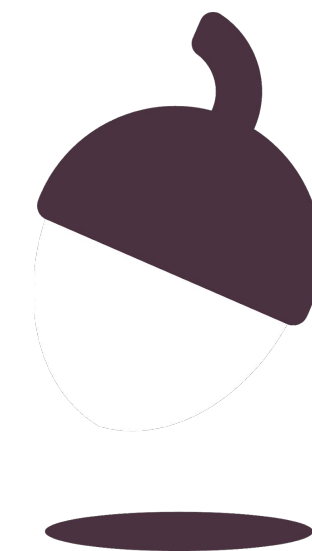


Combined Science - Biology - KS4  
Cell Biology

# Cell cycle and mitosis

(Downloadable student document)

Miss Wong



**OAK**  
NATIONAL  
ACADEMY

# **Pause the video to complete your task**

**Arrange the following from the smallest size to the largest size.**

**Chromosomes**

**Nucleus**

**An animal cell**

**DNA double helix**

**A gene**

**Resume once you're finished**



**Pause the video to complete your task**

**Answer:**

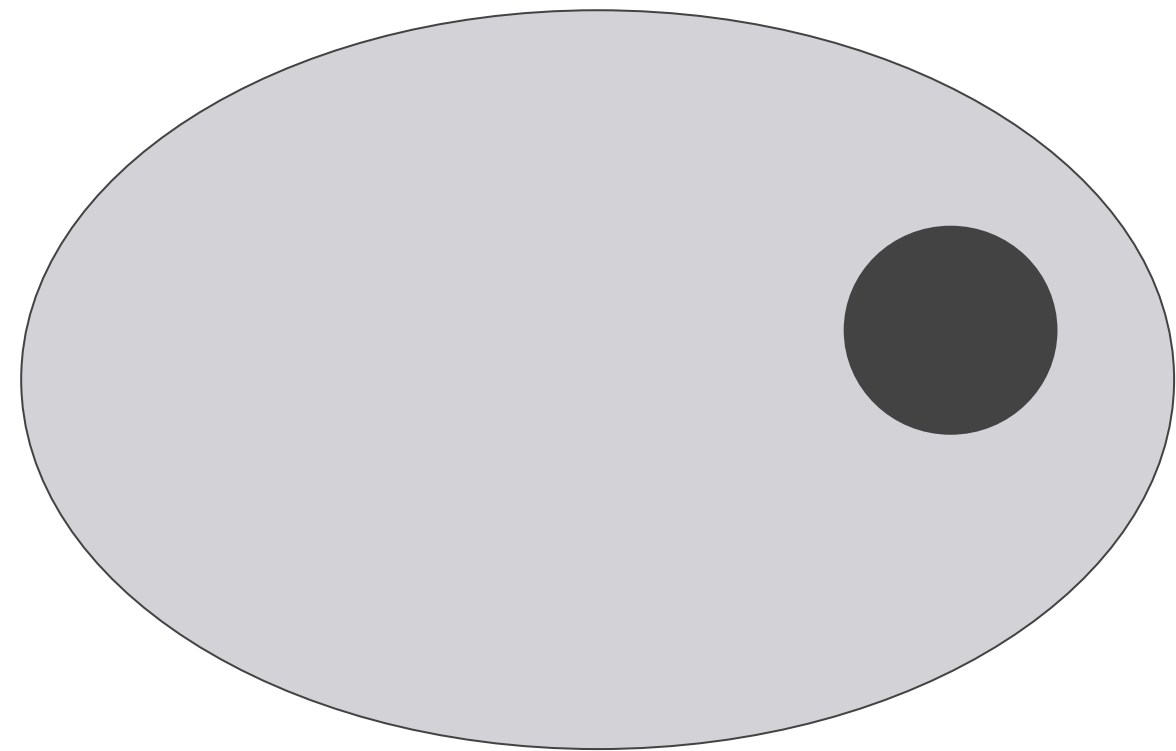
A gene → DNA double  
helix → chromosomes →  
nucleus → an animal cell

