

Mitosis and meiosis: practice questions

6 questions • 18 marks • mark scheme at the back

For Cambridge IGCSE Biology 0610 (and 0970, which has the same content). **Supplement** is Extended content, only examined on Papers 2 and 4.

Name

Total / 18

1 **Supplement** [1 mark]

Which describes the cells produced by mitosis?

- A. ☐ two genetically identical cells
- B. ☐ two genetically different cells
- C. ☐ four genetically identical cells
- D. ☐ four haploid cells

2 **Supplement** [1 mark]

A human cell with 46 chromosomes divides by meiosis. How many chromosomes are in each cell produced?

- A. ☐ 12
- B. ☐ 23
- C. ☐ 46
- D. ☐ 92

3 **Supplement** [4 marks]

(a) Define mitosis. [2] (b) State what happens to the chromosomes before mitosis begins. [1] (c) State one use of mitosis in a plant or animal. [1]

4

Supplement

[3 marks]

(a) Describe what is meant by a stem cell. [2] (b) Name the type of cell division that stem cells use to make new cells. [1]

5

Supplement

[4 marks]

(a) State the type of cell that is produced by meiosis. [1] (b) Describe meiosis in terms of chromosome number. [2] (c) Explain why gametes must be haploid. [1]

6

Supplement

[5 marks]

Compare mitosis and meiosis. [5]

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1] Supplement

A A (1)

2. [1] Supplement

B B (1)

3. [4] Supplement

- (a) nuclear division (1)
- giving rise to genetically identical cells (1)
- (b) the chromosomes are replicated exactly / copied (1)
- (c) growth / repair of damaged tissues / replacement of cells / asexual reproduction (1)

4. [3] Supplement

- (a) an unspecialised cell (1)
- that divides to produce daughter cells that can become specialised (for specific functions) (1)
- (b) mitosis (1)

5. [4] Supplement

- (a) gametes / sex cells (1)
- (b) the chromosome number is halved (1)
- from diploid to haploid (1)
- (c) so that the diploid number is restored at fertilisation / so the chromosome number does not double in each generation (1)

6. [5] Supplement

- mitosis produces genetically identical cells but meiosis produces genetically different cells (1) each mark needs a comparison; ignore a statement about only one type of division
- mitosis keeps the chromosome number the same but meiosis halves it (1) allow mitosis: diploid to diploid; meiosis: diploid to haploid
- mitosis is used for growth / repair / replacement of cells / asexual reproduction but meiosis is used to produce gametes (1)
- mitosis makes two cells and meiosis makes four cells (1)
- meiosis happens only in the reproductive organs / testes and ovaries, mitosis happens in body cells (1)