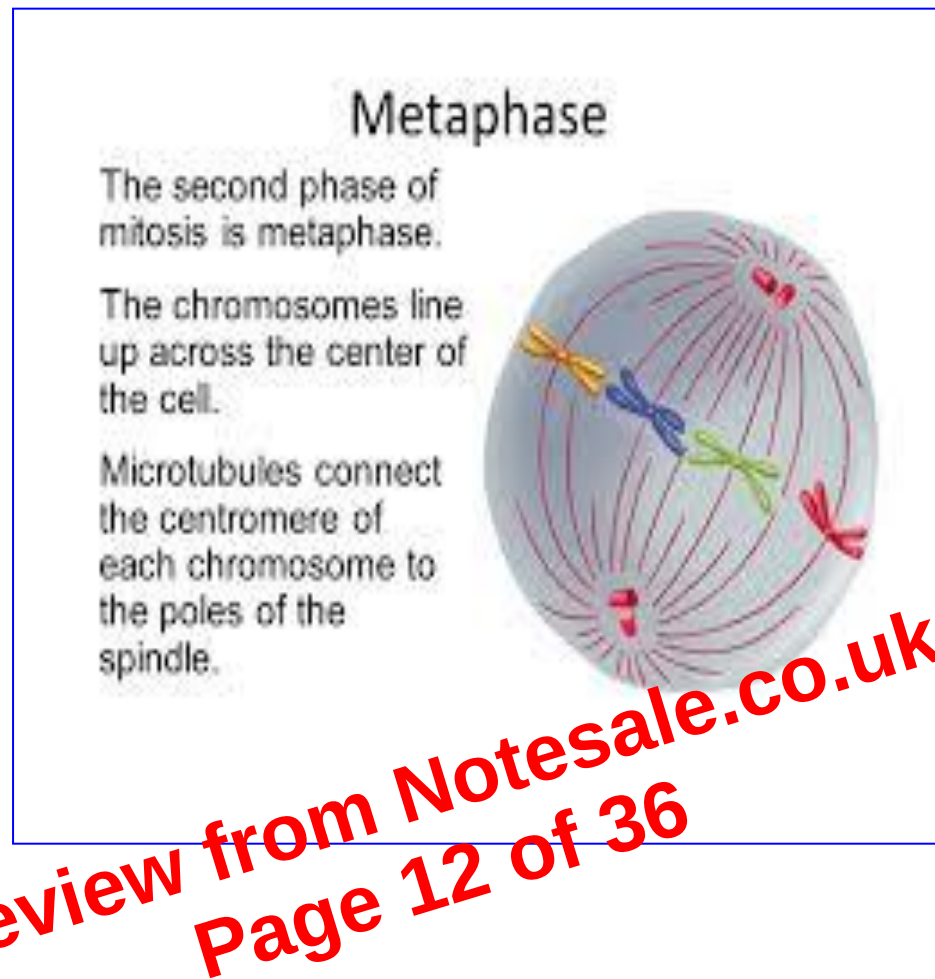


METAPHSAE

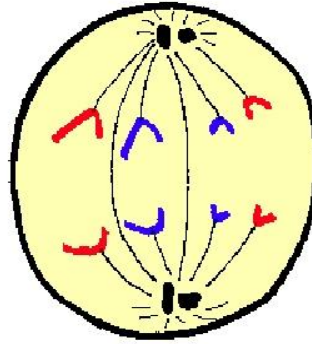


- Spindle microtubules take the central position due to the disappearance of nuclear envelope.
- Chromosome which are present irregularly in the cytoplasm become more or less regular i.e. all the chromosomes come to lie at the equator to form the metaphase plate.

ANAPHASE

Anaphase

- Chromatids move apart from each other.
- Chromatids are called chromosomes after the separation.
- Chromosomes can be seen moving. They take on a rough V shape.
- Result of anaphase is an equal separation and distribution of chromosomes.



→ Anaphase is divided into 3 stages. It lasts for 2-3 mins.

Early Anaphase	Middle Anaphase	Late Anaphase
Sister chromatids of each chromosome separated from each other due to the separation of Centromere. These sister chromatids start moving towards their poles.	The daughter chromosomes start moving towards their respective poles.	The daughter chromosomes finally reach their respective poles.

Cytokinesis is different in animal cells :

- **In animal cells cytokinesis occurs by means of cleavage or furrowing.**
- **During the late Anaphase or Early Telophase a small cleavage or constriction appears in the centre of cell on both sides.**
- **This constriction is brought about by the peripheral band of Actin and Myosin microfilaments. This constriction finally deepens and divides the cell into two equal halves.**

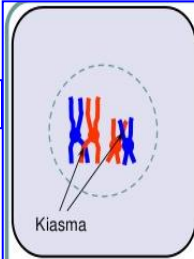
Preview from Notesale.co.uk
Page 17 of 36

Differences in Mitosis within Plant and Animal Cells

Feature	Animal cell	Plant cell
Cytokinises	Constriction of the cell membrane and the appearance of a cleavage furrow that increases in indentation until the two cells separate completely.	The Golgi apparatus sends vesicles filled with polysaccharides to the equator region. These vesicles fuse and form the cell plate. The cell plate develops into a cell wall by the addition of cellulose, pectin and other tough polysaccharides.
Centrioles	Present and they send out spindle fibers.	Absent, and so spindle fibers arise from free microtubules, that assemble in one point.

