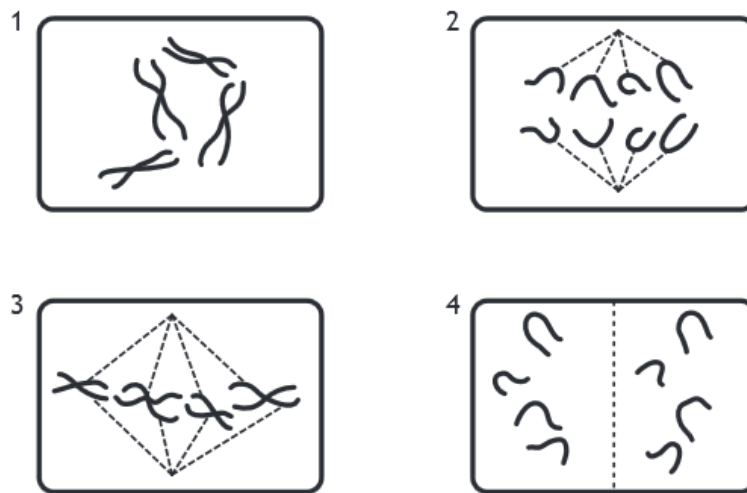


## Producing New Cells

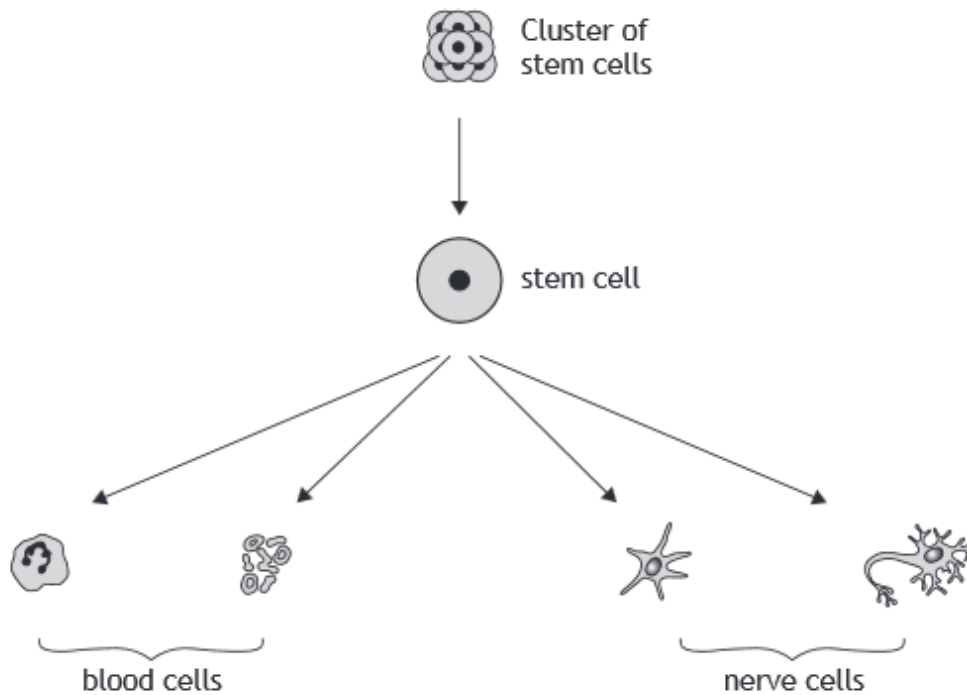
10. The following diagrams show a cell at four different stages of mitosis.



The correct order of the stages of mitosis is

- A 1,3,2,4
- B 2,3,4,1
- C 3,2,1,4
- D 4,1,2,3.

- (c) The diagram below shows some stages in the development of blood cells and nerve cells.



Describe the feature of stem cells which gives them the potential to develop into many different types of cells, such as blood and nerve cells.

1

- (d) Which of the following statements refer to processes involving stem cells?  
Tick (✓) the correct box(es).

