Cell Division

Sequence of events → cell duplicates its genome, synthesis other components of cell and divides into 2 daughter cells.

⇝ interphase → preparation phase

↳ G_1 phase → gap 1

↳ S-phase → synthesis

↳ G_2 phase → Gap 2

⇝ Division phase → Dividing phase. (M-phase)

Karyokinesis (Division of nucleus)

1- Prophase
2- Metaphase
3 Anaphase
4. Telophase

Cytokinesis (Division of cytoplasm)

↳ chromosomes are in the form of chromatin → uncondensed form.

Interphase:

⇝ Cell continuously grow in size.

G_1 phase:

↳ many cell organelles duplicate.

↳ Cell is metabolically active.

↳ Number of chromosomes: 2n
- ↳ 46 chromosomes
- ↳ 46 chromatids.

S phase:

↳ DNA replication : 2n
- ↳ 46 chromosome
- ↳ 92 chromatids.

↳ Centrioles duplicate

* Number of chromosomes remains same

G_2 Phase:

→ proteins → synthesize

→ cytoplasm growth

→ chromosome number: 2n

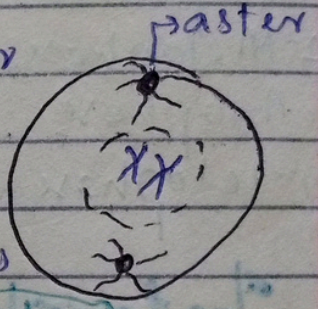
→ heart cells
→ Brain cells

Go phase:
if cell has to exit the (G2 phase.)

Division Phase: → mitosis phase.

↳ Cell divides into two
→ Number of chromosomes remains same in daughter cells.

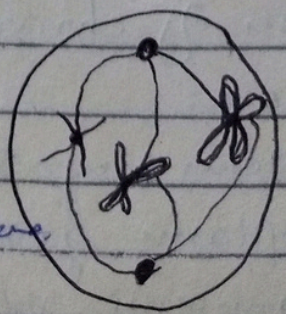
⇝ Prophase: **Karyokinesis:**
↳ condensation of chromosome
↳ centrioles moves to opposite poles.
↳ Nucleolus disappear
↳ cell organelles disappear
↳ each chromosome consist of 2 chromatids.
→ each centriole radiates out microtubules called (aster).



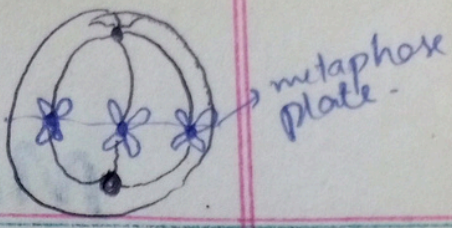
Late prophase:
↳ nuclear membrane disintegrate
↳ Chromosomes appear.
↳ centrioles reached opposite poles.

⇝ ~~Anaphase~~

Metaphase:
→ best phase to study chromosomes.
→ complete disintegration of nuclear membrane.
→ condensation of chromosome complete.



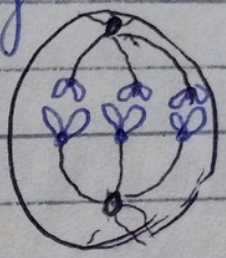
→ Spindle fibers attach to (kinetochore) of chromosome



→ chromosomes aligned at metaphase plate

Anaphase:

→ chromosomes splits simultaneously
→ daughter chromosomes migrate to opposite pole
→ No. of chromosomes = 92
↳ 4n



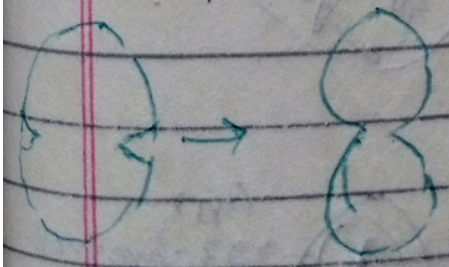
Telophase:

→ Final stage
→ chromosomes → uncondensed → chromatin
→ nuclear envelope, organelles → reappear.

Cytokinesis:

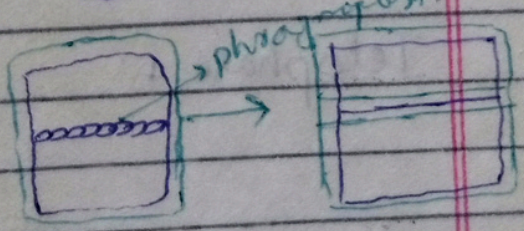
Animal Cell

→ Cell membrane invaginates inward
→ Cell furrow



Plant Cell.

→ phragmoplast → cellplate.
↳ accumulation of golgi vesicles at center.
cell wall can't divide → rigid.



Meiosis

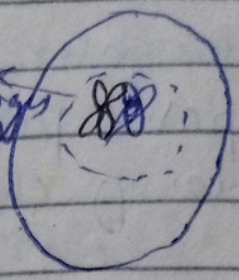
Interphase
G1 S G2

Meiosis:
→ meiosis I
→ meiosis II
— Interkinesis

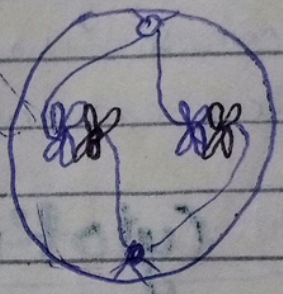
Meiosis I:

Prophase I:

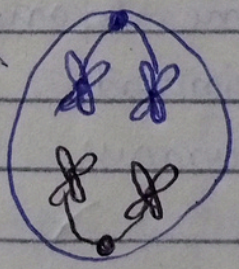
Pairing of homologous chromosomes



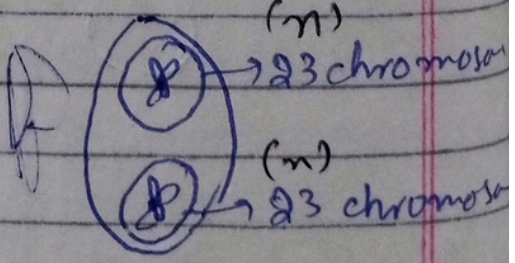
Metaphase I:



Anaphase I:

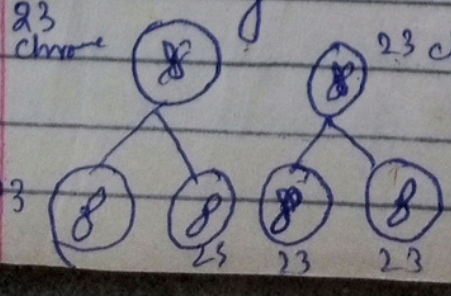


Telophase I:



Meiosis II:

Exactly same as mitosis.



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