

Bikini Bottom Genetics

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

TT _____ Pp _____ dd _____ Ff _____ Tt _____ FF _____

Which of the genotypes listed above would be considered purebred? _____



2. In Squidward's family, a blue body color (B) is dominant to green (b). Determine the phenotype for each genotype below based on this information.

BB _____ Bb _____ bb _____

3. If tall eyeballs (T) are dominant to short eyeballs(t), give the genotypes that are possible for members of Mr. Krabbs' family.

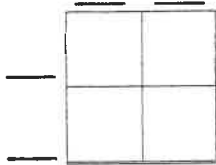
Tall eyeballs = _____ Short eyeballs = _____



4. SpongeBob is known for his big round eyes (R), which is dominant over an oval eye shape (r). If he is heterozygous for his round eye shape and marries a woman with oval eye shape, what type of eyes might the kids have?

A. List the genotypes for each: Heterozygous round eyes - _____ Oval eyes - _____

B. Complete the punnett square to show the possibilities that would results if SpongeBob had children with an oval-eyed woman.



C. List the possible genotypes and phenotypes for their children.

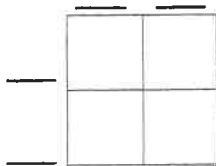
D. What are the chances of a child with a round eye shape? ____%

E. What are the chances of a child with an oval eye shape? ____%

5. Patrick recently married Patti, a cute girl he met at a local dance. He is considered a purebred for his tall head shape (T), which is dominant over a short head (t). If Patti is a short-headed woman, what type of heads would their children have?

A. List the genotypes for each: Patrick - _____ Patti - _____

B. Complete the Punnett square to show the possible genotypes and phenotypes for the children.



C. Which type of head is most likely: tall or short? Explain.

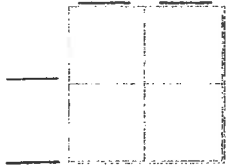
D. Would the children be considered purebreds? Explain.



6. Everyone in Squidward's family has light blue skin, which is the dominant trait for body color in his hometown of Squid Valley. His family brags that they are a "purebred" line. He recently married a nice girl who has light green skin, which is a recessive trait. Create a Punnett square to show the possibilities that would result if Squidward and his new bride had children. Use B to represent the dominant gene and b to represent the recessive gene.



A. List the possible genotypes and phenotypes for their children.



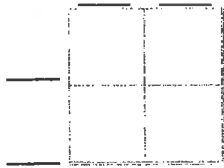
B. What are the chances of a child with light blue skin? ____%

C. What are the chances of a child with light green skin? ____%

D. Would Squidward's children still be considered purebreds? Explain!

7. Assume that one of Squidward's sons, who is heterozygous for the light blue body color, married a girl that was also heterozygous. Create a Punnett square to show the possibilities that would result if they had children.

A. List the possible genotypes and phenotypes for their children.



B. What are the chances of a child with light blue skin? ____%

C. What are the chances of a child with light green skin? ____%

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.