Chapter 12 Review: Mitosis

Questions to answer:

- I. What has to occur for a cell to divide? What purposes do these divisions serve?
- 2. Why does the DNA condense into chromosomes during cell division?
- 3. Explain what happens during each of the following phases of the cell cycle in a typical eukaryotic cell:
 - I. Interphase
 - i. GI
 - ii. S
 - G2 iii.

2. Prophase

- 3. Pro-Metaphase
- 4. Metaphase
- 5. Anaphase
- 6. Telophase
- 7. Cytokinesis

- 4. If a cell has 12 pairs of chromosomes in G1 of interphase, how many chromosomes does it have during each of the following phases of the cell cycle?
 - I. G2:
 - 2. Metaphase:
 - 3. Immediately after cytokinesis:
- 5. Why does a multicellular organism need to control and coordinate cell division? What might be the consequences of uncontrolled cell division in a multicellular organism?
- 6. What does it mean when we say that there are several "checkpoints" that occur during the cell cycle?
- 7. Diagram the relationship between cdK, and cyclin.
- 8. Give an example of an external signal that regulates cell division and explain how it works.
- 9. Compare and contrast the functions of proto-oncogenes and tumor suppressor genes. Give an example of each and explain why mutations in these genes can lead to cancer.