

Chapter 12: Mitosis
Reading Focus Questions 2006

Read pages 215-222 of chapter 12, and then answer the questions below in your notebook or on separate paper. Be prepared to discuss your responses during class TOMORROW! Be sure to also print necessary diagrams from chapter 12. See diagram list on line.

1. How is mitosis (cell division) important for single-celled organisms? How is mitosis important for multi-cellular organisms?
2. Create a concept map OR concept generalization incorporating the following terms. Underline the terms in your generalization.
Genome *chromosomes* *chromatin* *centromere*
3. Create a concept map OR concept generalization incorporating the following terms:
somatic cell *gamete* *sister chromatid* *mitosis* *cytokinesis*
4. State several, specific cellular activities occurring during each stage of the cell cycle: G₁, S, G₂, M.
(**Think** about what we've studied so far, don't copy the lame information from the book)
5. Look at the stages of mitosis pictures on pages 218-219. You should have learned these stages in 5th grade! Go on-line and locate pictures of animal cells during each stage of mitosis. Label the pictures with the name of the phase and the scientific name of the organism.
6. Create concept map or concept generalization incorporating the following terms:
kinetochore *microtubule* *chromosome* *centromere*
spindle fiber *centrosome* *(sister) chromatids* *tubulin*
7. Use figure 12.8 to create a Venn diagram (or table) to compare animal cell cytokinesis with plant cell cytokinesis.

Read pages 223-229 of chapter 12, and then answer the questions below in your notebook or on separate paper. Be prepared to discuss your responses during class on MONDAY!

8. How is binary fission of prokaryotic cells different from mitosis? How are binary fission and mitosis similar?
9. What is a checkpoint? What is the role of checkpoints in the cell cycle? Where are checkpoint mechanisms located within the cell cycle? Why? What is the 'default' setting of cells at particular checkpoints?
10. What are kinases? In what process have we previously studied these molecules? Kinases have active and inactive forms. What kind of enzyme regulation is involved here? (Hint: see p. 101)
11. What is MPF? How does MPF regulate the cell cycle?
12. Using figure 12.14, describe the relative concentrations of MPF, Cdk, and cyclin during the cell cycle.
13. Describe a chemical external growth factor and a physical external growth factor that influence cell division (figures 12.15 and 12. 16).
14. State 5 differences between cancer cells and normal cells.