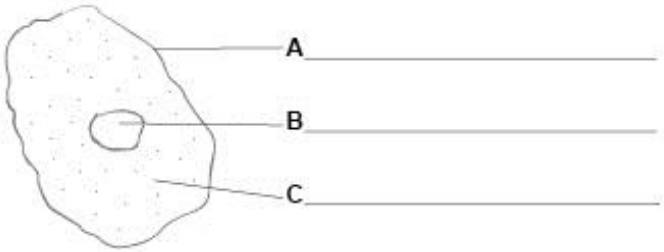
Homework (Edexcel Entry Level Certificate) Biology 1A

Name _____ **Class** _____ **Date** _____

1 This drawing is of a **cell** seen under a **light microscope**.



a Write one word from the box on each writing line, to label the cell correctly.

cell membrane	cytoplasm
nucleus	

b Complete each sentence with the name of the correct cell structure. The completed sentence should describe what each cell structure does.

The _____ controls what goes into and out of the cell.

The _____ controls what happens in the cell.

The _____ is where many cell reactions take place.

2 Plant cells may also contain green structures called **chloroplasts**. Tick (✓) the box that shows the function of chloroplasts.

☐ where cell **respiration** takes place ☐ where substances are stored until the cell needs them

☐ protect the cell from bursting ☐ where **photosynthesis** takes place

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3 Complete the table about other cell structures.

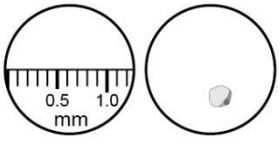
Cell structure	In plant cells?	In animal cells?	In bacterial cells?	Function
mitochondria			x	
cell wall			x	
ribosome			x	
large **vacuole**			x	

4 Explain why **ribosomes** are studied with an **electron microscope**, not a light microscope.

_____

_____

5 A very fine scale is viewed through a microscope, as shown in the left image. The right image shows a human fat cell at the same **magnification**.



a What is the diameter of the field of view? _____

b Estimate the diameter of the fat cell. _____

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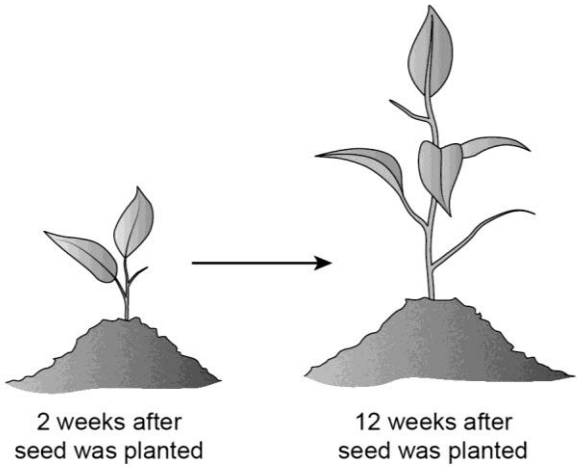
1 The drawings show **growth** in the plant.
Complete this sentence.

Growth means:

_____

_____

_____



2 weeks after seed was planted

12 weeks after seed was planted

2 Cross out the wrong underlined words so that the sentences below are correct.

a Growth in plants begins with **cell division**. This increases the length / number of cells.

b Growth in plants continues with cell **elongation**. This increases the length / number of cells.

c In animals there is no cell division / elongation during growth.

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3 Describe one way that the growth of a child could be measured.

_____

4 The diagram shows the division of a cell. Label the diagram using words from the box.

diploid	**daughter**	identical	**mitosis**
	parent		

Before division:

the one_____cell has

pairs of chromosomes, so this is

a_____cell

type of cell division

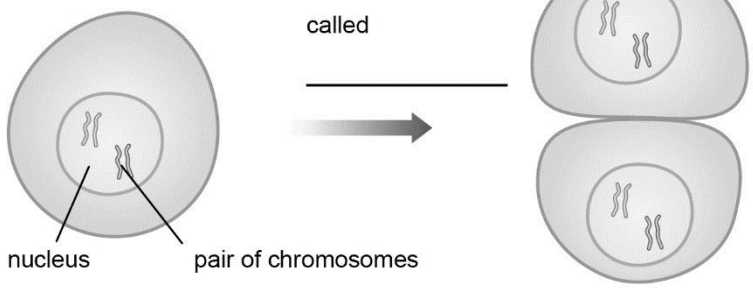
called

_____

After division:

