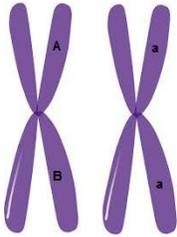


1. If the individuals AB/ab and ab/ab are crossed, list the parental and recombinant genotypes of the offspring.

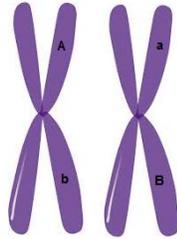
Parental: AB/ab & ab/ab

Recombinants: Ab/ab & aB/ ab

2. Draw examples of coupling and repulsion linkage. What do you notice about the genotype of the individuals of these types of linkage?



Coupling- show dominant



Repulsion- may show incomplete dominant

3. Answer the following given the number of progeny resulting from a test cross (assume that the parent with the dominant phenotype is heterozygous)

Ab/ab: 235

AB/ ab: 150

ab/ab: 115

aB/ ab: 250

- a. Identify the parental and recombinant offspring.

Parental: Ab/ab & aB/ ab

Recombinant: AB/ ab & ab/ab

\*Two highest #s will always be parental\*

\*Two lowest #s will always be recombinants\*

- b. What is the linkage arrangement of the heterozygous parent?

Incomplete linkage

- c. Calculate the recombination frequency between genes "A" and "B".

$265/750 * 100 = 35.3 \%$

4. The recombination frequency between two genes is 23. If there are 400 offsprings resulting from a cross between AB/ab and ab/ab, how many offspring are represented for each genotype?

$$92/400 * 100 = 23$$

92 recombinants ( Ab/ab & aB/ab)

308 parentals (AB/ab & ab/ab)

5. If the individuals Ab/ aB and ab/ab are crossed, what would the genotypes of the offspring be if (a) the genes exhibited complete linkage or (b) independent assortment? (Assume there are 100 progeny).

a) Ab, aB

b) AB, ab, Ab, aB

6. Answer the following about mapping.

- a. What does a gene map tell you?

Shows a linkage group- which genes occur on a chromosome and where they occur.

- b. What does recombination analysis tell you?

The order of genes and the distance between genes.

7. Generate a genetic map using the following recombination frequencies.

Gene Pair	Recombination frequency
F-R	0.7%
F-O	48.3%
R-O	42.6%
O-G	5%
R-G	51.2%

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