

Group Questions

Work with you neighbors to answer the following questions.

1. Suppose a pea plant with genotype $DdPp$ is crossed with another pea plant with genotype $Ddpp$. What is the probability of getting a purple dwarf plant?
2. If 5 such crosses are made, what is the probability of getting at least one purple dwarf plant?

Example of Bayes Theorem

3. Suppose that 1 in 50 athletes take a particular performance enhancing drug. A test for this drug is positive for 90% of all drug users but is also positive for 1% of all clean athletes. If an athlete tests positive for this drug what is the probability that she actually is a drug user?

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4. Suppose you have a mixture of homozygous and heterozygous tall pea plants, 20% of which are homozygous. If you choose one of these plants at random and cross it with a dwarf pea plant, what is the probability of getting a tall plant in the next generation?
(Hint: draw a tree diagram and calculate the probabilities on each branch using either the laws of probability and Mendel's law of independent assortment.).
5. If the plant turns out to be tall what is the probability that it came from the heterozygous cross?