

A-Level Biology

Name: _____ Score: _____

1. A chromosome is:
 - ☐ a long DNA molecule wound around proteins called histones
 - ☐ a single protein
 - ☐ a type of carbohydrate
 - ☐ a membrane
2. The two daughter cells produced by mitosis are:
 - ☐ genetically identical to each other and to the parent cell
 - ☐ genetically different from each other
 - ☐ always specialised
 - ☐ half the size forever
3. In prophase:
 - ☐ chromosomes condense, the nuclear envelope breaks down, and a spindle forms
 - ☐ chromosomes line up at the equator
 - ☐ sister chromatids are pulled to the poles
 - ☐ two new nuclei form
4. After replication, a chromosome is two identical sister _____ joined at the centromere.

5. Mitosis produces genetically identical daughter cells, which is why it is used for growth and repair.
 - ☐ True ☐ False
6. In _____, the chromosomes line up along the equator of the cell.

7. During which phase of interphase is the DNA copied?
 - ☐ the S phase
 - ☐ the G₁ phase
 - ☐ the G₂ phase
 - ☐ cytokinesis
8. Select **all** the roles of mitosis.

- ☐ growth
- ☐ repair and replacement of cells
- ☐ asexual reproduction
- ☐ producing genetically varied gametes
- ☐ making ATP

Tick every correct option.

9. Anaphase is the stage where:

- ☐ the centromeres split and sister chromatids are pulled to opposite poles
- ☐ the spindle first forms
- ☐ the nuclear envelope breaks down
- ☐ the cytoplasm divides

10. Interphase (G_1 , S, G_2) is the longest part of the cell cycle.

- ☐ True ☐ False

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1. **a long DNA molecule wound around proteins called histones**

Chromosomes are DNA wound tightly around histone proteins, packing a huge length into the nucleus.

2. **genetically identical to each other and to the parent cell**

Mitosis produces genetically identical cells — they carry exactly the same genes as the parent.

3. **chromosomes condense, the nuclear envelope breaks down, and a spindle forms**

Prophase: chromosomes coil up and become visible, the nuclear envelope breaks down, and the spindle forms.

4. **chromatids**

Replication makes an identical copy; the two sister chromatids stay joined at the centromere until anaphase.

5. **True**

Identical copies are exactly what growth, repair and asexual reproduction need.

6. **metaphase**

In metaphase the chromosomes line up at the cell's equator and spindle fibres attach to each centromere.

7. **the S phase**

DNA replication happens in the S (synthesis) phase, between G_1 and G_2 .

8. **growth; repair and replacement of cells; asexual reproduction**

Mitosis gives identical cells for growth, repair/replacement and asexual reproduction. Varied gametes come from meiosis; ATP comes from respiration.

9. **the centromeres split and sister chromatids are pulled to opposite poles**

In anaphase the centromeres split and the spindle pulls the sister chromatids apart to the poles.

10. **True**

Interphase takes up most of the cycle; mitosis and cytokinesis are comparatively short.