

# MathsBites by Clifford the Dog

## Boys and Girls



### Gender of children in a family

The gender of children in a family is generally considered to be independent from one child to the next.

**Activity:** Determine the possible sequences of children by gender in a family if there are one, two, three or four children.

Find the corresponding probabilities for different numbers of boys (or girls) in these families, assuming it is equally likely that a child is a boy or girl.



### The boy-girl paradox or the two child problem

$$\frac{1}{2} \quad ? \quad \frac{1}{3}$$

Consider the following two questions: 1. A family has two children, and the oldest is a girl, what is the probability that both children are girls? 2. A family has two children, and at least one of them is a boy. What is the probability that both children are boys? The second question is potentially ambiguous and the answer could be  $\frac{1}{3}$  or  $\frac{1}{2}$  depending on how it is interpreted (see: [http://en.wikipedia.org/wiki/Boy\\_or\\_Girl\\_paradox](http://en.wikipedia.org/wiki/Boy_or_Girl_paradox))

### Empirical data – is gender of successive children really independent?

Some US data indicates that there is a *slight* conditional element to the sex of children in families (see: [www.in-gender.com/XYU/Odds/Gender\\_Odds.aspx](http://www.in-gender.com/XYU/Odds/Gender_Odds.aspx)). Alternatively, given that the toss of a coin is used to simulate sequences of children's sex in a family, one could say that the coin is slightly biased.



**Activity:** investigate related data for the Australian context, and find the corresponding probabilities for different sequences of sex in families of two, three and four children.