the two_____cells

are genetically_____



5 State why the cell division in the diagram above is important for the repair of damaged tissues.

_____

_____

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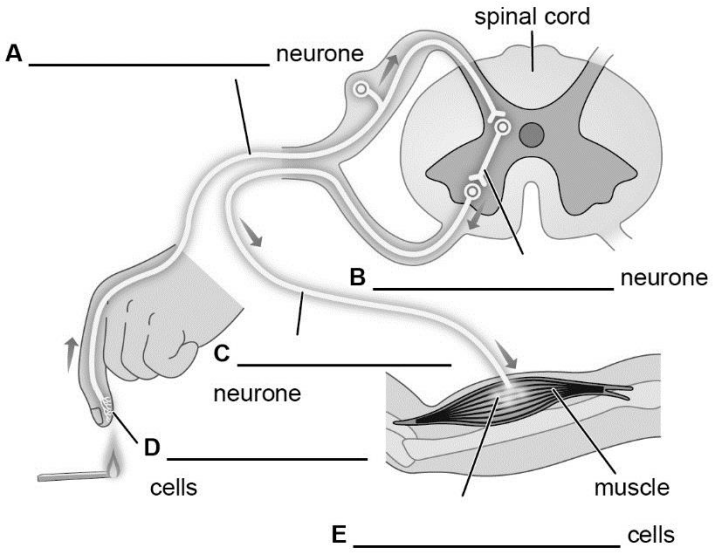
1 Draw lines to link the parts of the **nervous system** with their functions.

sensory neurone	carries **impulses** from relay neurones to **effector** cells
relay neurone	**insulates** the **neurone**
motor neurone	substance released into a **synapse** that triggers an impulse in the next neurone
neurotransmitter	carries impulses from **receptor cells** to relay neurones
myelin sheath	carries impulses from sensory neurones to other neurones, such as motor neurones

2 The diagram shows a **reflex arc**.



a Use words from the box to complete the labels **A** to **E**.

effector	motor	relay	receptor	sensory

b Circle one place on the diagram where you would find neurotransmitter.

c Give a reason for the position you marked in part **b**.

_____

3 Explain how the following parts of a neurone are adapted to their function.

d **axon** _____

e **axon terminals** _____

f **dendrites** _____

4 The response of the muscle in the diagram is to contract. The muscle contraction pulls the hand away from the heat automatically, without the person thinking.

Explain the advantage of automatic **reflex** responses like the one in the diagram.

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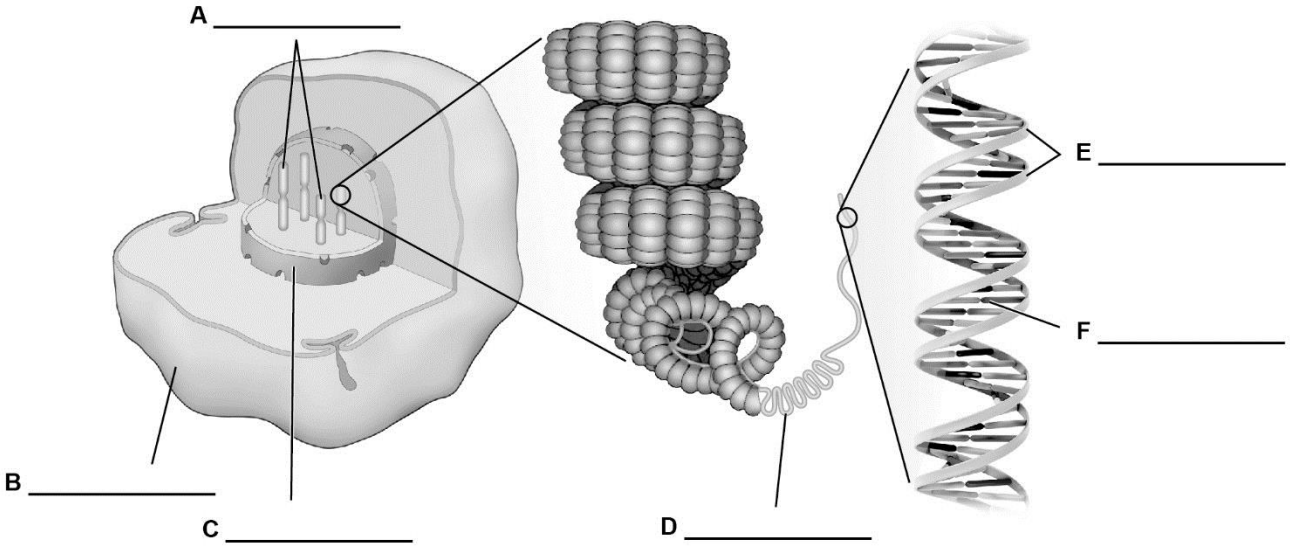
Name _____ **Class** _____ **Date** _____

