

So: Nature's solution \rightarrow MEIOSIS

1. Background:

(a) cells with _____
are (or $2n$)

(b) cells without _____
are (or n)

(c) Human _____ () cells
are . The 46 Chromosomes
are really _____.

(d) Human _____ (cells)
are . They have only

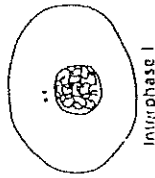
(e) MEIOSIS changes ($2n$)
_____ cells into (n)

V. MEIOSIS AND SEXUAL REPRODUCTION:

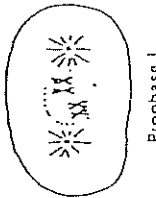
(1) MEIOSIS:

- Is the process of cell division used by the organism to halve the genetic information before reproduction.
- It occurs in the ovaries of females and the testes of males. It produces pollen in plants. If it did not occur each new generation would have twice as many chromosomes in each cell as the previous generation.
- In this process we want to half the number of chromosomes but we also want to make sure that one chromosome of every trait goes into each cell.
- Occurs in a series of stages that are divided into 2 basic steps:

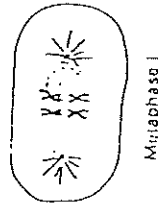
1. INTERPHASE I: - DNA is replicated



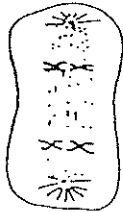
- 2. PROPHASE I: - nuclear membrane disappears.
- chromosomes condense and become visible.



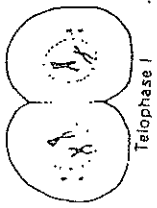
3. METAPHASE I: - chromosomes line up in the middle of the cell.



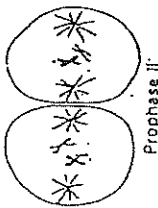
4. ANAPHASE I: - chromosomes are pulled apart by spindle.



chromosome pair each.



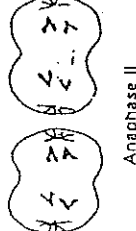
6. PROPHASE II: - cells begin to divide again.



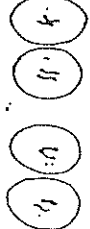
7. METAPHASE II: - chromosomes line up in the middle of the cell.



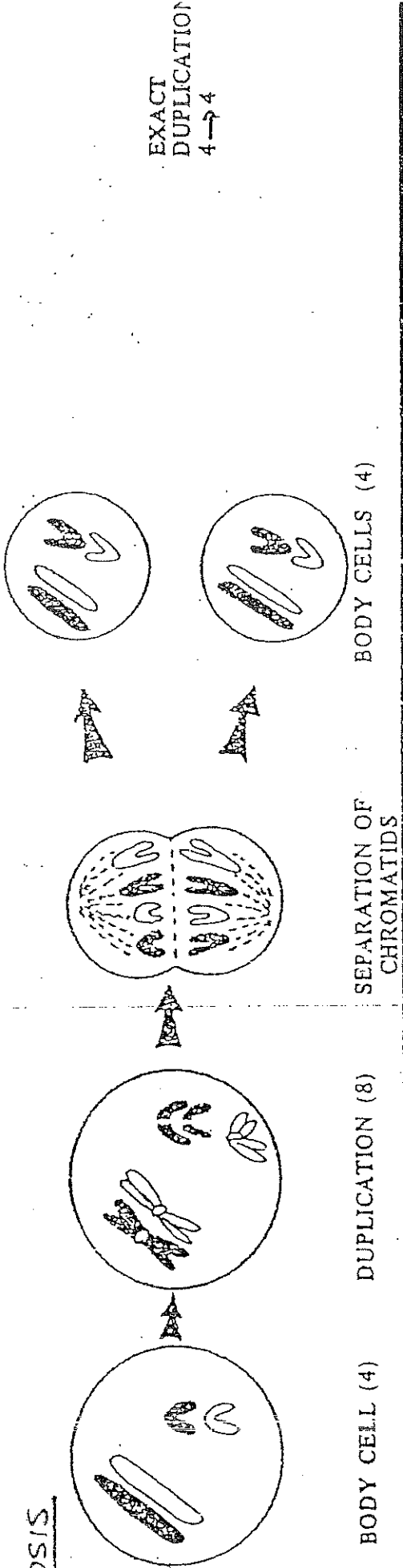
8. ANAPHASE II: - the spindle pulls the chromatids apart