**Resume once you're finished**

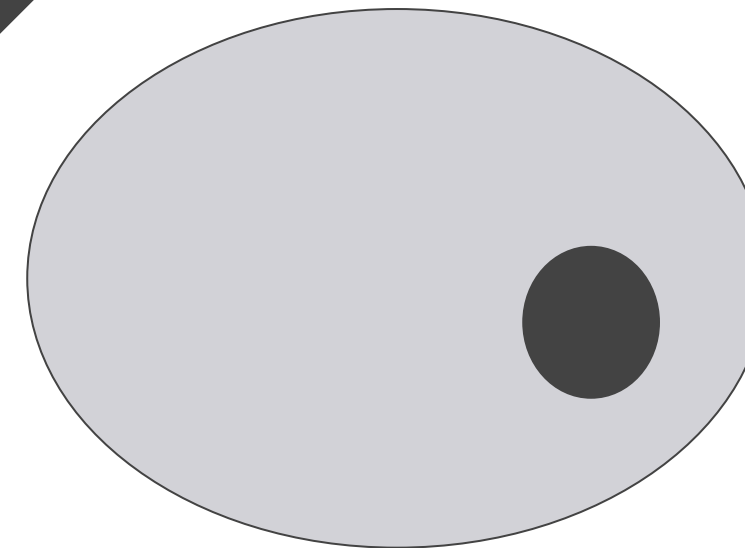
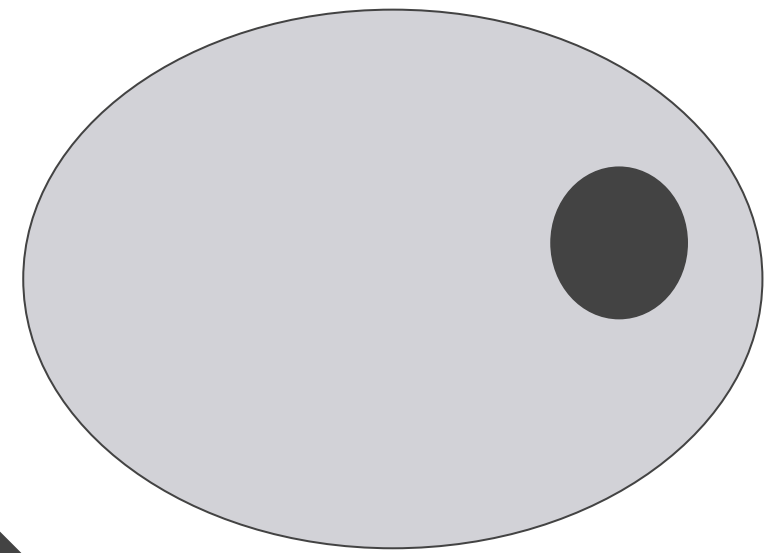


# Growth and mitosis

Image created by Miss C. Wong



**Diploid Mother cell**



**Diploid daughter cells**



# Multiple choice quiz

Which phase is the longest in the cell cycle?

**Growth**

**DNA duplication**

**Mitosis**

**Preparation for mitosis**



# Multiple choice quiz

Which phase is the shortest in the cell cycle?

**Growth**

**DNA duplication**

**Mitosis**

**Preparation for mitosis**



# Multiple choice quiz

What is/are the product(s) of mitosis?

