

Probabilities in Genetics

Vocabulary terms

Genes

Traits

Alleles

Dominant

Recessive

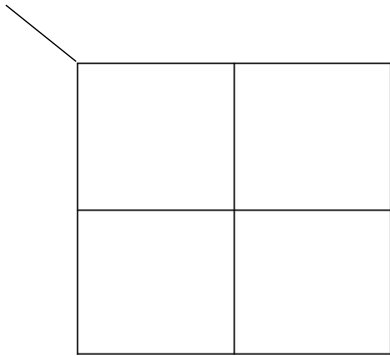
Independent assortment

Notes

Practice

Mendel's Flower Garden

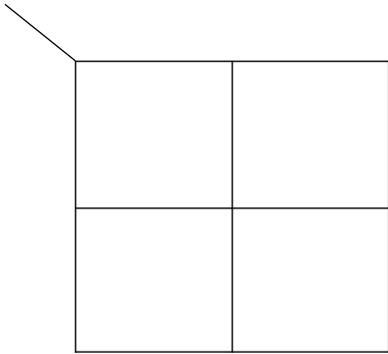
1. Gregor Mendel crosses (mates) a **purple/purple** flower with a **purple/white** flower, what is the probability that an offspring flower is purple? Purple *and* carries a white allele?



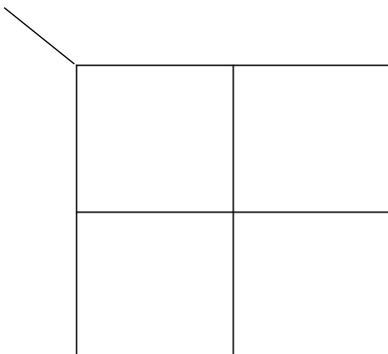
2. Gina the Geneticist breeds 1,000 flowers in his garden and observes 497 purple flowers and 503 white flowers. What alleles do the parent flowers carry?

Pig tails

3. Mother Pig has two alleles for straight tail, and Father Pig has two alleles for curly tail. If curly tail is dominant to straight tail, what is the probability that their baby pigs will have straight tails?



4. Sally Pig has a curly tail. If both Mother and Father Pig have curly tails and Brother Pig has a straight tail, what is the probability Sally is heterozygous for tail shape? (Heterozygous means having both a dominant and a recessive allele)

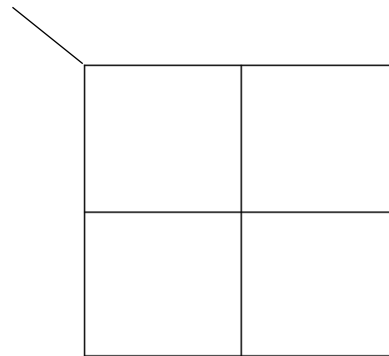
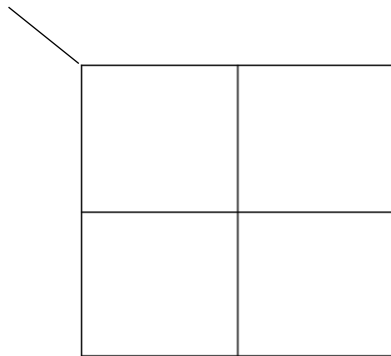


Two genes

5. Given the traits of the parents below, what is the probability an offspring is yellow/green **AND** wrinkled/smooth? Yellow is dominant to green. Wrinkled is dominant to smooth.



Probability?



6. Given the traits of the parents below, what is the probability an offspring pea plant is yellow **AND** smooth? Yellow is dominant to green. Wrinkled is dominant to smooth.



Probability?

7. Given the traits of the parents below, what is the probability an offspring is yellow/green **OR** wrinkled/smooth?



8. Given the traits of the parents below, what is the probability an offspring is yellow **OR** smooth?



Hairy pig tails

9. Gina the Geneticist decides to inspect her pigs' tails a little more closely and finds that not only are there differences in shape but also hairiness. If Mama Pig has a hairy curly tail (heterozygote) and Papa Pig has a smooth straight tail, what is the probability Baby Pig has a hairy curly tail? Hairy is dominant to smooth. Curly is dominant to straight.

Wrinkled hairy pig tails

10. Given the allele combinations of Mama and Papa Pig, what is the probability Baby Pig is **wrinkled/smooth, hairy/hairy, curly/straight**? The three genes **independently** assort.

	Texture	Hairiness	Straightness
Mama Pig	smooth/smooth	hairy/hairless	curly/curly
Papa Pig	wrinkled/smooth	hairy/hairless	curly/straight