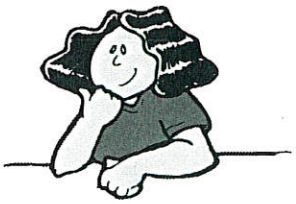
Name: Key

Genetics Practice Problems



1. For each genotype below, indicate whether it is heterozygous **(He)** or homozygous **(Ho)**

AA Ho	Ee He	Ii He	Mm He
Bb He	ff Ho	Jj He	nn Ho
Cc He	GG Ho	kk Ho	OO Ho
Dd He	HH Ho	Ll He	Pp He

2. For each of the **genotypes** below determine what **phenotypes** would be possible.

Purple flowers are dominant to white

PP Purple
Pp Purple
pp White

Brown eyes are dominant to blue

BB Brown
Bb Brown
bb blue

Round seeds are dominant to wrinkled

RR Round
Rr Round
rr wrinkled

Bobtails are recessive (to long tails)

TT Long
Tt Long
tt Bobtails

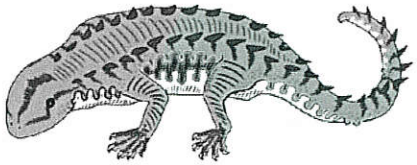
3. For each **phenotype** below, list the **genotypes** (remember to use the letter of the dominant trait)

Straight hair is dominant to curly

SS Ss straight
SS Ss straight
ss curly

Tail spikes are dominant to plain tails

SS Ss spikes
SS Ss spikes
ss plain



4. Set up the Punnet squares for each of the crosses listed below. **Round seeds are dominant to wrinkled.**

Rr x rr

	r	r
R	Rr	Rr
r	rr	rr

What percentage of the offspring will be round? 50%

Rr x Rr

	R	r
R	RR	Rr
r	Rr	rr

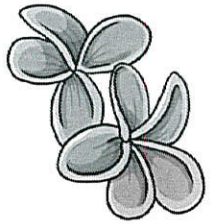
What percentage of the offspring will be round? 75%

RR x Rr

	R	r
R	RR	Rr
R	RR	Rr

What percentage of the offspring will be round? 100%

Practice with Crosses. Show all work!



5. A TT (tall) plant is crossed with a tt (short plant).

TT x tt

	t
T	Tt

What percentage of the offspring will be tall? 100%

6. Show the cross of a Tt plant and a Tt plant.

Tt x Tt

	T	t
T	TT	Tt
t	Tt	tt

What percentage of the offspring will be short? 25%

What percentage is tall? 75%

7. A heterozygous round seeded plant (Rr) is crossed with a homozygous round seeded plant (RR).

Rr x RR

	R	R
R	RR	RR
r	Rr	Rr

What percentage of the offspring will be homozygous (RR)? 50%

8. A homozygous round seeded plant is crossed with a homozygous wrinkled seeded plant. What are the genotypes of the parents?

RR x rr

	r
R	Rr

What percentage of the offspring will also be homozygous? 0%

What is the genotype of all of the offspring? Rr

9. **In pea plants purple flowers are dominant to white flowers.**

Two white flowered plants are crossed...

pp x pp

What percentage of their offspring will have white flowers? 100%

10. A white flowered plant is crossed with a plant that is heterozygous for the trait.

pp x Pp

	p	p
P	Pp	Pp
p	pp	pp

What percentage of the offspring will have purple flowers? 50%

11. Two plants, both heterozygous for the gene that controls flower color are crossed.

Pp x Pp

	P	p
P	PP	Pp
p	Pp	pp

What percentage of their offspring will have purple flowers? 75%

What percentage will have white flowers? 25%

12. In guinea pigs, the **allele for short hair is dominant.**

What genotype would a heterozygous short haired guinea pig have? Hh

What genotype would a purebreeding short haired guinea pig have? HH

What genotype would a long-haired guinea pig have? hh

Show the cross for two heterozygous guinea pigs.

Hh x Hh

	H	h
H	HH	Hh
h	Hh	hh

What percentage of the offspring will have short hair? 75%

What percentage of the offspring will have long hair? 25%