6.1.2 Meiosis

AQA GCSE Biology (Higher)
Question and answer notes

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How to use these notes

These notes cover everything you need to know for this part of the specification. They have been written in question-answer format to make them easier for you to study from.

In order to study successfully, I recommend you do the following for each question and answer:

- Read it carefully and make sure you **understand** it.
- **Memorise** the answer.
- **Practice** applying your understanding to past exam questions.

A good way to memorise information is to use **retrieval practice**. This is when you practise retrieving information from your memory. You could do this by making a flashcard for each question with the question on one side and the answer on the other. Or you could use a flashcard app. Alternatively, use a sheet of paper to cover up the answer so you can only see the question. Try to answer the question and then check how you did.

You should practise retrieving each answer from your memory until you can do it perfectly. Even once you can retrieve the answer perfectly, your ability to retrieve it will probably fade as time passes without practising. Therefore you will need to keep going back to the questions that you have previously mastered and practising them again. However, each time you re-learn the answer, the memory will be stronger and will last longer than the time before.

In multicellular eukaryotes, where does meiosis take place?
In multicellular eukaryotes, meiosis takes place within the reproductive organs. For example, in humans, meiosis takes place in the ovaries and testes.

How many sets of chromosomes does a cell that is about to start meiosis have?
A cell that is about to start meiosis has two sets of chromosomes.

What happens in meiosis?
When a cell undergoes meiosis, the following things happen:

- First, the cell undergoes DNA replication, during which every chromosome is copied. This results in there being two identical copies of every chromosome in the cell.
- Then, the cell divides twice to form four gametes which are all genetically different to each other.

How many sets of chromosomes do the gametes produced in meiosis have?
Each gamete produced by meiosis contains one set of chromosomes.

What is fertilisation? What does it involve?
Fertilisation is when a female gamete and a male gamete fuse during sexual reproduction to form a new individual. Because each gamete contains one set of chromosomes, the new cell formed when they fuse contains two sets of chromosomes. Therefore, the original number of chromosomes has been restored.

In multicellular eukaryotes, what happens after fertilisation?
In multicellular eukaryotes, after fertilisation the new cell that has been formed divides multiple times by mitosis. This results in many genetically identical cells being formed. This bundle of cells is called an embryo. The embryo then develops into the mature organism. This involves cells differentiating to form various types of specialised cells.