
Wavy Hair,  
Straight Hair

### Principle of Dominance:

Some alleles are dominant + others are recessive.

Dominant: An allele whose form of a trait

always shows up in an organism if the dominant allele is

present.

Ex.) Curly

\* written as capital letter

C = dominant = curly

Recessive: Allele whose trait only shows up when the

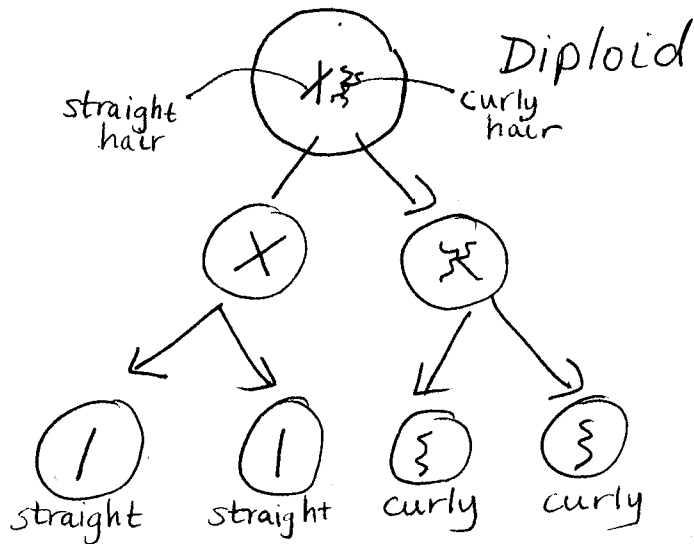
dominant allele is NOT present.

Ex.) Straight

c = recessive = straight

Segregation During Meiosis:

★ Separation of paired alleles



Genotype:

Genetic Makeup

Ex. | Hair texture curly vs. straight  
3 Genotypes: CC, Cc, cc

Phenotype:

Physical Characteristics  
Curly vs. Straight

CC = curly  
Cc = curly  
cc = straight

Homozygous: An organism with two identical alleles for a particular trait.

CC or cc

Heterozygous: An organism with two different alleles for a particular trait.

Cc

Punnett Square:

Diagram that shows possible gene combinations for offspring of genetic cross.

Background Information for Practice Problems:

- Bunnies
- Brown Fur Color = Dominant (B)
- White Fur Color = Recessive (b)
- Long Ears = Dominant (L)
- Short Ears = Recessive (l)
- White Whiskers = Dominant (W)
- Black Whiskers = Recessive (w)

Practice Problem #1:

Make a Punnett Square for a cross between a BB rabbit and a bb rabbit.

	B	B
b	Bb	Bb
b	Bb	Bb

all 4 result = Brown Fur

Practice Problem #2:

Cross a Ll rabbit with a Ll rabbit.

	L	l
L	LL	Ll
l	Ll	ll

3 = long  
1 = short

Practice Problem #3:

Cross a homozygous dominant white whiskered rabbit with a black whiskered rabbit.

	W	w
W	WW	Ww
w	Ww	ww

Practice Problem #4:

Cross two rabbits that are both heterozygous for brown fur.

	B	b
B	BB	Bb
b	Bb	bb

Genotype Ratio:

Cross two rabbits that are Ww and Ww. (White whiskered)

-What is the genotype ratio?

	W	w
W	WW	Ww
w	Ww	ww

G.R. = 1WW : 2Ww : 1ww

What is the genotype ratio for a cross between the following rabbits? Ll and ll?

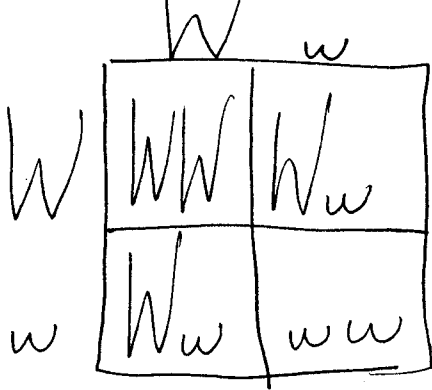
	L	l
L	Ll	ll
l	Ll	ll

G.R. = 0LL : 2Ll : 2ll

Phenotype Ratio:

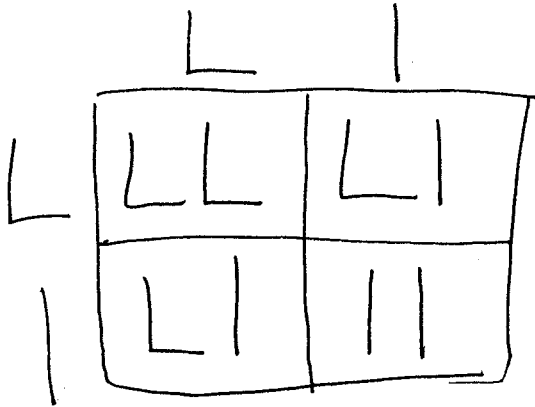
Cross two rabbits that are Ww and Ww (White whiskered)

-What is the phenotype ratio?



3 White Whiskers:  
1 Black Whiskers

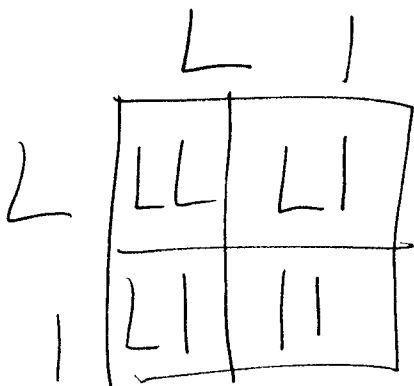
What is the phenotype ratio for a cross between the following rabbits? Ll and Ll



P.R. = 3 Long Ears:  
1 Short Ear

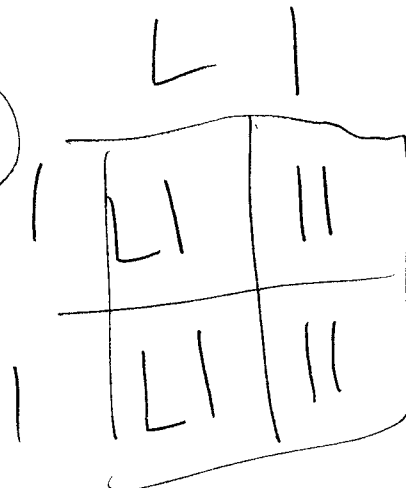
What are the odds of having a short-eared rabbit baby if both parents are heterozygous for long-ears? What if one parent was short-eared?

(a)



25%

(b)



50%

