bb_____ BB____ FF__

Genetics Assignment

Part A: Single Trait Inheritance

1.	For each genotype below.	indicate whether it is:	a heterozygous ((He) OR homozygous ((Ha)

TT____ Bb___ DD___ Ff___ tt___ dd____

2. Determine the phenotype for each genotype using the information provided for tulips Yellow tulip flowers are dominant to Red

Dd____ ff___ Tt___

YY _____ Yy ____ yy ____

Round is dominant to Square

RR _____ Rr ____ rr ____

3. For each phenotype, give the genotypes that are possible for crocus flowers

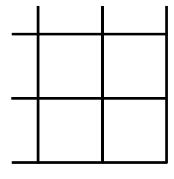
 $\underline{\mathsf{Tall}} \text{ is dominant to } \underline{\mathsf{short}}$

Tall = _____ Short = _____

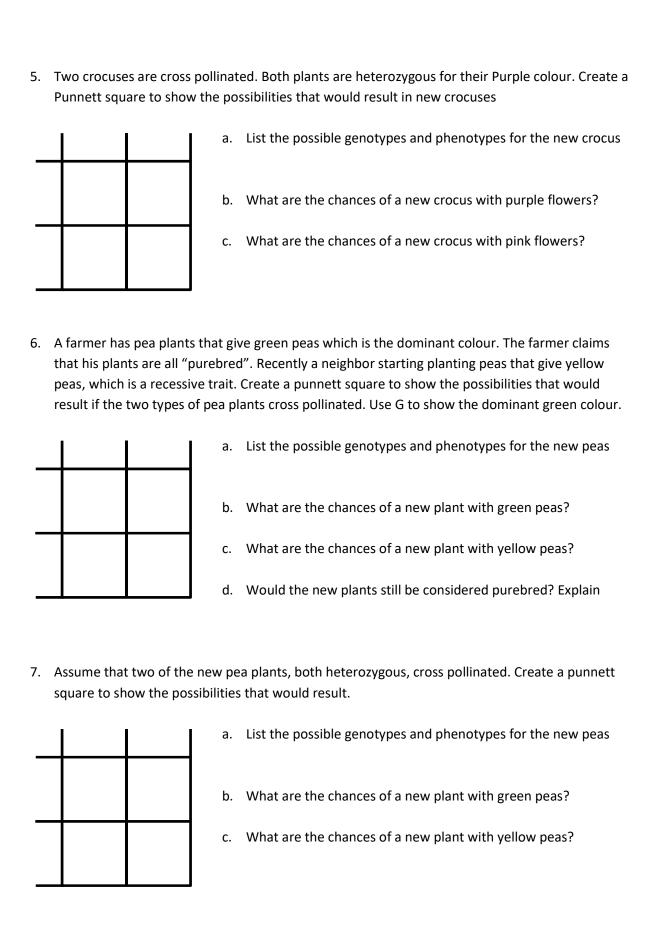
<u>Purple</u> colour is dominant to <u>Pink</u>

Purple = _____ Pink = ____

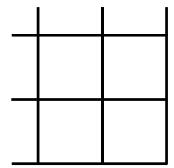
4. A heterozygous Yellow tulip cross pollinates with a Red tulip. Create a Punnett square to show the possibilities that would result in the new tulips



- a. List the possible genotypes and phenotypes for the new tulips
- b. What are the chances of a new tulip with Yellow flowers?
- c. What are the chances of a new tulip with Red flowers?



8. Mr. Krabbs and his wife recently had a Lil' Krabby, but it has not been a happy occasion for them. Mrs. Krabbs has been upset since she first saw her new baby who had short eyeballs. She claims that the hospital goofed and mixed up her baby with someone else's baby. Mr. Krabbs is homozygous for his tall eyeballs, while his wife is heterozygous for her tall eyeballs. Some members of her family have short eyes, which is the recessive trait. Create a Punnett square using T for the dominant gene and t for the recessive one.



- a. List the possible genotypes and phenotypes for their children
- b. Did the hospital make a mistake? Explain your answer

Part B: Sex-Linked Traits

Use these genotypic symbols for the sex linked trait of red-green colour blindness in humans to solve the problems that follow. Show your work

"Normal" Female	$X^{E}X^{E}$
Carrier female	$X^{E}X^{e}$
Colour-blind Female	XeXe
"Normal" male	XEY
Colour-blind male	XeY

- 1. A normal female marries a colour blind male (Show your work below)
 - a. What are the chances that the offspring will be colour blind if they are females? ______
 - b. What are the chances that the offspring will be colour blind if they are males?

2.	A colour-blind female marries a normal male. (Show your work below) a. How many of the female offspring will be carriers of the colour-blind gene?
3.	A carrier female marries a normal male. (Show your work below) a. How many of the male offspring can be expected to be colour-blind?
	b. How many of the male offspring can be expected to have normal vision?
	c. How many of the female offspring can be expected to be carriers?
	d. How many of the female offspring can be expected to be normal?
4.	A man whose mother is colour blind marries a woman with normal vision. (Show your work below) a. What is the genotype of the husband?
	b. What percent of their offspring can be expected to be colour-blind?
	c. What percent of the male offspring can be expected to be colour-blind?
	d. What percentage of their offspring can be expected to be carriers?
5.	A normal man marries a woman whose mother is a known carrier of a sex-linked recessive lethal gene on the X chromosome. This gene results in the slow degenerative death of all male infants within the first year. (Show your work below) a. What are the chances of this couple having a normal offspring? b. What are the chances of this couple having a normal male offspring?