27

4.



Diplotene:

- chromosomes begin to separate, crossing over visible.

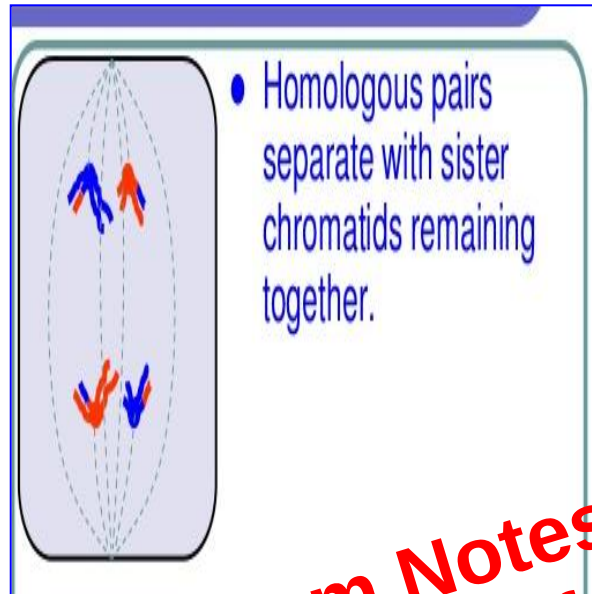
Preview from Notesale.co.uk
Page 24 of 36

5.

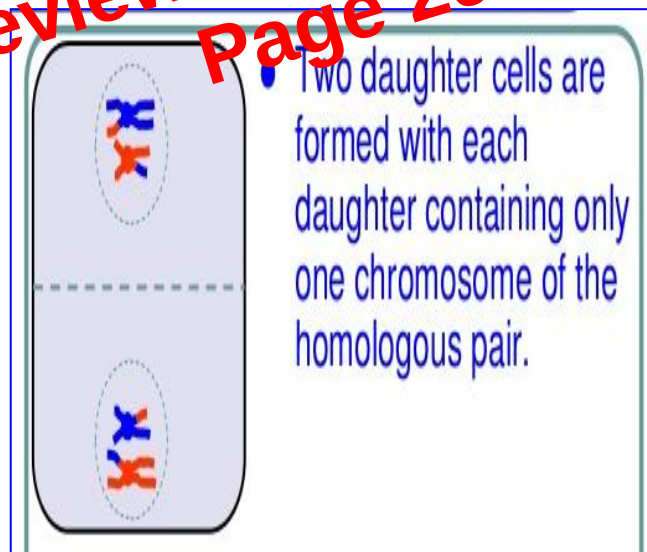


Diakinesis:

- the centromeres move away from each other
- the chromosomes remain joined only at the tips of the chromatids.



Anaphase I

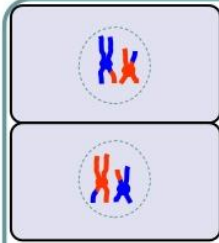


Telophase I

- Prophase I
 - Leptotene
 - Zygotene
 - Pachitene
 - Diplotene
 - Diakinesis.
- Metaphase I
- Anaphase I
- Telophase I

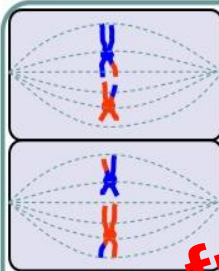
Preview from Notesale.co.uk
Page 29 of 36

Prophase II



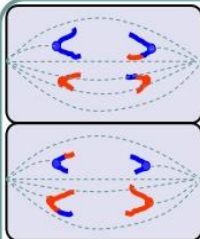
- the nuclear envelope is dissolved again
- the spindle is set up again
- Prophase II is identical to prophase of mitosis except that there is half the amount of chromosomes

Metaphase II



- Chromosomes line up **individually** on the equator plate.

Anaphase II



- At anaphase the centromeres divide, splitting the 2 chromatids
- The one-chromatid chromosomes are pulled to opposite poles.

- | • Meiosis I | • Meiosis II |
|---------------|-----------------|
| • Prophase I | • Prophase II |
| • Leptotene | • Metaphase II |
| • Zygotene | • Anaphase II |
| • Pachitene | • Telophase II. |
| • Diplotene | |
| • Diakinesis. | |
| • Metaphase I | |
| • Anaphase I | |
| • Telophase I | |