**1 identical cells      2 identical cells**

**3 identical cells      4 identical cells**



# Multiple choice quiz

**Why is mitosis important?**

**For growth**

**For reproduction**

**For repair**

**For respiration**





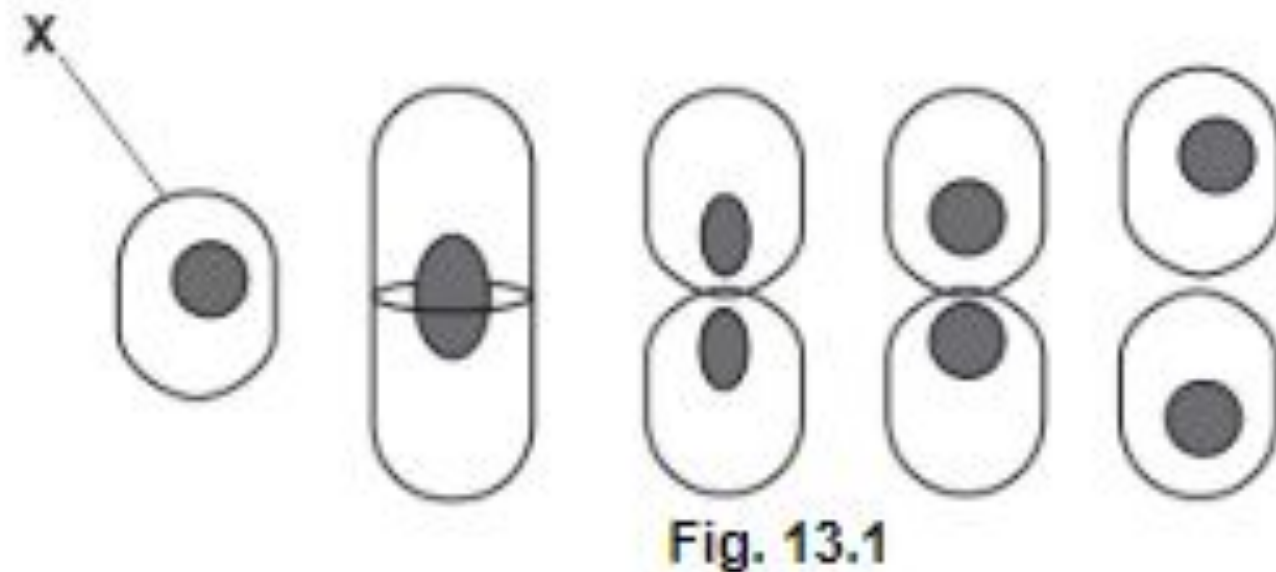
# Exam questions



# Exam question

Fig. 13.1 represents a cell dividing to form two new cells.

OCR, Jun 2019 J250/01



i. Complete these sentences about the type of cell division shown in Fig. 13.1.

Use words from the list. Each word can be used once, more than once, or not at all.

cell cycle      mitosis      multiplication      replication      repair

This type of cell division is called .....

Before the cell divides, DNA ..... takes place in the nucleus.

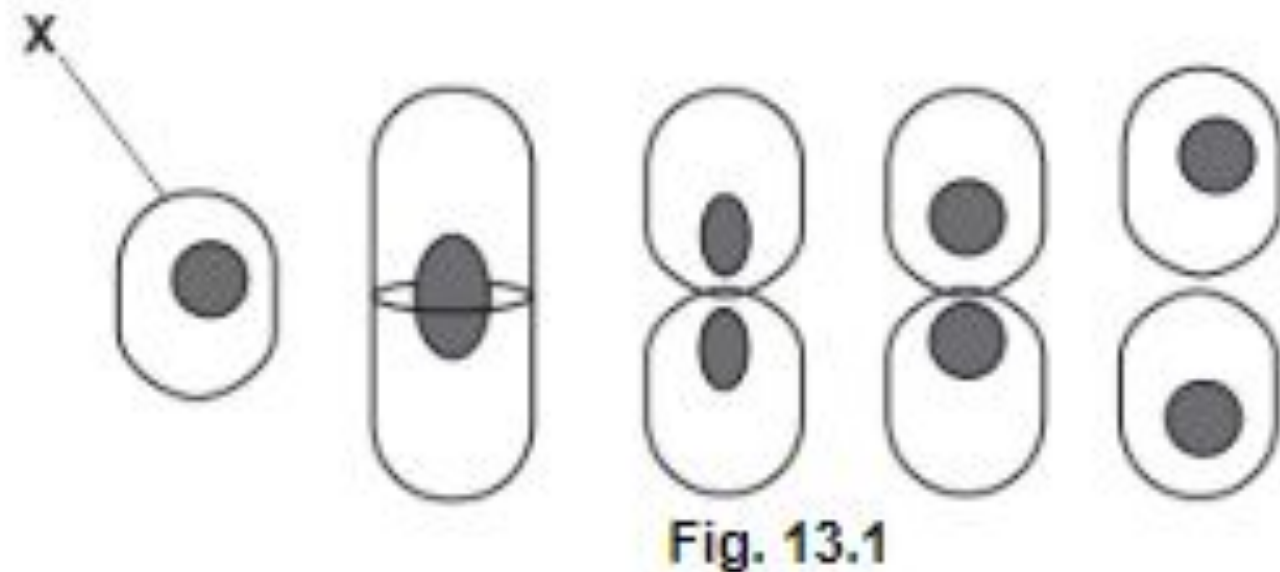
[2]



# Exam question

Fig. 13.1 represents a cell dividing to form two new cells.

OCR, Jun 2019 J250/01



i. Complete these sentences about the type of cell division shown in Fig. 13.1.

Use words from the list. Each word can be used once, more than once, or not at all.

cell cycle      mitosis      multiplication      replication      repair

This type of cell division is called .....

Before the cell divides, DNA ..... takes place in the nucleus.

