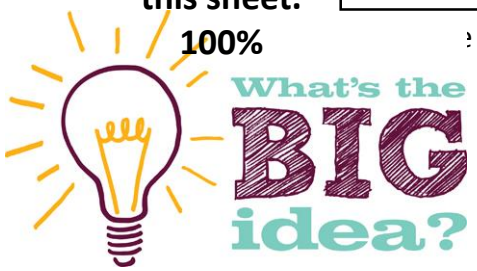
You need to know the content of this sheet. 100%

100% Sheet
DNA and Stem Cells



Organisms

are organised on a cellular basis and require a supply of energy or materials.

DNA is the material that makes up your genes and chromosomes. It is located in the nucleus of the cells and is inherited during fertilisation.

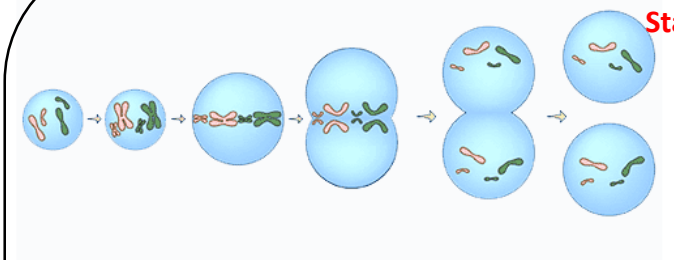
Egg + sperm – zygote – embryo—foetus --baby

During the early stages of development mitosis is occurring making new cells for growth and development. These early cells in the embryo are identical and could develop into any type of cell – they are undifferentiated. These are called stem cells.
Later in development when cells become specialised they have one particular function – e.g. blood or muscle cells.
Stem cells can e used to treat diseases. Ensure you know benefits and risks of using these.

Cell Division:

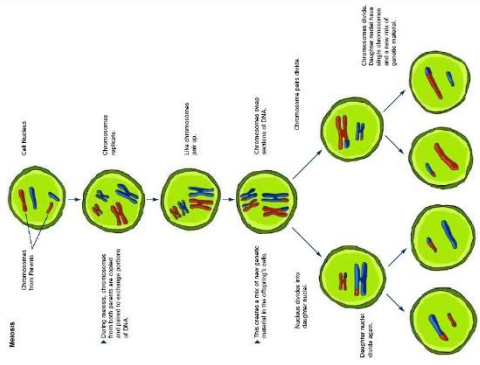
Mitosis and meiosis are methods of cell division. Meiosis produces GAMETES ONLY (sex cells).

Mitosis is how EVERY CELL EXCEPT GAMETES is formed.



Stages of mitosis

1. DNA is copied and Chromosomes are duplicated (23 pairs) The cell also grows in size.
2. Chromosomes align in the middles of the cell
3. Spindle fibres pull the chromosomes apart
4. Cytokinesis occurs where the cytoplasm divides and a new cell membrane forms creating 2 new cells
5. These new cells are genetically identical – Clones



Stages od Meiosis:

1-4 AS ABOVE

5. Each cell splits again, resulting in 4 cells each with half the DNA of the parent cell.

Questions:

Complete the table

Type of cell division	Number of daughter cells	Genes in daughter cells	Used for

What is a stem cell, how are they different from other cell types?

Describe the advantages and disadvantages of using stem cells for medical purposes.