Higher Human Biology: Homework Questions

Topic 1: Human Cells

Sub-Topic 1: Division and differentiation in human cells

Sub-Topic 2: Structure and function of DNA

Sub-Topic 3: Cell Metabolism

Name _____

Class _____

Human Biology Higher Homework: Topic Human Cells

Sub-topic 1: Division and differentiation in Human Cells

1. Which of the following is **not** a use of stem cells?

A Skin grafts

B Drug testing

C IVF treatment

D Bone marrow transplant

2. Which line in the table below describes correctly cell division in a specific cell type

	Cell Type	***Type of cell division***	***Chromosome number in cells produced***
A	somatic	meiosis	diploid
B	somatic	meiosis	haploid
C	germline	mitosis	haploid
D	germline	mitosis	diploid

3. Which of the following statements about cancer cells is **TRUE**?

A. Cancer cells respond to regulatory signals
B. Cancer cells cannot spread through the body
C. Cancer cells cannot divide excessively
D. Cancer cells can form secondary tumours

4. Which of the following statements is **TRUE?**

A. Blood cells and muscle cells are undifferentiated germline cells
B. Blood cells and muscle cells are differentiated germline cells
C. Blood cells and muscle cells are undifferentiated somatic cells
D. Blood cells and muscle cells are differentiated somatic cells

5. Which of the following statements regarding stem cells is **TRUE?**

A Stem cells are specialised cells that continue to divide.

B Stem cells cannot differentiate into specialised cells

C Stem cells are unspecialised cells that can differentiate into specialised cells.

D None of the above

6. Cancer cells can divide excessively to produce a mass of abnormal cells known as a tumour.
A tumour cell can double every 40 minutes.
If one tumour cell starts to divide how many tumour cells will be present after 12 hours?

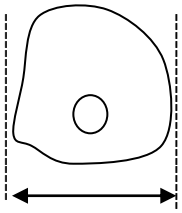
A 720

B 32768

C 131072

D 262144

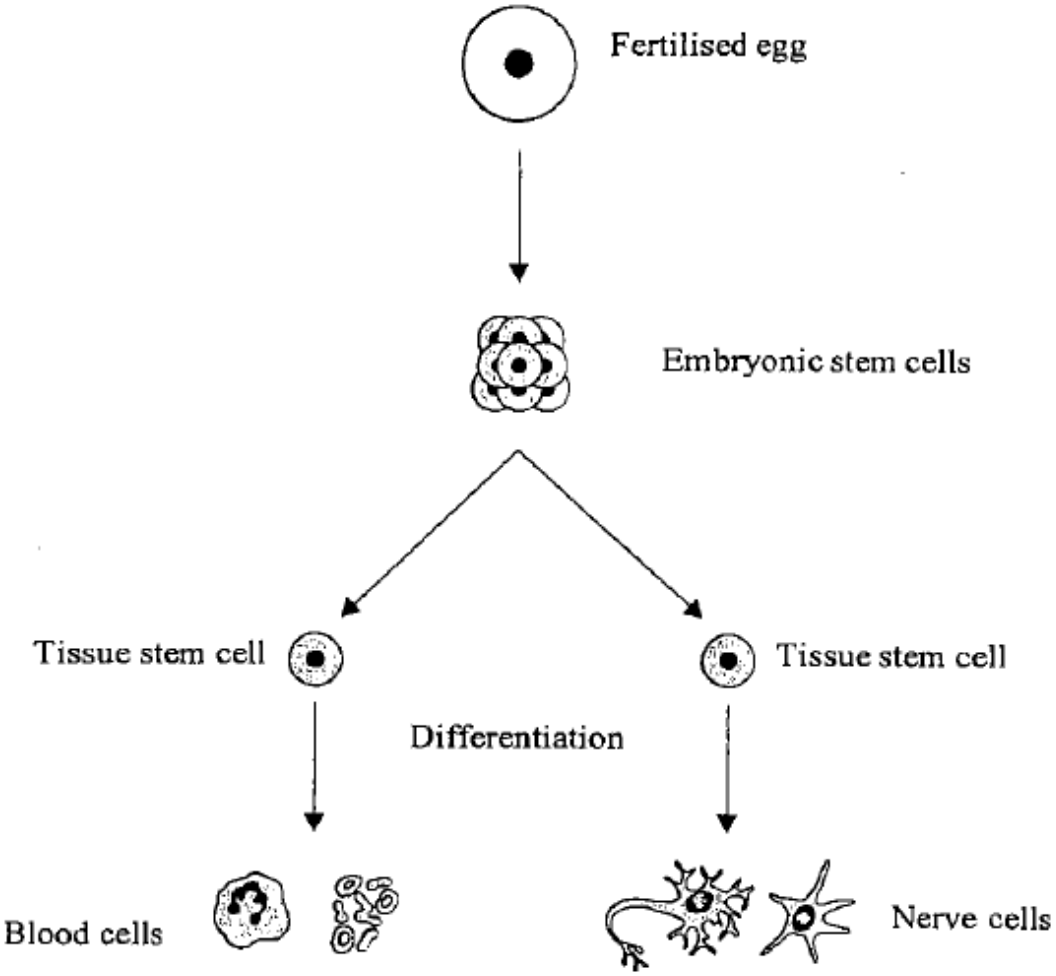
7. The cell shown below is magnified six hundred times. What is the actual size of the cell?



18 mm

A 1080 µm
B 108 µm
C 30 µm
D 3 µm

8. The diagram below shows some stages in the development of blood cells and nerve cells.



(a) What are stem cells?

_____

_____ **(1)**

(b) State the location of the tissue stem cells which develop into blood cells.

_____**(1)**

(c) Describe what is meant by the term *differentiation.*

_____

_____**(1)**

8. (continued)

(d) Both embryonic stem cells and tissue stem cells are used in medical research.

Give **one** reason why embryonic stem cells are potentially more useful than tissue stem cells.

_____

_____ **(1)**

(e) (i) Stem cells can be used in research and therapeutics (branch of medicine relating to the treatment of disease) because stem cells are able to develop into different types of cells. Explain why stem cells are able to develop into different types of cells.

_____

_____ **(1)**

(ii) List 3 therapeutic uses of stem cells.

1. _____
2. _____
3. _____ **(3)**

(f) Tumours can be found in patients suffering from cancer.

(i) Describe what a tumour is:

_____

_____ **(1)**

(ii) Describe how a **secondary** tumour develops:

_____

_____ **(1)**