Exercise walk-through

Mitosis ▪ 17.2

eXercise

You must be able to

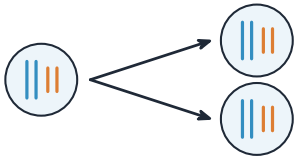
- describe mitosis (two genetically identical diploid cells)
- state where mitosis is used
- describe stem cells

Method — Mitosis

- chromosomes are copied (replication) first, so each daughter keeps the full number.
- used for **growth, repair, replacing cells and asexual reproduction**.
- **stem cells** are unspecialised cells that divide by mitosis.

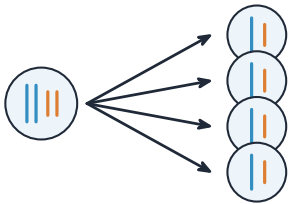
Method — Mitosis

mitosis
(growth, repair)



2 **identical** cells
(diploid: full set)

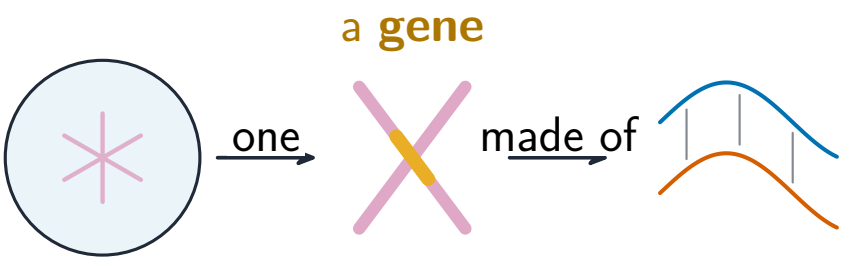
meiosis
(makes gametes)



4 **different** gametes
(haploid: half the set)

Mitosis: 1 cell → 2 identical diploid cells; meiosis: 1 → 4 different haploid gametes

Method — Mitosis



Chromosomes carry the genes copied in mitosis

Practice 2.1 ▪ 1 mark

State how the daughter cells of mitosis compare with the parent.

Solution 2.1

Method: Mitosis

Worked steps

they are genetically identical to the parent B1.

Practice 2.2 ▪ 1 mark

State one use of mitosis in the body.

Solution 2.2

Worked steps

any of: growth; repair; replacing cells; asexual reproduction B1.

Exam-style 3.1 ▪ 1 mark

Mitosis produces cells that are:

A haploid and different

B diploid and identical

C haploid and identical

D diploid and different

Solution 3.1

Method: Mitosis

A haploid and different

B diploid and identical ✓

C haploid and identical

D diploid and different

Worked steps

B. Mitosis produces diploid, genetically identical cells.

Exam-style 3.2 ▪ 2 marks

Mitosis is important for growth and repair.
(a) Explain why the chromosomes are copied before mitosis.
(b) State what a stem cell is.

Solution 3.2

Method: Mitosis

Worked steps

(a) so each daughter cell receives a full, identical set of chromosomes M1; keeping the diploid number A1.
(b) an unspecialised cell that divides by mitosis (and can become specialised) B1.