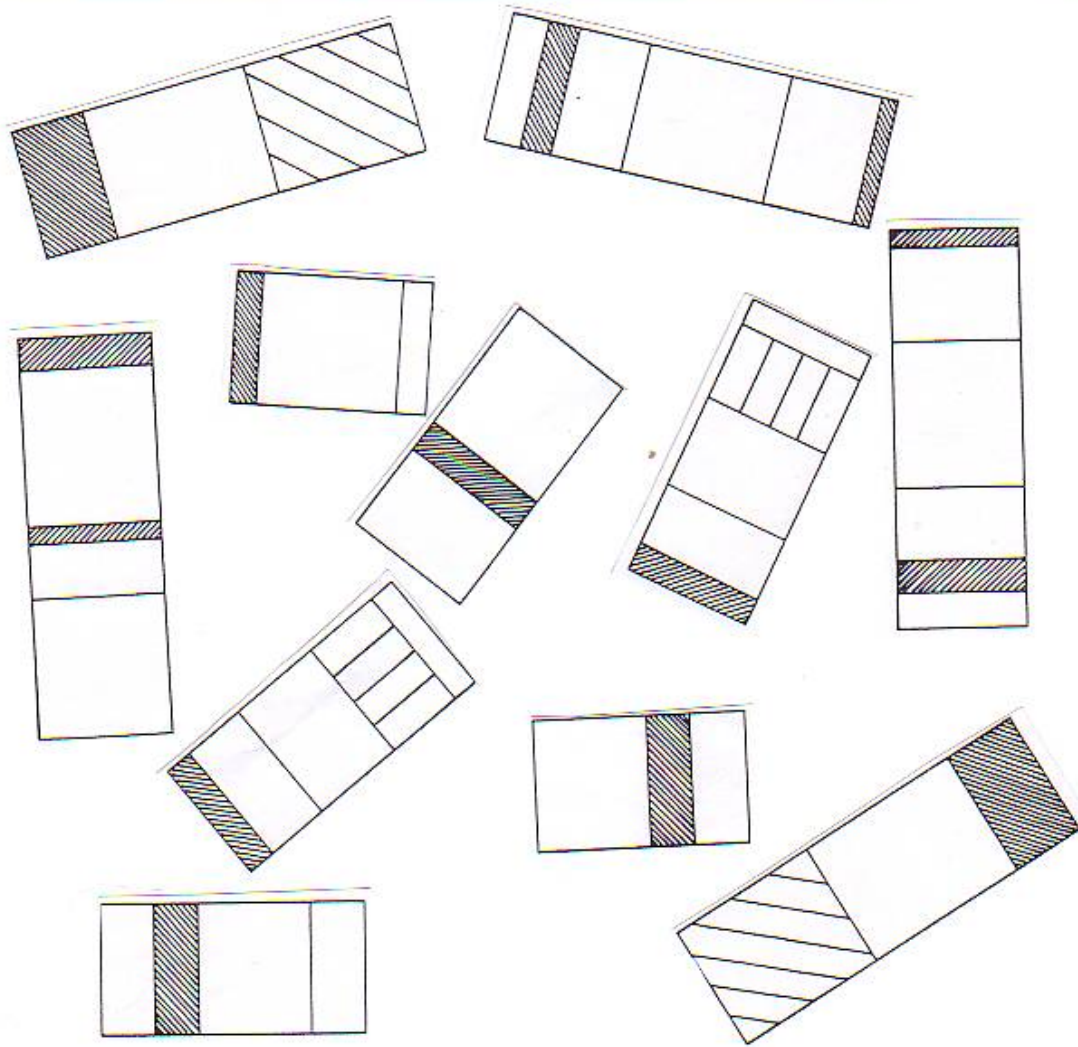
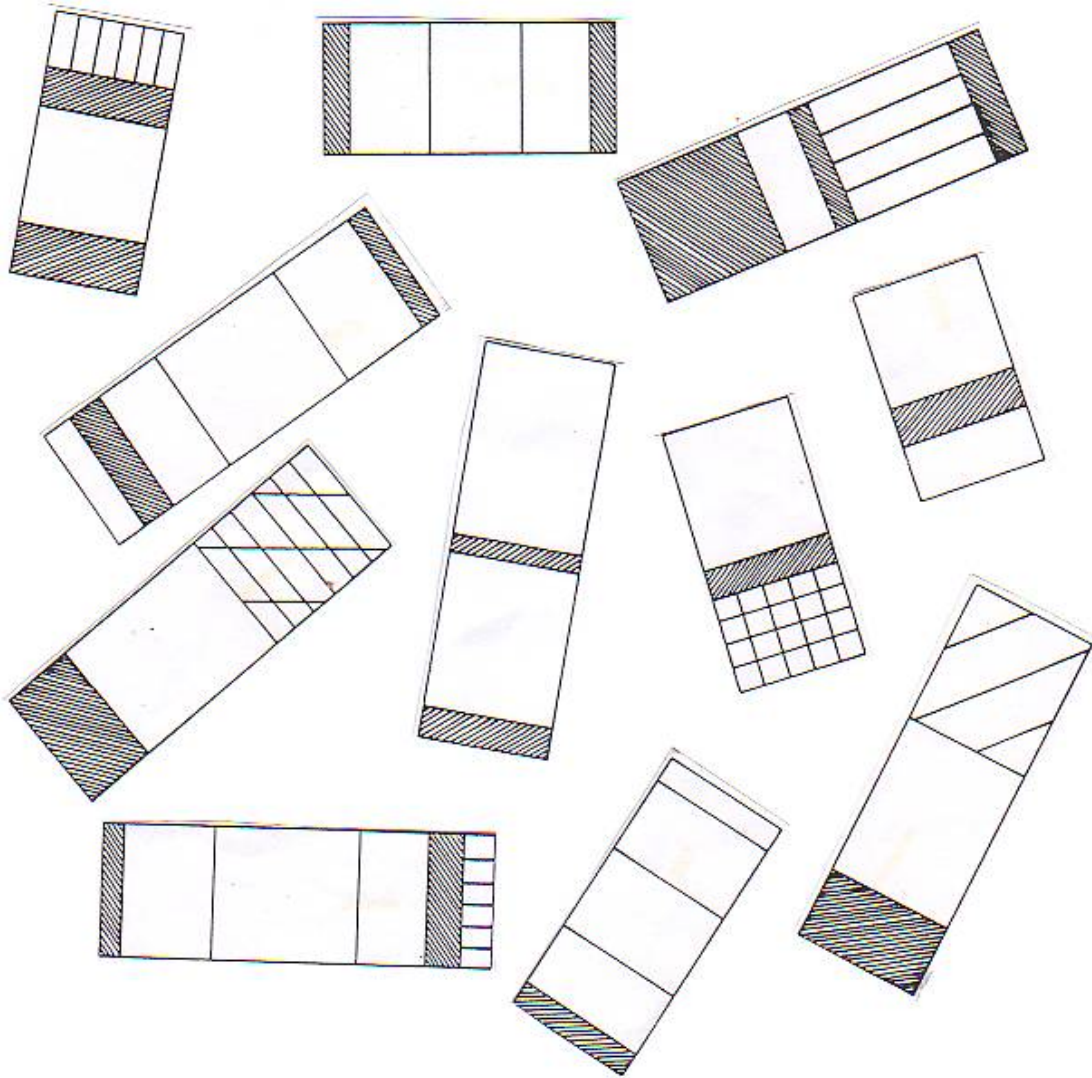


