50:50 Chances 50

The chance of a flipped coin landing with the "heads" side up rather than the "tails" side is 50:50. Does that mean that for every two times a coin is flipped, heads will turn up once and tails will turn up once? The chance of a boy rather than a girl being born in a family is also 50:50. Does that mean that in a family with six children, three are boys and three are girls? You know the answer to both of these questions is no. What is the value, then, of saying the chances are 50:50?

Strategy

You will compare the chances of a boy or girl being born with the chances of a flipped coin landing on one side or the other.
You will flip a coin six times to represent the sexes of the children in one family.
You will record your results and compare the sexes of the children in 15 families.

Materials

coin

Procedure

1. Let the heads side of the coin represent boys. Let the tails side represent girls. Flip the coin six times. Record your results in Data Table 50–1 in Data and Observations.
2. Continue to flip the coin until you have a total of 15 groups of six flips each.

Data and Observations

1. Record the results of 15 groups of six coin flips each in Data Table 50–1.

Data Table 50–1

Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Girls (Heads)															
Boys (Tails)															

2. Use the mark (/) to complete Data Table 50–2 using the data recorded in Data Table 50–1 for each group of six flips.

Data Table 50–2

Possible Combinations	6 girls: 0 boys	5 girls: 1 boy	4 girls: 2 boys	3 girls: 3 boys	2 girls: 4 boys	1 girl: 5 boys	0 girls 6 boys
Number of Combinations							

Questions and Conclusions

1. Why can you use coin flips to represent sex combinations which may occur in families? _____

_____

_____

2. According to your results, is it possible to have a family of exactly three boys and three girls? _____

_____

Do you know any family where there are exactly three boys and three girls?_____

3. According to your results, is it possible to have a family of six children where the ratio of boys to girls is not exactly 50:50? _____

Do you know of actual families where this is true? _____

4. According to your results, which combination of boys and girls occurred most often?

_____

Does this agree with what you had expected? _____

5. Explain how one can make a statement that you expect three boys and three girls in every family of six children, but yet you may not get this ratio in an actual family. _____

_____

_____

6. Out of the 90 total children (coins) counted, how many were males? _____ Females?

_____ Is your answer close to half boys and half girls? _____ Explain. _____

_____

7. In a single family, the ratio may or may not be half boys and half girls. When do you begin to show that an equal number of boys and girls occurs in families?_____

_____

Strategy Check

_____ Can you compare the chance of a boy or girl being born with the chance of a coin landing on one side or the other?

_____ Can you compare the sexes of the children in 15 families by flipping a coin?

_____ Can you explain how numbers, such as 50:50, can be used to show the likelihood of an occurrence?