

Probability Worksheet (Tree Diagrams)

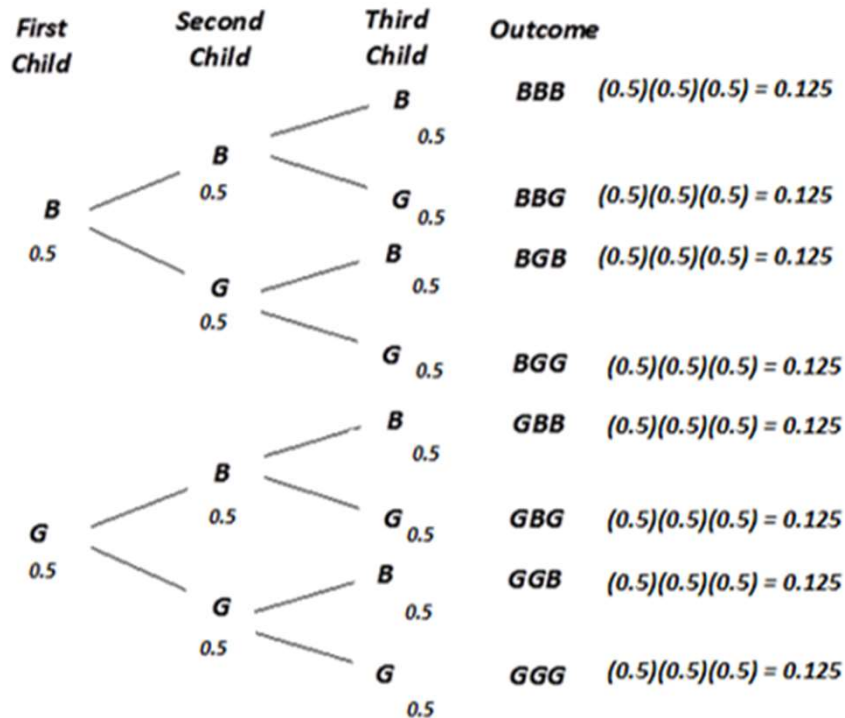
1. A neighboring family just welcomed their third child. It turns out that all 3 of the children in this family are girls, and they are not twins or triplets. Suppose that for each birth, the probability of a boy birth is 0.5, and the probability of a girl birth is also 0.5. What are the chances of having 3 girls in a family's first 3 births?
- a) Draw a tree diagram showing the eight possible birth outcomes for a family with 3 children (no twins or triplets). Use the symbol B for the outcome of *boy* and G for the outcome of *girl*. Consider the first birth to be the first stage.
- b) Write in the probabilities of each stage's outcomes in the tree diagram you developed above, and determine the probabilities for each of the eight possible birth outcomes for a family with 3 children (no twins or triplets).
- c) What is the probability of a family having 3 girls in this situation? Is that greater than or less than the probability of having exactly 2 girls in 3 births?
- d) What is the probability of a family of 3 children having at least 1 girl?

Go to [onlinemathlearning.com](https://www.onlinemathlearning.com) for more free math resources

Probability Worksheet (Tree Diagrams)

1. A neighboring family just welcomed their third child. It turns out that all 3 of the children in this family are girls, and they are not twins or triplets. Suppose that for each birth, the probability of a boy birth is 0.5, and the probability of a girl birth is also 0.5. What are the chances of having 3 girls in a family's first 3 births?

a) Draw a tree diagram showing the eight possible birth outcomes for a family with 3 children (no twins or triplets). Use the symbol B for the outcome of *boy* and G for the outcome of *girl*. Consider the first birth to be the first stage.



b) Write in the probabilities of each stage's outcomes in the tree diagram you developed above, and determine the probabilities for each of the eight possible birth outcomes for a family with 3 children (no twins or triplets).

In this case, since the probability of a boy is 0.5 and the probability of a girl is 0.5, each of the eight outcomes will have a probability of 0.125 of occurring.

c) What is the probability of a family having 3 girls in this situation? Is that greater than or less than the probability of having exactly 2 girls in 3 births?

The probability of a family having 3 girls is 0.125. This is less than the probability of having exactly 2 girls in 3 births, which is 0.375 (the sum of the probabilities of GGB, GBG, and BGG).

d) What is the probability of a family of 3 children having at least 1 girl?

The probability of having at least 1 girl would be found by subtracting the probability of no girls (or all boys, BBB) from 1, or $1 - 0.125 = 0.875$.

Go to onlinemathlearning.com for more free math resources