Answer on Question #84482 – Math – Statistics and Probability

Question

There are five children in a family of parents AB× BB. The children of such parents must have genotype AB or genotype BB. Find the probability that two of the children have genotype AB and three others have genotype BB.

Solution

One needs to find the probability of the following event:

$$AB, AB, BB, BB, BB$$

There may be different cases if five children were chosen:
five children have genotype AB;
four children have genotype AB and one child has genotype BB;
three children have genotype AB and two children have genotype BB;
two children have genotype AB and three children have genotype BB;
one child has genotype AB and four children have genotype BB;
five children have genotype BB.
Then the probability that two of the children have genotype AB and three others have genotype BB

$$P(AB = 2, BB = 3) = \frac{1}{6}$$

Answer: $\frac{1}{6}$.