1 The diagram shows how **DNA** is packaged into a cell. Use the words in the box to label the diagram, **A** to **F**.

base pair	cell	**chromosomes**	DNA molecule	DNA strands	**nucleus**



2 Draw lines to link the words with their definitions.

double helix	coded for by a gene
gene	shape of a DNA molecule
chromosome	section of DNA that codes for a protein
protein	DNA packaged with proteins, in a cell's nucleus

3 What links the DNA strands in a DNA molecule?

_____

4 DNA can be extracted from fruit. One of the first steps in this process is to mix the fruit with a solution of salt and detergent. This releases the DNA from the cells.

Two types of cell structure are broken open by the salt and detergent to release the DNA. Name these two cell structures. Give a reason for your answers.

_____

_____

Homework (Edexcel Entry Level Certificate) Biology 1A

Name _____ **Class** _____ **Date** _____

1 Write one word from the box into each space to complete the sentences.

environmental	genetic	**mutation**	**variation**

a A small change in the structure of DNA is called a _____ .

b Differences in the characteristics of organisms of the same species are called _____ .

c A change in an organism's characteristics caused by changes in the surroundings is called _____ variation.

d Differences in characteristics due to the different alleles that an organism inherits from its parents

are called _____ variation.

2 Here are some examples of variation in humans.
Write G in the box by an example if it shows **genetic variation**.
Write E in the box by an example if it shows **environmental variation**.

☐ eye colour ☐ body mass

☐ a scar from a wound ☐ hand width

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3 Cross out the incorrect *italic* words in each sentence so that the sentence is correct.

a Most human characteristics are controlled by *a single gene / many genes.*

b If you look at the DNA of organisms of the same species, you will see *little / extensive* genetic variation.

4 A particular species of plant has the phenotype that the plant is about 10 cm high and has red flowers.

a Give a reason why most seeds from this plant grow into new plants that have the phenotype of red flowers.

_____

b Give a reason why one seed from this plant grows into a new plant that had the phenotype of white flowers.

_____

c Some of the seeds from this plant are grown in bright light, and some are grown in shade. The new plants grown in shade are all much taller than those grown in light.

Is this difference in height an example of genetic or environmental variation? Give a reason for your answer.

_____

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1 Which statement describes the process of **selective breeding**? Tick *one* box.

- ☐ Organisms select which mate to breed with.
- ☐ The environment selects which organisms survive and breed.
- ☐ People choose which organisms to breed together.
- ☐ Breeding between organisms is random.

2 **a** Draw lines to link each organism to a characteristic that has been developed in that species through selective breeding.

cows	small size for hunting animals in burrows
dogs	resistance to disease
wheat	high milk yield

b Give a reason why these characteristics have been chosen for development by selective breeding.

_____

3 Complete the description of **genetic engineering** using words from the box.

characteristic	DNA	gene	species

Genetic engineering is when a _____ for a desirable _____ is taken out of one species and inserted into the _____ of a different _____.

4 Caterpillars eat cabbages. A gene from a bacterium that codes for poison that kills caterpillars has been used to make genetically engineered cabbages.

a) Describe one benefit of making genetically engineered cabbages.

_____

b) Suggest one problem that might be caused by genetically engineering cabbages.

_____

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5 Chickens have been developed from wild birds over thousands of years by selective breeding. Wild chickens lay about 20 eggs a year. Some breeds of chicken have been selectively bred to produce over 300 eggs a year. These breeds of chicken need lots of food and extra nutrients to keep healthy.

Describe one benefit of selectively breeding chickens.

_____

6 Explain why keeping selectively bred chickens might cost more than keeping older chicken breeds.

_____

_____