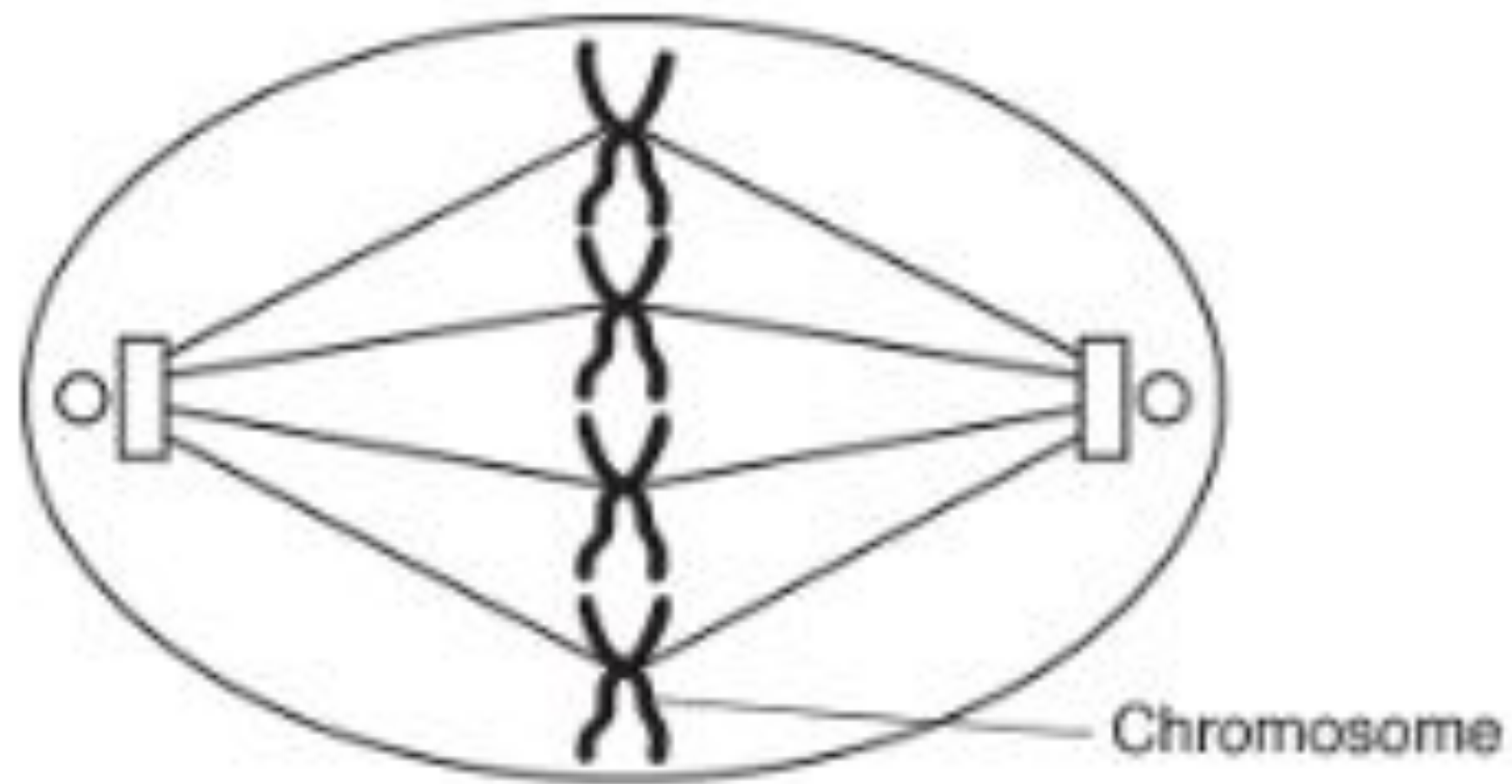
[2]

mitosis ✓

replication ✓



The diagram shows a cell during one stage of mitosis.



- i. Describe two things that happen to the chromosomes in the next stage of mitosis. 2 marks



# Answers

(chromosomes) separate / split / divide / pulled apart ✓

They move to opposite ends ✓





Noel investigates the growth of onions.

OCR, Jun 2013 B721/02

He puts an onion bulb in a jar of water.

The bulb starts to grow roots.



Cell division is happening in the tips of the roots to make new cells for growth.

What is the name of this type of cell division?

-----  
[1]



Noel investigates the growth of onions.

OCR, Jun 2013 B721/02

He puts an onion bulb in a jar of water.

The bulb starts to grow roots.



Cell division is happening in the tips of the roots to make new cells for growth.

What is the name of this type of cell division?

**mitosis ✓**

[1]



# Independent practice





# Independent practice

1. What is mitosis?
2. What happens when cells differentiate?
3. Why is mitosis important?
4. How long does it take approximately for a human cell complete a cell cycle? How many chromosomes does a normal body cell have?
5. What does haploid mean?
6. What happens in the final stage of the cell cycle?
7. Why the cell has to grow bigger before mitosis?



# Answers to independent practice

1. The separation of the nucleus after duplication of DNA.
2. The specialise to perform a function.
3. It allows tissue to grow or replacement of damaged cells.
4. 20-24 hours
5. 46 (23 pairs)
6. It refers to having a full set of chromosomes.
7. Cytoplasm and cell membrane divide to produce two genetically identical cells.
8. To grow big enough to contain more subcellular structures form from duplication.