Male (♂) Chromosomes
(Color before cutting out if not already colored)



Female (♀) Chromosomes
(Color before cutting out if not already colored)



Name: _____ Section: _____

"The Matching Game"

The purpose of this activity is to introduce you to chromosomal karyotyping. A karyotype is "a visual representation of an individual's chromosomes arranged in a specific way." Karyotyping chromosomes involves classifying and organizing them according to the arrangement, number, size, shape, or other characteristics of the chromosomes. These pictures of an individual's chromosomes allow scientists/doctors to identify characteristics of a person such as gender, genetic disorders, among other things. Carefully complete the following procedures as this experience will be practice for creating a karyotype using real pictures of chromosomes.

Procedures:

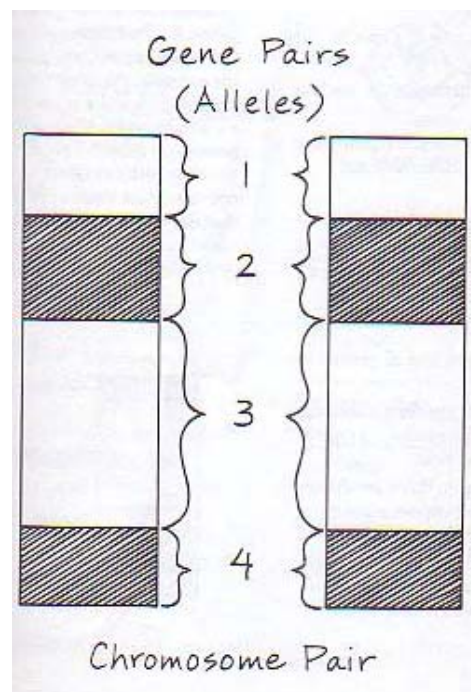
1. Color all of the male chromosomes the same color (if not already colored) and then carefully cut them out.
2. Color all of the female chromosomes the same color (if not already colored) and then carefully cut them out.
3. Spread the chromosome models on your desk or lab table.
4. Turn the models as needed to pair up as many matching models as possible. You must match a male chromosome with a female chromosome (different colors). A chromosome pair with identical genes must match in length as well as in the number, size, and location of open and shaded areas, as shown in the diagram on the following page. Be aware that the actual patterns in the open or shaded areas do not have to match to make a pair.
5. Once you have all chromosomal pairs matched up (if possible), you should arrange them on the sheet from the tallest pair to the shortest pair. If you have a pair that

does not match, this pair could represent the sex chromosomes of a male. This pair should be placed at the end of the karyotype.

6. Once all of your chromosomes are arranged in order from the largest pair to the smallest pair, you should paste or tape them onto the sheet.

EXAMPLE

Notice how this matching pair is the same length, has the same number of sections (4), and has sections that are equal in size. Although the top section has a different pattern, these chromosomes are still considered a matching pair. Remember that we get our traits from our parents. If the top section represented attached or unattached earlobes, the fact that one section is shaded and the other is not would indicate that one parent possesses the trait for attached earlobes and the other parent possesses the trait for unattached earlobes. How these two genes interact and which characteristic will be passed on to the offspring (attached or unattached earlobes) will be discussed in our next topic



The following websites provides interactive karyotyping activities

<http://www.explorelarning.com/index.cfm?method=cResource.dspDetail&ResourceID=440>

<http://learn.genetics.utah.edu/content/begin/traits/karyotype/>

http://www.biology.arizona.edu/human_bio/activities/karyotyping/karyotyping.html

1 st Pair (autosomes)	2 nd Pair (autosomes)	3 rd Pair (autosomes)	4 th Pair (autosomes)	5 th Pair (autosomes)	6 th Pair (autosomes)
7 th Pair (autosomes)	8 th Pair (autosomes)	9 th Pair (autosomes)	10 th Pair (autosomes)		11 th Pair (sex chromosomes)

Adapted from (2001) Janice VanCleave, Teaching the Fun of Science