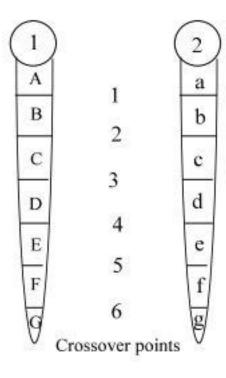
Crossing Over



- 1. Imagine a fly contains a pair of chromosomes as shown. The fly is heterozygous for each of seven traits, a through g, found on each chromosome.
- 2. In the figure, the numbers 1 through 6 indicate points where crossing over may occur, resulting in alleles being separated. For example, if a cross over occurred at point 3, the alleles on chromosome 1 would be ABCdefg, while those on chromosome 2 would be abcDEFG.
- 3. Roll the die to randomly determine where a cross over will occur. In the table record the alleles which would remain on the same chromosome as 'a.' For example, if you rolled a 4, you would record a mark in the table beside b, c, and d because they remained on the chromosome as a.
- 4. Repeat step 3 another 99 times (Yep, I'm serious.)
- 5. Draw a data table like the one shown (or just use the one on this page, silly)

# of times "a" is on the same chromosome as each of these	% of times "a" is on the same chromosome as each of these
b	b
С	С
d	d
e	e
f	f
g	g

6. Calculate the percentage of times each allele is found on the same chromosome as 'a.'

Questions

- 1. Is the location of crossing over random or does it occur more frequently in any particular location?
- 2. Which recessive allele most often remains on the same chromosome as "a"?
- 3. Which recessive allele is most often separated from "a"?
- 4. Assume a crossover occurs at point 2. What would be the resulting order of alleles on each chromosome?
- 5. Suppose a fly containing the chromosomes in question 4 were mated with a fly recessive for all seven traits. What would be the genotypes of the offspring?