4 The cell cycle and its control – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	**Write it 3 times** (English)		
cell cycle			
interphase			
mitosis			
checkpoints			
cancer			

Recall

You already know that cells divide:

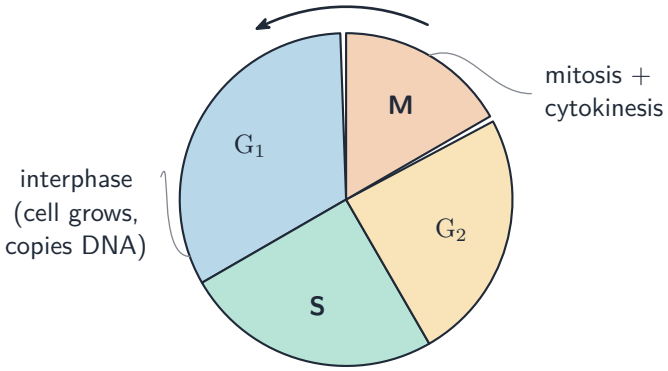
- Your body makes new cells to grow and to repair injuries.
- **Mitosis** produces two identical cells from one.
- You have heard that cancer is cells dividing out of control.

This sheet lines up how a cell's life and division are controlled. Each idea has a short worked example.

New ideas

■ 1 The cell cycle

The **cell cycle** is the life of a cell from one division to the next. It has two main parts:



- **interphase** – the cell grows and copies its DNA,
- **mitosis** – the cell divides into two identical daughter cells.

2 DNA is copied once

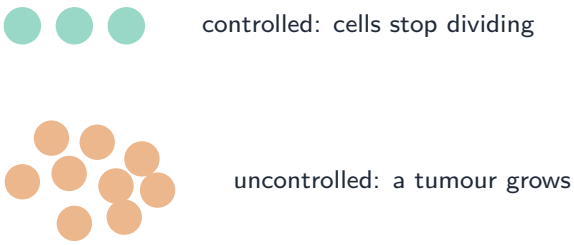
The DNA is copied only during the S phase of interphase, so each daughter cell gets a complete, identical copy.

3 Checkpoints

The cycle is controlled at **checkpoints** that check conditions before the cell continues (Is the DNA undamaged? Are the chromosomes ready?). If something is wrong, the cycle pauses.

4 When control fails

If the checkpoints fail – often through a mutation – cells divide uncontrollably, forming a tumour. This is the basis of **cancer** .



Watch out: mitosis makes two **identical** daughter cells, each with a full copy of the DNA – not half each. The DNA is copied first (in interphase) so nothing is lost.

Practice

Try these in order. The methods are all above.

2.1 Name the two main parts of the cell cycle and state what happens in each. [2]

2.2 State when in the cell cycle the DNA is copied, and why this matters. [2]

2.3 State what checkpoints do in the cell cycle. [2]

2.4 Explain how a failure of cell-cycle control can lead to cancer. [2]

2.5 State how many daughter cells mitosis produces, and whether they are identical. [1]