Atypical Meiosis

Use pages 123 - 128 to complete the questions below.

1. What is a karyotype?

2. Use diagrams to illustrate how a female zygote versus a male zygote is produced. (Note: the sperm determines the sex of the zygote since the egg can only contribute an X chromosome while the sperm can contribute an X or Y chromosome).

3. What is nondisjunction?

4. Summarize the nondisjunction conditions listed in the table provided below.(page127 – 128)

	MONOSOMIC	TRISOMIC	
Name of Syndrome	**Turner Syndrome**	**Down Syndrome**	**Klinefelter Syndrome**
Description			

5. Turner syndrome is a "monosomic" condition, but Down Syndrom and Klinefelter Syndroms are "trisomic".
   a. What does the prefix "mono" mean?

   b. What does the prefix "tri" mean?

   c. What does "somic" mean? (it's related to the term "soma")

   d. Based on your observations of figure 2(a) and figure 3 on page 128, differentiate between the genetics of monosomic and trisomic conditions.

6. Complete the karyotype activity on page 139.

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NONDISJUNCTION is an error that occurs when two homologous chromosomes move to the same pole during meiosis.

- This results in one daughter cell having an extra chromosome and the other daughter cell missing a chromosome.
- Cells that have too much or too little genetic information will not function properly.
- Most cases, the zygote dies, but sometimes a person will be born with a nondisjunction disorder.

1. **DOWN Syndrome** - People with this condition have an extra 21st chromosome.
2. **TURNER Syndrome** - A female born with a single "X" chromosome instead of the normal "XX". Females do not mature sexually.
3. **KLINEFELTER Syndrome** - A male born with 2 "X" chromosomes and a single "Y" chromosome (XXY instead of XY). Produces higher levels of female sex hormone during puberty.