

Exercise walk-through

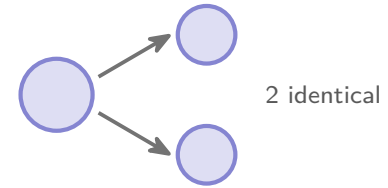
17.2

Mitosis

IGCSE Biology

What we will cover

- 1 Chromosomes, genes & DNA
- 2 Sex determination
- 3 Making a protein
- 4 Mitosis vs meiosis
- 5 Inheritance key words
- 6 Monohybrid crosses



mitosis vs meiosis

Mitosis, stem cells, and the inheritance words

mitosis is used for

growth, **repair of tissues**, replacing old cells, and **asexual reproduction**

stem cells

unspecialised cells that divide by mitosis; their daughter cells can then **become specialised**

where they are

in plant meristems, and in animal bone marrow and embryos

genotype

the alleles an organism has – its genetic make-up

phenotype

the features you can **observe**

the link

phenotype comes from genotype **and** environment together

Two organisms with the same genotype can differ in phenotype. That is why identical twins are the standard evidence in this topic.

Topic 17 – key takeaways

1

Genes

a gene codes for a protein; alleles are forms

2

Division

mitosis identical; meiosis halves & varies

3

Dominant

shows with one copy; recessive needs two

4

Crosses

$Bb \times Bb \rightarrow 3:1$; $Bb \times bb \rightarrow 1:1$

Exercises 2.1·2.2

2.1 State how the daughter cells of mitosis compare with the parent. [1]

2.2 State one use of mitosis in the body. [1]

Exercises 2.1-2.2

2.1 State how the daughter cells of mitosis compare with the parent. [1]

2.1

- daughter cells of mitosis are **genetically identical** to the parent
-

2.2 State one use of mitosis in the body. [1]

2.2

- any **one** of: **growth** / **repair** / replacing cells / asexual reproduction

Exercise 3.1

3.1 Mitosis produces cells that are:

[1]

☐

A haploid and different

B diploid and identical

C haploid and identical

D diploid and different

Exercise 3.1

3.1 Mitosis produces cells that are:

[1]

☐

A haploid and different

B diploid and identical

C haploid and identical

D diploid and different

3.1 B

- mitosis produces **diploid, genetically identical** cells
- A and C are meiosis-like; D would be variation

Exercise 3.2 (a)

3.2 Mitosis is important for growth and repair.

(a) Explain why the chromosomes are copied before mitosis.

[2]

Exercise 3.2 (a)

3.2 Mitosis is important for growth and repair.

(a) Explain why the chromosomes are copied before mitosis.

[2]

(a)

- so each daughter cell gets a **full, identical set** of chromosomes
- keeping the **diploid number**

Exercise 3.2 (b)

3.2 Mitosis is important for growth and repair.

(b) State what a stem cell is.

[1]

Exercise 3.2 (b)

3.2 Mitosis is important for growth and repair.

(b) State what a stem cell is.

[1]

(b)

- a stem cell is an **unspecialised** cell that divides by mitosis (and can become specialised)