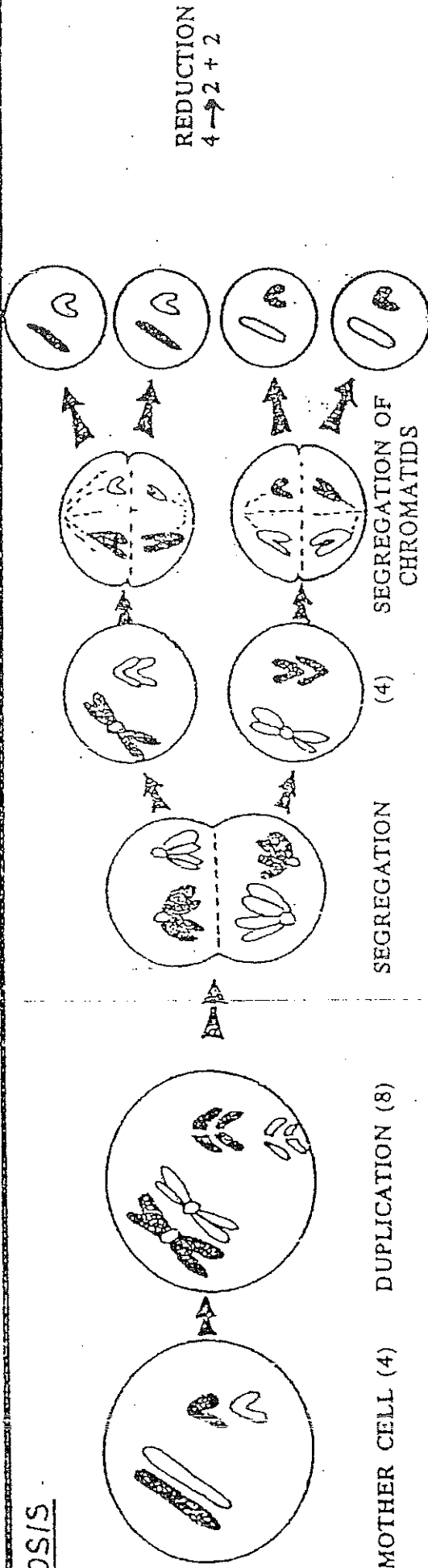
9. TELOPHASE II: - From the original cell we now have 4 daughter cells each with half the genetic information as the parent cell. These cells are now ready for sexual reproduction.



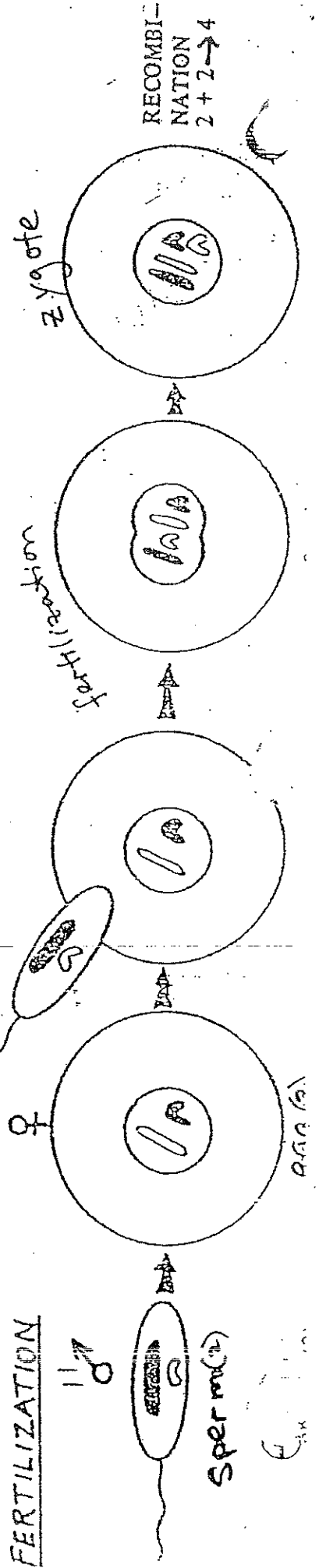
MITOSIS



MEIOSIS



FERTILIZATION



MITOSIS

MEIOSIS

Where it occurs
in body

Results

Chromosome #

describe change in number
from parent to daughter cell

of cells produced

of divisions

duplication of chromatids (phase?)

paired chrom. separate? (what phase)

chromatid separate? (what phase)

Importance of (Purpose)

(a) In the space shown below, write the names each of the labeled parts from the diagrams:

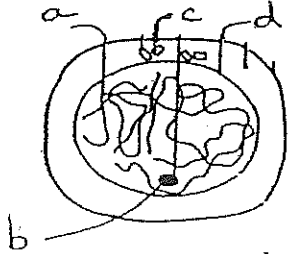
a: _____
 c: _____
 e: _____

b: _____
 d: _____
 f: _____

(b) Beside each of the diagrams shown below, describe what happens in that phase of meiosis.

