

When labeling a figure, draw the figure to be labeled.

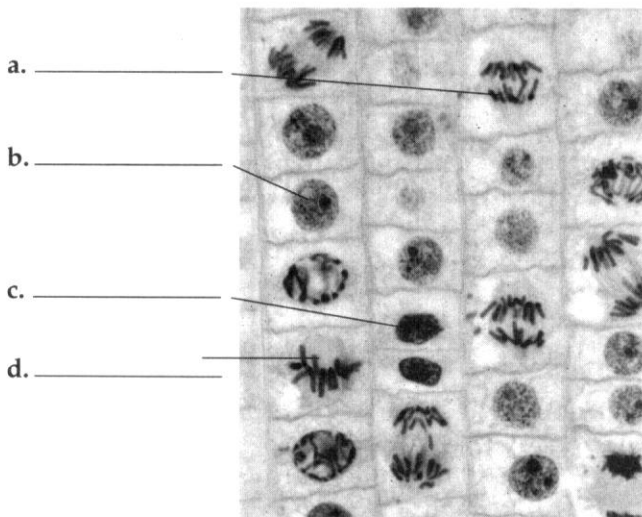
IQ

IQ

1. What is a genome?
2. How many chromosomes are in a human somatic cell?
3. How many in a gamete?
4. How are the three subphases of interphase alike?
5. What key event happens during the S phase?
6. Make a labeled drawing of mitosis with a $2n = 4$.
7. What is MPF?
8. Describe the concentrations of Cdks and cyclin throughout the cell cycle.

SYK

9. Describe the life of one chromosome as it proceeds through an entire cell cycle starting with interphase and ending with telophase of mitosis.
10. Draw a sketch of a mitotic spindle. Identify and list the functions of the components.
11. In this photomicrograph of cells in an onion root tip, identify the cell cycle phase of the indicated cells.



12. If a cell no longer divides, it is in the _____ phase.
13. Sister chromatids separate and chromosomes move apart in which phase?
14. Mitotic spindle begins to form in which phase?
15. Cell plate forms in which phase?
16. When do chromosomes replicate?
17. When do chromosomes line up on the equator?
18. Which is the phase after DNA replication?
19. When do chromosomes become visible under a light microscope?
20. When does the kinetochore-microtubule interaction move chromosomes to the midline?
21. In which phase does the restriction point occur?

22. One of the major differences in the cell division of prokaryotic cells compared to eukaryotic cells is that
- cytokinesis does not occur in prokaryotic cells.
 - genes are not replicated on chromosomes in prokaryotic cells.
 - the duplicated chromosomes are attached to the nuclear membrane in prokaryotic cells and are separated from each other as the membrane grows.
 - the chromosomes do not separate along a mitotic spindle in prokaryotic cells.
 - the chromosome number is reduced by half in eukaryotic cells but not prokaryotic cells.
23. A plant cell has 12 chromosomes at the end of mitosis. How many chromosomes would it have in the G_2 phase of its next cell cycle?
- 6
 - 9
 - 12
 - 24
 - It depends on whether it is undergoing mitosis or meiosis.
24. The longest part of the cell cycle is
- prophase.
 - G_1 phase.
 - G_2 phase.
 - mitosis.
 - interphase.
25. In animal cells, cytokinesis involves
- the separation of sister chromatids.
 - the contraction of the contractile ring of microfilaments.
 - depolymerization of kinetochore microtubules.
 - a protein kinase that phosphorylates other enzymes.
 - sliding of nonkinetochore microtubules past each other.
26. Humans have 46 chromosomes. That number of chromosomes will be found in
- cells in anaphase.
 - the egg and sperm cells.
 - the somatic cells.
 - all the cells of the body.
 - only cells in interphase.
27. Sister chromatids
- have one-half the amount of genetic material as does the original chromosome.
 - start to move along kinetochore microtubules toward opposite poles during telophase.
 - each have their own kinetochore.
 - are formed during prophase.
 - slide past each other along nonkinetochore microtubules.
28. Which of the following would *not* be exhibited by cancer cells?
- changing levels of MPF concentration
 - passage through the restriction point
 - 'density-dependent inhibition
 - metastasis
 - response to growth factors
29. Which of the following is *not* true of a cell plate?
- It forms at the site of the metaphase plate.
 - It results from the fusion of microtubules.
 - It fuses with the plasma membrane.
 - A cell wall is laid down between its membranes.
 - It forms during telophase in plant cells.
30. A cell that passes the restriction point will most likely
- undergo chromosome duplication.
 - have just completed cytokinesis.
 - continue to divide only if it is a cancer cell.
 - show a drop in MPF concentration.
 - move into the G_0 phase.
31. The rhythmic changes in cyclin concentration in a cell cycle are due to
- its increased production once the restriction point is passed.
 - the cascade of increased production once its enzyme is phosphorylated by MPF.
 - its degradation by an enzyme phosphorylated by MPF.
 - the changing ratio of cytoplasm to genome.
 - the binding of the growth factor PDGF.