To determine gamete classes and their expected proportions:

1) Write the alleles on the two parental chromosomes in the blanks $a-b-c/a'-b'-c'$ at the root.
2) Copy those alleles into the boxes with the same letters on the branches.
3) Write the known map distances for the intervals in the upper left box, and calculate $\alpha$ and $\beta$.
4) Write the values of $\alpha$, $(1-\alpha)$, $\beta$, and $(1-\beta)$ in the boxes where indicated.
5) For each tip on the right, trace from root to tip, writing down the alleles encountered along the way. This gives the genotype of that gamete class.
6) For each tip on the right, trace from root to tip, multiplying all numbers along the way. This gives the expected proportion $p$ for that gamete class.
7) Each change of direction is a recombination event. Classes are labeled NR (non-recombinant) SR (single-recombinant, interval 1 or 2) or DR (double-recombinant).
8) If doing a $\chi^2$ test, multiply each $p$ by the total number of progeny observed to get expected values.

Known Map Distances:

Interval 1 (a___ to b___): _______ map units / 100 = _________ = $\alpha$
Interval 2 (b___ to c___): _______ map units / 100 = _________ = $\beta$