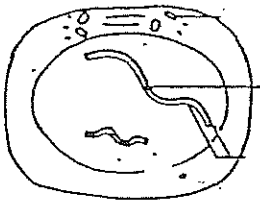
Meiosis I

Interphase I



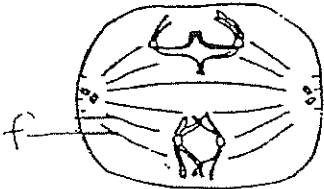
1. _____

Prophase I



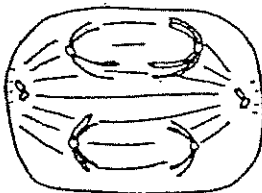
1. _____
 2. _____
 3. _____

Metaphase I



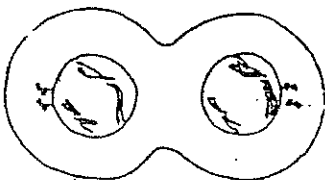
1. _____

Anaphase I



1. _____
 2. _____

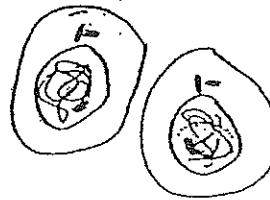
Telophase I



1. _____
 2. _____

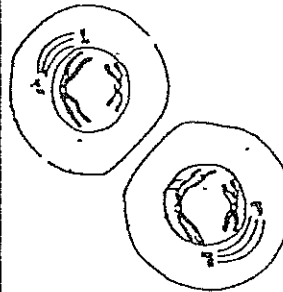
Meiosis II

Interphase II



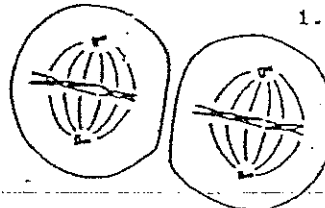
1. _____

Prophase II



1. _____
 2. _____
 3. _____

Metaphase II



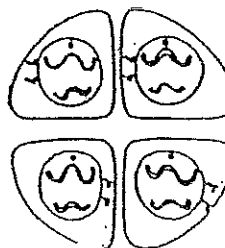
1. _____

Anaphase II



1. _____
 2. _____

Telophase II

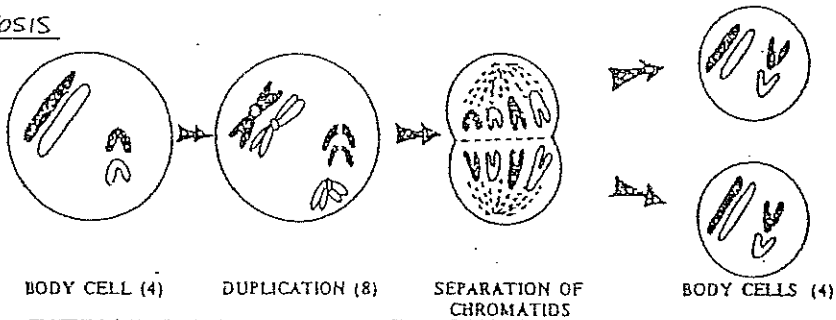


1. _____
 2. _____

Matching Place the number of the best choice on the space provided. Numbers may be used more than once.

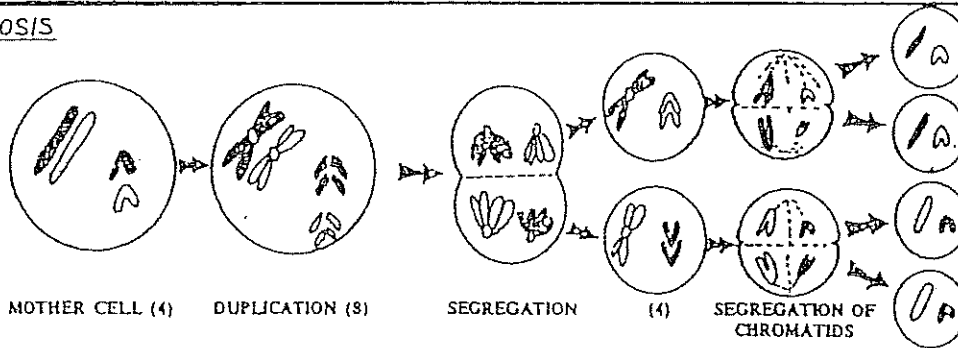
- | | | |
|---------------------------|---|-------|
| 1. Mitosis | (a) Haploid cells are formed | _____ |
| 2. Meiosis | (b) Replication occurs | _____ |
| 3. Both Mitosis & Meiosis | (c) Chromatids separate at anaphase | _____ |
| | (d) 2 divisions occur | _____ |
| | (e) Chromosome number kept constant | _____ |
| | (f) Paired chromosomes separate at anaphase | _____ |
| | (g) 4 cells produced from 2 divisions | _____ |
| | (h) keeps chromosome number from increasing generation after generation | _____ |
| | (i) occurs only in the gonads | _____ |
| | (j) prevents chromosome number from doubling at fertilization | _____ |

MITOSIS



EXACT
DUPLICATION
4 - 4

MEIOSIS



REDUCTION
4 - 2 + 2