

Cell Division

GCSE Biology · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Describe what happens to a cell before mitosis begins. (3 marks)

Step 1 · Growth

The cell grows.

Step 2 · More organelles

The number of sub-cellular structures such as mitochondria increases.

Step 3 · DNA

The DNA replicates to form two copies of each chromosome.

Answer: Grows; makes more organelles; copies its DNA

Check: The question says BEFORE mitosis, so do not describe the division itself.

2. Now try one with the steps

A human skin cell divides by mitosis. How many chromosomes are in each daughter cell? Explain your answer. (2 marks)

Step 1 · Starting number

Step 2 · Mitosis

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. How many chromosomes are found in the nucleus of a human body cell? [1]

2. State two reasons why the body needs cells to divide by mitosis. [2]

3. Describe what a chromosome is made of. [1]

4. Name the stage of the cell cycle in which the cytoplasm and cell membrane divide. [1]
-
-
5. Explain why the DNA must be copied before a cell divides. [2]
-
-
6. Describe what happens to the chromosomes during mitosis. [3]
-
-
-
7. Compare the two daughter cells produced by mitosis with the parent cell. [2]
-
-
8. Why do the chromosomes become visible under a light microscope only during mitosis? [1]
-
-
9. A cell divides every 20 minutes. Starting with one cell, how many cells are there after 2 hours? [2]
-
-
10. A cell cycle lasts 16 hours. Mitosis takes 1 hour. What percentage of the cycle is spent in mitosis? [2]
-
-
11. In a sample of 500 onion root-tip cells, 45 are in mitosis. The cycle lasts 24 hours. Estimate the time spent in mitosis in hours. [3]
-
-
-
12. Explain why root tips are used to observe cells in mitosis. [2]
-
-
13. Explain how uncontrolled cell division can lead to a tumour. [2]
-
-

14. A cell has 2 units of DNA at the start of the cycle. State how many units it has just before mitosis, and in each daughter cell. [2]

4. Before you hand it in

"Mitosis makes cells with half the chromosomes."

Mitosis makes two identical cells with the full number (46 in humans). Meiosis makes four gametes with half (23).

"Mitosis is the whole cell cycle."

The cycle includes growth and DNA replication (the longest part), mitosis, and cytokinesis.

Saying chromosomes 'split' without copying first

Each chromosome is first copied; the two copies are then separated into the two new cells.