

AP Biology  
Genetics Quiz

1. Pattipan squash are either white or yellow. In growing pattipans, you notice that if you want to get white Pattipans at least one of the parents must be white. Which color is dominant? Explain.

2. Determine the probability of obtaining the indicated offspring in the following crosses:

| Cross           | Offspring | Probability |
|-----------------|-----------|-------------|
| AAbb x AaBb     | AaBb      | a.          |
| AaBB x AaBb     | aaBB      | b.          |
| AABbcc x aabbCC | AaBbCc    | c.          |
| AaBbCc x AaBbcc | aabbcc    | d.          |

3. True-breeding tall red-flowered plants are crossed with dwarf white-flowered plants. The resulting F1 generation consists of all tall pink-flowered plants. Assuming that height and flower color are each determined by a single gene locus, predict the results of an F1 cross of the TtRr plants. List the phenotypes and predicted ratios for the F2 generation.

4. Blood typing has often been used as evidence in paternity cases, when the blood type of the mother and child may indicate that a man alleged to be the father could not possibly have fathered the child. For the following mother and child combinations, indicate which blood groups of potential fathers would be exonerated (i.e. – he can't be the father).

| Blood Group of Mother | Blood Group of Child | Man Exonerated if he belongs to Blood Group(s) |
|-----------------------|----------------------|--|
| AB                    | A                    | a.   |
| O                     | B                    | b.   |
| A                     | AB                   | c.   |
| O                     | O                    | d.   |
| B                     | A                    | e.   |

5. In rabbits, the homozygous CC is normal, Cc results in rabbits with deformed legs, and cc is lethal. For coat color, BB produces black, Bb brown, and bb a white coat. Give the phenotypic proportions of offspring from a cross of a deformed-leg, brown rabbit with a deformed-leg, white rabbit.