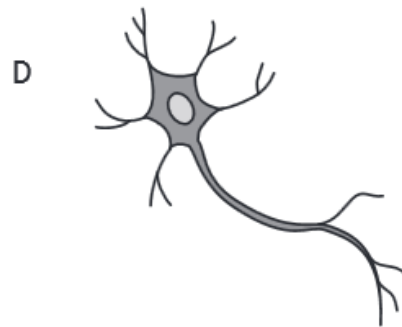
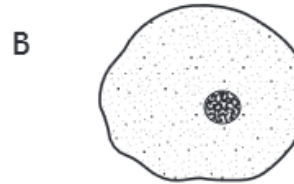
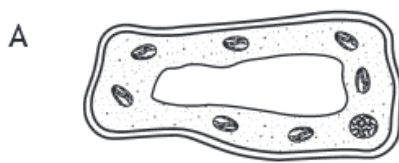
1

- |                                |                          |
|--------------------------------|--------------------------|
| Growth of new skin             | <input type="checkbox"/> |
| Transmission of nerve impulses | <input type="checkbox"/> |
| Muscle contraction             | <input type="checkbox"/> |
| Repair of broken bones         | <input type="checkbox"/> |
| Production of insulin          | <input type="checkbox"/> |

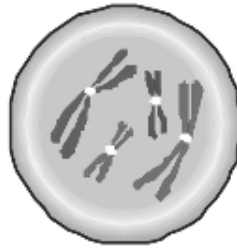
2. Which of the following does not involve mitosis?

- A Synthesis of proteins
- B Growth of tissue
- C Maintenance of the diploid chromosome complement
- D Repair of tissue

6. The diagrams below show four different types of cell.  
Which cell was produced by a meristem?



1. (a) The diagram below represents a cell in an early stage of mitosis.



(i) State the number of chromosomes present in this cell. 1

\_\_\_\_\_

(ii) State how many chromosomes will be present in each of the two cells produced by the process. 1

\_\_\_\_\_

(b) Name a site of mitosis in plants. 1

\_\_\_\_\_

9. Specialisation of cells in animals leads to the formation of

- A tissues and organs
- B meristems and organs
- C stem cells and tissues
- D stem cells and meristems.

7. Which of the following shows terms listed in order of increasing level of organisation in a multicellular organism?

- A organ → tissue → system
- B organ → system → tissue
- C tissue → system → organ
- D tissue → organ → system

8. Stem cells are

- A specialised cells which can divide to produce new stem cells
- B specialised cells which are unable to divide to produce new stem cells
- C non-specialised cells which can divide to produce new stem cells
- D non-specialised cells which are unable to divide to produce new stem cells.

2. (a) (i) The table describes some stages which occur during cell division, but not in the correct order.

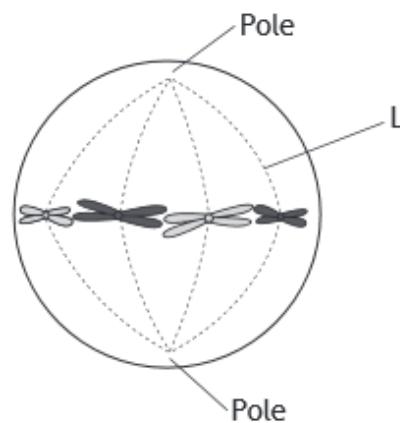
The first stage has been given.

Identify the **third stage** by writing the number 3 beside its description.

1

<i>Stage</i>	<i>Description</i>
	cytoplasm divides
	nuclear membranes form
1	chromosomes shorten and thicken
	chromosomes move to the equator of the cell
	pairs of chromatids are pulled apart

- (ii) The diagram represents a cell during one of the stages of mitosis.



Name the part labelled L in the diagram.

1

\_\_\_\_\_

- (b) During mitosis a pair of chromatids was pulled apart, each moving away from the equator, towards opposite poles, at a rate of 1 micrometre per second.

Calculate the distance between them after 20 seconds.

1

.....

7. The process of mitosis begins with the chromosomes becoming visible.  
Describe the sequence of events which follows on from this resulting in the production of two daughter cells.

4

---

---