

Reproduction Review

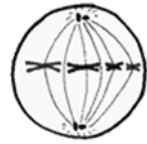
Name: _____

Answer the following questions in the space provided:

1. Match the following steps of Mitosis with the correct event that takes place and diagram:

Interphase Prophase Metaphase Anaphase Telophase

- _____ The Double stranded chromosomes line up in the middle of the cell
- _____ Chromosomes split and move to opposite poles of the cell
- _____ Not really a stage of Mitosis, but is where growth & preparation occur
- _____ Thin chromosomes shorten and thicken, nuclear membrane dissolves
- _____ Cytokinesis begins; new nuclear membrane forms, daughter cells form



2. Define:

Cytokinesis: _____

Daughter Cells _____

3. Fill-in the following chart for an organism that has 42 chromosomes in its somatic (body) Cells

Characteristic	Mitosis	Meiosis
# of chromosomes (end result)		
Number of stages (steps)		
Type of cell that uses.....		
Type of reproduction that uses...		
1 Benefit of using each		

4. Match the following type of asexual reproduction with the correct definition:

1. Binary Fission _____ cells splits into two equal parts by mitosis
2. Budding _____ the cell produces a small growth by mitosis it continues to grow until it separates
3. Regeneration _____ growing back or replacing lost body parts
4. Spore Formation _____ production of thousands of highly resistant cells(spores) by mitosis
5. Fragmentation _____ a part of the organism breaks off and a new organism grows

5. Give a difference between plant and animal cells.

6. What is the function of the nucleus in the cell?

7. What items are found in the nucleus?

8. What is meiosis? Why is it important?

9. List the differences between sexual and asexual reproduction.

10. Where in the female reproductive system does fertilization take place?

11. Where in the female reproductive system does the zygote develop into a baby?

12. Identify the main male sex hormone. What are its main functions?

13. List the four (4) main female hormones. For each, describe their function, and where they are produced.

14. Fill in the chart regarding advantages and disadvantages of sexual and asexual reproduction:

	Advantages	Disadvantages
Sexual Reproduction		
Asexual Reproduction		

15. Describe the path of a sperm cell as it exits the male body – identify all major parts and glands.

16. Describe the path of a female egg cell as it exits the body. Identify all major parts.

17. If an organism has 76 chromosomes, how many will its sex cells have? How does this happen?

18. What are 3 functions (jobs) of cell division?

19. What are the major parts of the life cycle of a cell? Which is the longest part?

20. What do the terms haploid and diploid mean?

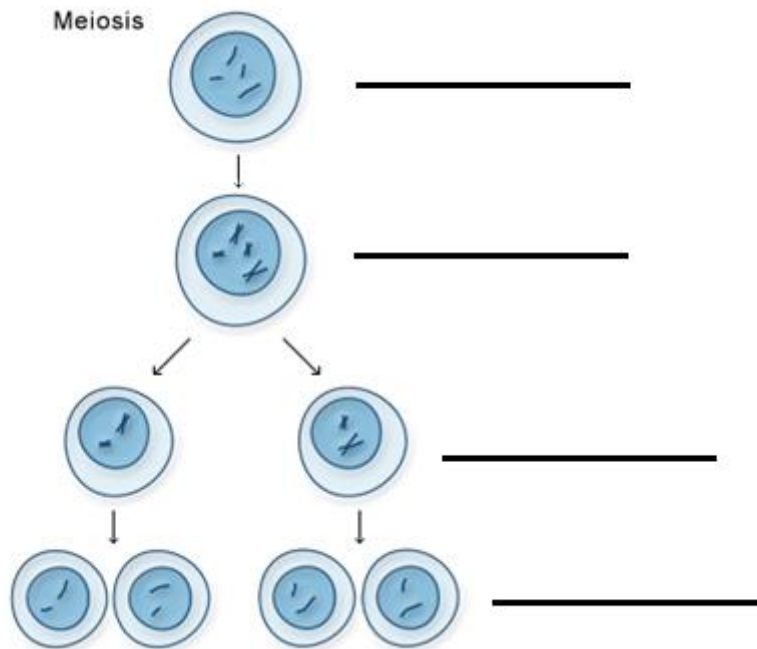
21. What are the two major types of cells in all animals? State which is haploid and which is diploid.

22. There are two different types of cell division – Mitosis and Meiosis. Compare them by completing the following table:

	Mitosis	Meiosis
Type of reproduction (sexual or asexual)		
Type of cells produced		
Number of cells produced		
Number of divisions		
How daughter cells compare to mother cell		
# of chromosomes (haploid or diploid)		

23. What are homologous chromosomes?

24. In diagram of meiosis below, indicate if the cells at each step are **haploid or diploid**:



25. Below are several gene pairs for the trait of “hair colour”. “D” represents the dominant dark hair; “d” represents the recessive blond hair.

i) DD

ii) Dd

iii) dd

a) describe each pair as “homozygous dominant”, “homozygous recessive”, or “heterozygous”

i) _____ ii) _____ iii) _____

b) for each example above state what the hair colour of each will be.

i) _____ ii) _____ iii) _____

25. Briefly state what **phenotype** means and give an **example** of a **phenotype**.

26. Briefly state what **genotype** means and give an **example of a genotype**.

27. A scientist crossed pea plants with red flowers with pea plants that had white flowers.

Red is dominant to white.

a. Using the letter "R" write the symbols for:

- I. Homozygous Red = _____
- II. Heterozygous Red = _____
- III. White = _____

b. Complete the punnett square resulting from crossing **homozygous red** with **homozygous white** plants.

a) The **genotypes** for the offspring are _____.

b) One of the offspring from above is crossed with another **homozygous white** plant. Complete a punnett square for this and state the **phenotypes** and **genotypes** of the offspring.

28. A man is **heterozygous for brown** eye colour. He marries a woman who is **homozygous recessive for blue** eye colour.

a. What is the man's genotype?

b. What is the man's phenotype?

c. Give the woman's genotype?

d. Give the woman's phenotype?

e. Draw a **punnett square** for the above pairing of individuals.

f. State the **phenotypes** and **genotypes** of their children.

29. A plant breeder has a strain of corn he wants to use in breeding. However, **he is unsure** if the genotype of the corn is TT or Tt. Where '**T**' results in stalks that are tall and '**t**' is for short stalks. To determine the genotype, he crosses his corn with another corn he knows to be tt.

a. Draw a punnett square for both possibilities:

TT x tt

Tt x tt

b) Clearly explain how he will know if his corn is TT or Tt.

7. You are a genetics counselor. **Neither** Mr. nor Mrs. Smith has Tay-Sachs disease, **a recessive genetic disease**. However, their **first child died of Tay-Sachs** at the age of 3. Prepare a **punnett square** and tell this couple **how likely they are** to have another child with Tay-Sachs.

30. Create a Creature:

The **genotype** for the father "creature" tt bb Rr Ff

The **genotype** of the mother "creature" is Tt Bb rr Ff

Where: T = tall t = short

R = round body r = pear shaped body

B = large beak b = small hooked beak

F = large feet f = small feet

a) Draw a picture of each parent

b) What is the **% possibility** for any of their offspring to be:

i) large beaked (do a punnett square for "beaks")

ii) homozygous for round body (do a punnett square for "bodies")

iii) homozygous for small feet (do a punnett square for "feet")

c) What % of their children would have their mother's body shape?

d) What % of their children would be as "tall" as their father?

31. How can you explain the fact that when you cross a tall plant and a short plant, you don't usually get offspring that are of medium height?

32. What is variation? Why is variation important to the survival of a species?

33. What is a Karyotype and how is it useful in the detection of genetic disorders?