

0 2

This question is about cell division.

0 2 . 1

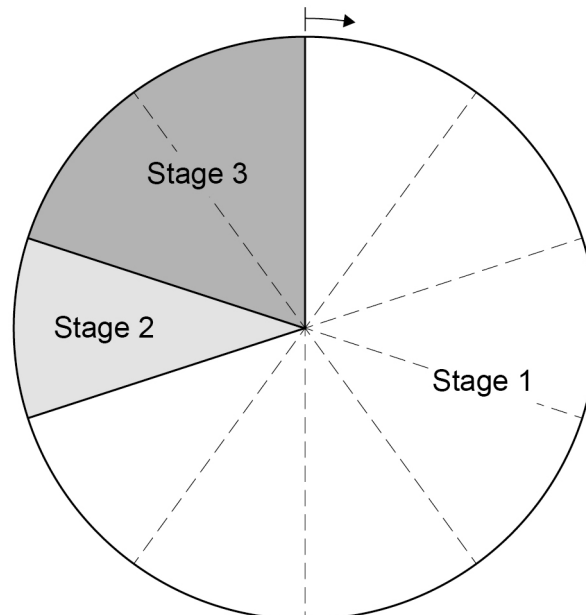
Which process makes two identical new body cells for growth and repair?

[1 mark]Tick (✓) **one** box.

Differentiation

Fertilisation

Mitosis

Figure 5 shows the three stages of a cell cycle.**Figure 5**

0 2 . 2

Draw **one** line from each stage of the cell cycle to what happens during that stage.**[2 marks]**

Stage of cell cycle	What happens during that stage
Stage 1	One set of chromosomes is pulled to each end of the cell
Stage 2	The cytoplasm and cell membrane divide to form two new cells
Stage 3	The cell grows and the chromosomes replicate

0 2 . 3

What percentage of the total time for the cell cycle is taken by stage 1?

[2 marks]

Percentage = _____ %

0 2 . 4

A cell divides to form two new cells every 24 hours.

How many days will it take for the original cell to divide into 8 cells?

[1 mark]Tick (✓) **one** box.1 3 6 8 **Turn over ►**

0 2 . 5 The chromosomes contain the genetic material.

Name the chemical which the genetic material is made from.

[1 mark]

0 2 . 6 The genetic material is made of many small sections.

Each section codes for a specific protein.

What is one section of genetic material on a chromosome called?

[1 mark]

Tick (✓) **one** box.

A gamete

A gene

A nucleus

0 2 . 7 Stem cells are cells which have **not** yet been specialised to carry out a particular job.

Bone marrow cells are one example of stem cells.

Explain how a transplant of bone marrow cells can help to treat medical conditions.

[2 marks]

10



Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.1	mitosis		1	AO1 4.1.2.2
02.2	<p>all lines correct = 2 marks 1 or 2 lines correct = 1 mark</p> <p>Stage of cell cycle</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Stage 1</p> <p>Stage 2</p> <p>Stage 3</p> </div> <div style="width: 65%;"> <p>What happens during that stage</p> <p>One set of chromosomes is pulled to each end of the cell</p> <p>The cytoplasm and cell membrane divide to form two new cells</p> <p>The cell grows and the chromosomes replicate</p> </div> </div> <p>additional line from a box on the left negates the credit for that box</p>		2	AO1 4.1.2.2
02.3	$\frac{7}{10} \times 100$ 70(%)	<p>allow $\frac{252}{300} \times 100$</p> <p>allow answer calculated from angle in range 250° to 254°</p> <p>if no other mark awarded, allow 0.7 for 1 mark</p>	1 1	AO2 4.1.2.2
02.4	3		1	AO2 4.1.2.2
02.5	DNA	allow deoxyribonucleic acid	1	AO1 4.1.2.1 4.1.2.2
02.6	a gene		1	AO1 4.1.2.1

02.7	(bone marrow) cells differentiate into many / other types of (named) cell	allow (bone marrow) cells can become many / other types of (named) cell	1	AO1
	(so) will cure diseases where new cells are needed or will cure diseases where cells are damaged	allow (so) will cure anaemia / leukaemia or blood cancer or blood disorders allow (so) will cure paralysis / diabetes	1	AO2 4.1.2.3
Total			10	