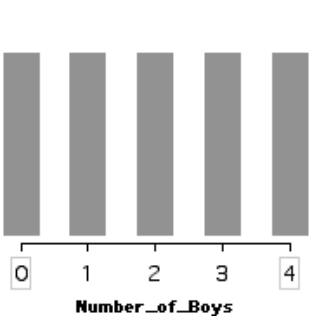
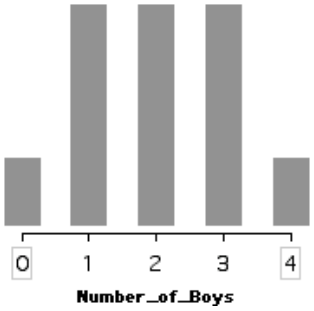
Four-Child Families

Name(s) _____

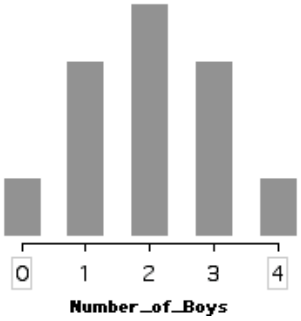
Here are three different plots you might get when you count the number of real families with four children and grouped them by the number of boys.



Plot A



Plot B

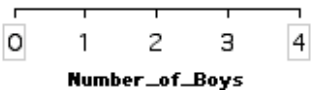


Plot C

1. Which plot do you expect the plot of real data to look most like? Explain?

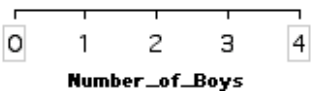
2. Do you know any families that have four children? If so, list the family's last name and the order of boys and girls (oldest to youngest) on an index card.

3. As a class, you'll sort index cards that list the boys and girls in real families of four children. When finished, sketch the plot your class ended up with on the axis at right.



4. Open the TinkerPlots document **Four-Child Families.tp.** Drag the attribute *Count_boys* from the table to the horizontal axis of the plot.

5. Separate the values and stack them. Sketch your final plot.



6. Your teacher will give you a pile of blank bars and two colors of stickers labeled G for girl and B for boy. Make a bar for each different four-child family order. Take a family with "G, B, G, G," for example. Put a "G" in the first square, a "B" in the second square, and then two more "G's" in the last two squares.
7. How many different four-child families can you make?
8. Make an organized chart of all the different four-child families that are possible.

9. Using your chart of all possible four-child families, figure out the probabilities for these events:
    a. 2 girls and 2 boys (in any order)
    b. All boys
    c. All girls
    d. 1 boy and 3 girls (in any order)
    e. 1 girl and 3 boys (in any order)
    f. "G, B, B, G" (in this order)
    g. Fewer than 3 boys
    h. More girls than boys

10. Use TinkerPlots to build a sampler that makes 100 four-child families. Make a plot showing the number of families with 0, 1, 2, 3, and 4 boys.
11. Does the plot you make look like the chart you made in Step 8?

12. What did you learn about probability from this activity?