Name:_____ 2

Simple Genetics Practice Problems

1. For each genotype, 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 the phenotype.

Purple flowers are dominant to white flowers
PP purple
Pp purple
pp white

Brown eyes are dominant to blue eyes
BB Brown
Bb Brown
bb Blue

Round seeds are dominant to wrinkled
RR Round
Rr Round
rr wrinkled

Bobtails are recessive (long tails dominant)
TT Long
Tt Long
tt Bob

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

Straight hair is dominant to curly.
SS straight
Ss straight
ss curly

Pointed heads are dominant to round heads.
PP pointed
Pp pointed
pp round

4. Set up the square for each of the crosses listed below. The trait being studied is round seeds (dominant) and wrinkled seeds (recessive)

Rr x rr

	R	r
r	Rr	rr
r	Rr	rr

What percentage of the offspring will be round? 50%

Rr x R r

	R	r
R	RR	Rr
r	Rr	rr

What percentage of the offspring will be round? 75%.

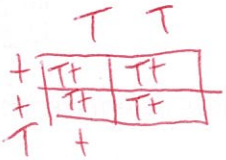
RR x Rr

	R	R
R	RR	RR
r	Rr	Rr

What percentage of the offspring will be round? 100%

Practice with Crosses. Show all work!

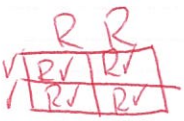
5. A TT (tall) plant is crossed with a tt (short plant).
What percentage of the offspring will be tall? 100%



6. A Tt plant is crossed with a Tt plant. What percentage of the offspring will be short? 25%

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



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

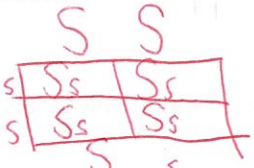
9. In pea plants purple flowers are dominant to white flowers.
If two white flowered plants are cross, what percentage of their offspring will be white flowered? 100%

10. A white flowered plant is crossed with a plant that is heterozygous for the trait. What percentage of the offspring will have purple flowers? 50%

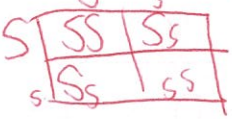
11. Two plants, both heterozygous for the gene that controls flower color are crossed. What percentage of their offspring will have purple flowers? 75%
What percentage will have white flowers? 25%

12. In guinea pigs, the allele for short hair is dominant.
What genotype would a heterozygous short haired guinea pig have? Ss
What genotype would a purebreeding short haired guinea pig have? SS
What genotype would a long haired guinea pig have? ss

13. Show the cross for a pure breeding short haired guinea pig and a long haired guinea pig.
What percentage of the offspring will have short hair? 100%



14. Show the cross for two heterozygous guinea pigs.
What percentage of the offspring will have short hair? 75%
What percentage of the offspring will have long hair? 25%



15. Two short haired guinea pigs are mated several times. Out of 100 offspring, 25 of them have long hair. What are the probable genotypes of the parents? Ss x Ss Show the cross to prove it!