In this activity, you will use a computer model to look at chromosomes and prepare a karyotype. You will diagnose patients for abnormalities and learn the correct notation for characterizing karyotypes.

Go to www.biology.arizona.edu - click on Karyotyping under Human Biology.

Introduction:

1. What causes a dark band on the chromosome?

_____________________________________

2. What is a centromere?

______________________________________________

Patient Histories: *Click on Patient Histories. You will be completing a karyotype for Patient A, B & C

Patient A (Click on the link to “Complete Patient A’s Karyotype”)
*Match the chromosome to its homolog. After all the matches are complete you’ll analyze your patient. (Scroll down to view your completed karyotype).

3. What is patient A’s history (summarize)

______________________________________________

4. How many total chromosomes are in your karyotype - count them _______

The last set of chromosomes is the sex chromosomes, if you have two large chromosomes, your patient is XX (female), one large and one small indicates and XY (male). What sex chromosomes does your patient have _______
Which chromosome set has an extra + _______

5. What diagnosis would you give this patient (what disease)? ______________

Patient B - click on the link to go to Patient B and repeat the above process.

6. What is Patient B’s history (summarize)

______________________________________________

7. How many total chromosomes are in your karyotype - count them _______

What sex chromosomes does your patient have _______
Which chromosome set has an extra + _______

8. Finish the notation for this patient’s karyotype: 47 X _______

9. What is the diagnosis? __________________________
Patient C - click on the link to go to Patient C and repeat the above process.

10. What is patient C's history (summarize)?

11. How many total chromosomes are in your karyotype - count them _________
What sex chromosomes does your patient have _________
Which chromosome set has an extra + _______
12. Write out the correct notation for this karyotype. _________
13. What is the diagnosis? _______________________________________

Site 2: Genetic Science Learning Center (learn.genetics.utah.edu)
Go to: Heredity Traits → Go to: How do scientists read chromosomes

1. What is Giemsa? _______________________________________
2. What are the three key features used to read chromosomes?
   ______________________________
   ______________________________
   ______________________________
3. Sketch or describe: metacentric, submetacentric, acrocentric

4. Go back a page, then go to → Making a Karyotype - Try it yourself
Create your own karyotype - turning on hints is okay. Check this box when your karyotype is complete (omit this question)
What did you find difficult about matching the chromosomes?
_____________________________

5. Go back a page, then go to → Using Karyotypes to Diagnose Genetic Disorders—head down to “Too many or Too Few”
What is trisomy? ______________________________
What is monosomy? ______________________________
What is a terminal deletion?
_____________________________

6. Go back to the home page, go to → Genetic Disorders. For each of the disorders, describe the chromosome abnormality and the symptoms.

   Cri Du Chat
   Turner Syndrome
   Klinefelter Syndrome
   Williams Syndrome
Extra Credit - Do at home

Site: http://bluehawk.monmouth.edu/~bio/karyotypes.htm
Pick from the list of abnormal karyotypes and arrange the chromosomes in a karyotype. Use the "print screen" button to copy your finished karyotype onto a word processing document. For "Diagnosis" write the chromosome set that has the abnormality, and what type of abnormality it is. Print this page out and turn it in.