

You and a partner will be assigned a question to answer in front of the class. For ALL questions, draw a diagram, flowchart, or some points on poster paper and answer using the poster as an aid.

1. Draw a diagram of the cell cycle and briefly discuss the phases.
2.
 - a) What kind of cells are produced by somatic cell division?
 - b) How many daughter cells are produced?
 - c) Are daughter cells haploid or diploid? Explain what this means.
 - d) Are daughter cells genetically identical or different? Explain why.
3.
 - a) Draw a diagram of two sister chromatids joined at the centromere.
 - b) Add a few different genes to the chromatids (same on both sides) and identify what the genes code for.
 - c) Why are sister chromatids identical?
4. Discuss the events in a cell during prophase and metaphase of mitosis.
5. Discuss the events in a cell during anaphase, telophase, and cytokinesis.
6. Draw a diagram to show the process of cloning a frog. Be prepared to explain the process.
7.
 - a) What does the term "totipotent" mean?
 - b) How do scientists attempt to bring cells back to a totipotent state for use in cloning or related experiments?
8.
 - a) What kind of cells are produced by meiosis?
 - b) How many daughter cells are produced in males and in females?
 - c) Are daughter cells haploid or diploid? Explain what this means.
9.
 - a) What are homologous chromosomes?
 - b) How many pairs of homologous chromosomes to humans have?
 - c) What are autosomes? How many autosomes do we have?
 - d) What are sex chromosomes? What sex chromosomes do YOU have?
10. Discuss the events in a cell during prophase I and metaphase I in meiosis. Make special mention of any important differences between meiosis and mitosis at these times.
11. Discuss the events in a cell during anaphase I and telophase I in meiosis. Make special mention of any important differences between meiosis and mitosis at these times.
12. Discuss the events in a cell during prophase II and metaphase II in meiosis. Make special mention of any important differences between meiosis and mitosis at these times.

13. Discuss the events in a cell during anaphase II and telophase II in meiosis. Make special mention of any important differences between meiosis and mitosis at these times.
14. What are the two major processes contributing to genetic variability in gametes (hence the species). Discuss each process.
15. What is a karyotype and how is it prepared and the chromosomes arranged?
16. Describe what the karyotype would look like and what the medical conditions involve for an individual with:
 - a) Down syndrome
 - b) Turner's syndrome
17. Describe what the karyotype would look like and what the medical conditions involve for an individual with:
 - a) Klinefelter's syndrome
 - b) normal male
18. Draw a diagram to show how a normal female baby is produced (ie. gametes with sex chromosomes → zygote).
19. Draw a diagram to show how a normal male baby is produced (ie. gametes with sex chromosomes → zygote).
20. Draw a diagram to show how a female baby with Turner's syndrome is produced (ie. gametes with sex chromosomes → zygote).
21.
 - a) Who discovered the 3D shape of the DNA molecule?
 - b) What is the shape of a DNA molecule?
 - c) What are the building blocks of DNA?
22. With reference to a diagram or a classroom model, name all the major parts of the DNA molecule pointing out their locations.
23. With reference to a diagram or a classroom model, explain how DNA replicates. Include the names and functions of the enzymes.
24.
 - a) What part of the DNA molecule carries the genetic code?
 - b) What is the definition of a gene?
25. Draw a diagram of DNA fingerprints for 3 or 4 people: evidence DNA and suspects. Make one suspect's DNA match the evidence and explain to the class.

(This review does not necessarily cover all topics in your notes)