Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ AP Biology Reading Guide

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Chapter 9: The Cell Cycle

2) How does the genome of a prokaryotic cell differ from that of a eukaryotic cell?

3) What is a somatic cell? How many chromosomes in a human somatic cell?

4) Name the two types of gametes. How many chromosomes in a human gamete?

5) You are going to have to learn the difference between a number of similar-sounding terms. The sketch that looks like an X represents a *replicated chromosome* that has two *sister chromatids*. The narrow “waist” represents the location of the *centromere*. Students often get all these terms confused, so take time now to label the indicated areas of the figure and then define each of the terms below. 

**Chromosome:**

**Chromatid:**

**Centromere:**

**Chromatin:**

6) What is the difference between mitosis and meiosis? How is the chromosome number of daughter cells different?

7) Select either *mitosis* or *meiosis* to answer the following questions.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ By what process are the damaged cells in a wound replaced?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ By what process are eggs formed?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ By what process does a zygote develop into a multicellular organism?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ In which process are identical daughter cells produced?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Which process reduces chromosome number of daughter cells?

8) A horse has 64 chromosomes in her somatic cells.

How many chromosomes are in her egg cells? \_\_\_\_\_\_\_\_\_\_\_\_

How many are in her skin cells? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How many are in her fertilized egg (zygote)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9) Label each of the parts of the cell cycle listed below, and give a brief explanation of what happens in each phase.



**G1**

**S**

**G2**

**M**

10) What is the centrosome? What happens to the centrosome during interphase and then prophase?

11) Label the stages and briefly describe each phase.





12) What is the role of the kinetochores and the microtubules?

13) How does cytokinesis differ in animal and plant cells? What is it called in each? Use a picture to help your explanation.

15) Eukaryotic mitosis is thought to have evolved from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16) Why is the regulation of the cell cycle critical to normal cells?

17) Summarize what happens at each checkpoint. You may add to this chart as you study this section.

|  |  |
| --- | --- |
| **Checkpoint** | ***What happens? How is it controlled?*** |
| **G1** |  |
| **G2** |  |
| **M** |  |

18) What is the G0 phase? Describe this phase.

19) Identify the role of the following in the cell cycle clock:

a. Kinase:

b. Cyclin:

c. Cdks:

21) Describe what triggers mitosis from G2.

23) Cancer cells exhibit different behaviors than normal cells. Here are two normal behaviors they no longer show. Explain each behavior.

**density-dependent inhibition**

**anchorage dependence**

24) What happens when cancer develops?

25) What is transformation? Metastasis?