

Name: _____
Date: _____

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Grade 12 Biology – UNIT A
Genetics Problem Solving – Crosses Involving One Trait

1. The Genotype cross → **Gg X GG**

Punnett square:	% of Genotype(s) of offspring	% Phenotype(s) of offspring
	Homozygous Dominant : _____ %	Dominant Trait Displayed: _____ %
	Heterozygous: _____ %	
	Homozygous Recessive: _____ %	Recessive Trait Displayed: _____ %

2. The Cross : **Tt X Tt**

Punnett square:	% of Genotype(s) of offspring	% Phenotype(s) of offspring
	Homozygous Dominant : _____ %	Dominant Trait Displayed: _____ %
	Heterozygous: _____ %	
	Homozygous Recessive: _____ %	Recessive Trait Displayed: _____ %

3. rr X rr (*little letters are always the recessive allele*)

Punnett square:	% of Genotype(s) of offspring	% Phenotype(s) of offspring
	Homozygous Dominant : _____ %	Dominant Trait Displayed: _____ %
	Heterozygous: _____ %	
	Homozygous Recessive: _____ %	Recessive Trait Displayed: _____ %

4. Cross two heterozygote Blue flowers (Use **B** for the dominant blue)

Punnett square:	% of Genotype(s) of offspring	% Phenotype(s) of offspring
	Homozygous Dominant : _____ %	Dominant Trait Displayed: _____ %
	Heterozygous: _____ %	
	Homozygous Recessive: _____ %	Recessive Trait Displayed: _____ %

5. Cross a homozygous 'true breeding' blue flower with a blue flower. (Gardeners know all about this, talk to a gardener!) (B = Dominant for Blue) (*Caution!*)

Punnett square:	% of Genotype(s) of offspring	% Phenotype(s) of offspring
	Homozygous Dominant : _____ %	Dominant Trait Displayed: _____ %
	Heterozygous: _____ %	
	Homozygous Recessive: _____ %	Recessive Trait Displayed: _____ %

6. Cross a homozygous tall plant with a short plant (T is dominant for Tall)

Punnett square:	% of Genotype(s) of offspring	% Phenotype(s) of offspring
	Homozygous Dominant : _____ %	Dominant Trait Displayed: _____ %
	Heterozygous: _____ %	
	Homozygous Recessive: _____ %	Recessive Trait Displayed: _____ %

7. Cross a phenotypical white seed plant with a heterozygous brown seed plant (B is dominant for brown, b is recessive for white)

Punnett square:	% of Genotype(s) of offspring	% Phenotype(s) of offspring
	Homozygous Dominant : _____ %	Dominant Trait Displayed: _____ %
	Heterozygous: _____ %	
	Homozygous Recessive: _____ %	Recessive Trait Displayed: _____ %

*** Be aware that recessive does not mean bad! There are lots of diseases that are dominant! There are lots of nice traits that are recessive. ***

8. **Think and Answer:** If a certain deadly disease has a **dominant** allele, why might there be so few organisms with that deadly disease if it is Dominant Trait?

Answer:

8. In squash, the allele for white fruits (**W**) is dominant over the allele for yellow (**w**). If a white-fruited plant is crossed with a yellow-fruited plant and all the offspring are white, explain all the possible genotypes of the parents and the offspring?