Cell Cycle and Mitosis Review Sheet

1. List and describe what is occurring during the 2 general stages of the cell cycle.
2. List and describe what is occurring during each of the 3 stages of interphase.
3. What are the 2 sub stages of cell division?
4. Define mitosis.
5. What are the 5 true phases of mitosis?
6. Explain cytokinesis?
7. If a plant cell has 24 DNA strands, how many DNA strands will be found in a given cell at the end of each of the following: (for this question count 1 replicated chromosome comprised of 2 daughter chromosomes as 2 DNA strands)
   G_1 ____
   S ____
   G_2 ____
   Prophase ____
   Metaphase ____
   Anaphase ____
   Telophase ____
   Cytokinesis ____
8. List 2 differences between plant and animal cell mitosis.
9. Explain the difference between chromatin and a chromosome.
10. Explain the difference between a chromosome and 2 sister chromatids.
11. What is a centromere?
12. What is the role of the spindle?
13. Sketch an animal cell in interphase and describe what is happening to the chromosomes. (label cell membrane, nuclear membrane, chromatin)
14. Sketch an animal cell in prophase and describe what is happening to the nucleus and chromosomes. (label chromosomes, sister chromatids, centromere)
15. Sketch an animal cell in metaphase and describe what is happening to the chromosomes. (label spindle fibres, centrioles)
16. Sketch an animal cell in anaphase and describe what is happening to the chromosomes. (label cleavage furrowing, daughter chromosomes)
17. Sketch an animal cell in telophase and describe what is happening to the cell membrane, nucleus, and chromosomes. (label nuclear membrane reforming)

1. List and describe what is occurring during the 2 general stages of the cell cycle.
   Interphase – cell growth and DNA replication
   Cell Division - the cells divides onto 2 daughter cells

2. List and describe what is occurring during each of the 3 stages of interphase.
   G1 – cell growth
   S - DNA replication
   G2 – more cell growth and final preparation for cell division

3. What are the 2 sub stages of cell division?
   Mitosis and Cytokinesis

4. Define mitosis.
   The process of nuclear division (the one nucleus divides into 2)

5. What are the 5 true phases of mitosis?
   prophase, prometaphase, metaphase, anaphase, telophase

6. Explain cytokinesis?
   the cytoplasm divides into 2 halves as the cell splits in half forming 2 cells

7. If a plant cell has 24 DNA strands, how many DNA strands will be found in a given cell at the end of each of the following: (for this question count 1 replicated chromosome comprised of 2 daughter chromosomes as 2 DNA strands)
   G_1 24
   S 48
   G_2 48
   Prophase 48
   Metaphase 48
   Anaphase 48
   Telophase 48
   Cytokinesis 24

8. List 2 differences between plant and animal cell mitosis.
   Plants have no cleavage furrowing and no centrioles

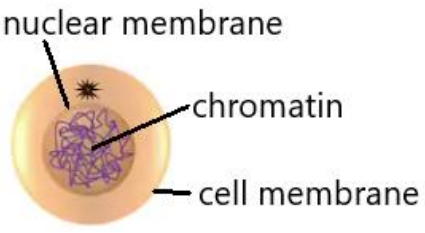
9. Explain the difference between chromatin and a chromosome.
   chromatin is long thin threadlike form of DNA
   chromosome is short thick coiled up form of DNA

10. Explain the difference between a chromosome and 2 sister chromatids.
    2 sister chromatids while still attached to one another form one chromosome

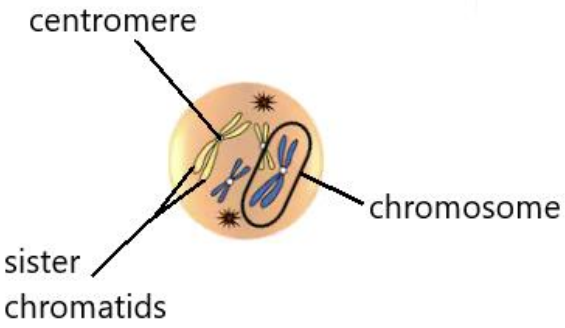
11. What is a centromere?
    Point of attachment for sister chromatids

12. What is the role of the spindle?
    To grab hold of the chromosomes, line them up in metaphase and pull the sister chromatids apart in anaphase

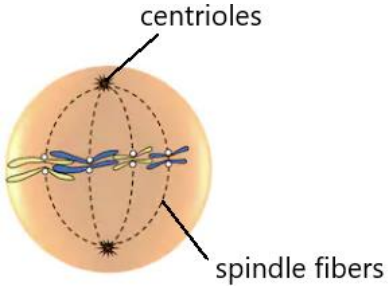
13. Sketch an animal cell in interphase and describe what is happening to the chromosomes. THEY REPLICATE



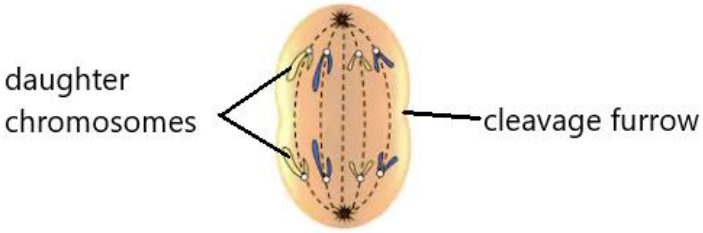
14. Sketch an animal cell in <u>prophase</u> and describe what is happening to the nucleus and chromosomes. THE NUCLEAS BREAKS DOWN AND THE CHROMATIN CONDENSE INTO CHROMOSOMES



15. Sketch an animal cell in <u>metaphase</u> and describe what is happening to the chromosomes. THEY LINE UP IN THE MIDDLE



16. Sketch an animal cell in <u>anaphase</u> and describe what is happening to the chromosomes.
THE SISTER CHROMATIDS SEPARATE



17. Sketch an animal cell in <u>telophase</u> and describe what is happening to the cell membrane, nucleus, and chromosomes. THE CELL MEMBRANE BEGINS TO CLEAVE INTO 2 CELLS. THE NUCLEAS REFORMS AROUND 2 SETS OF DNA, THE CHROMOSOMES NOW AT THE POLES WILL THEN UNCOIL AND TURN BACK INTO CHROMATIN