Mitosis Study Guide

1. Number the following steps of **Mitosis** Cell Division in the correct order:

_____ cytokinesis happens

_____ the chromosomes line up single file on the equator line of the cell

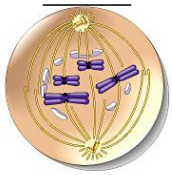
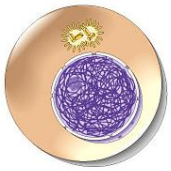
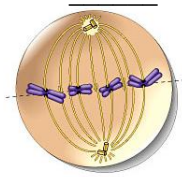
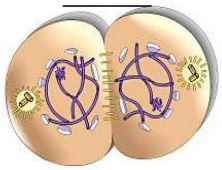
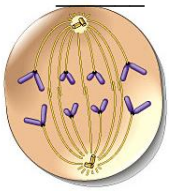
_____ the nucleolus and nuclear membrane reappear

_____ the nucleolus and nuclear membrane disappear

_____ the sister chromatids are ripped apart and pulled to opposite poles of the cell

2. Number the correct sequence for the Mitosis Cell Divison pictures below

_____ _____ _____ _____ _____

3. _____ 4. _____ 5. _____ 6. _____ 7. _____

MATCH each picture above and description below to the corresponding cell cycle phase.

Cell Cycle Phases

A = Anaphase D = Interphase

B = Telophase E = Metaphase

C = Prophase

_____8. Sister chromatids are ripped apart and pulled to opposite poles of the cell

_____9. The spindle disappears and single chromosomes unwind returning to chromatin

_____10. Cytokinesis happens right at the end of this phase

_____11. The nucleolus and nuclear membrane disappear as the chromatin coils tightly forming chromosomes.

_____12. The "double" chromosomes line up in a single file on the equator

_____13. The cells grow, builds new cell organelles, and the DNA is copied

_____14. The spindle grows as the centrioles spead to opposite poles of the cell

_____15. This phase takes 90% of the cell cycle time

SHORT ANSWER:

16. List 3 reasons why human use Mitosis Cell Division?

17. List all the cellular activities indicating that a cell is leaving interphase and beginning mitosis.

18. Draw a diagram of a "double" chromosome …. Label the 2 sister chromatids and the centromere

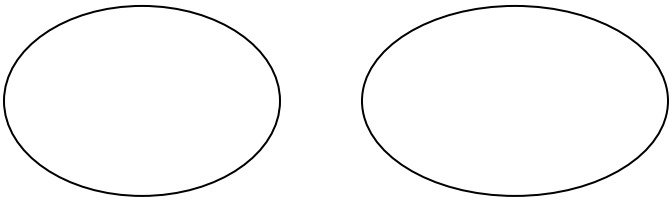
19. List all of the cell cycle phases in which "double" chromosomes are visible.

20. Draw a "single" chromosome and list all of the cell cycle phases in which "single" chromosomes are visible

21. Suppose a cell has 12 chromosomes. How man y chromosomes would each daughter cell receive if the cell completed Mitosis Cell Division twice?

22. What type of cells reproduce by binary fission?

23. Suppose a cell (2n=4) completes Mitosis Cell Division but the centrioles are damaged. Predict by drawing a diagram below what the 2 daughter cells would look like?



24. Suppose the same cell (2n=4) completes Mitosis Cell Division but cytokinesis fails to happen. How many chromosomes would be in the daughter cell …. Would they be "single" or "double"?

Identify whether each description below matches <u>asexual</u> or <u>sexual</u> reproduction.

A = asexual reproduction **B = sexual reproduction**

_____ 25. produces "cloned" cells identical to the original cell

_____ 26. involves the blending of parent DNA and then fertilization

_____ 27. both parents pass on one of each gene to their offspring

_____ 28. brings together NEW combinations of genes creating wide variation in offspring

_____ 29. usually involves only ONE parent

_____ 30. the way most eukaryotic organisms like Plants and Animals reproduce

_____ 31. allows for one disease to wipe out an entire population

_____ 32. allows for rapid population growth under favorable, stable conditions

_____ 33. slower rates of reproduction because some time and energy is used to attract a mate and prepare gametes

_____ 34. allows some members of the population to survive the challenges of a changing environment

_____ 35. allows for a new generation through binary fission, budding, fragmentation, and vegetative runners