Applied Science Summer Transition Work

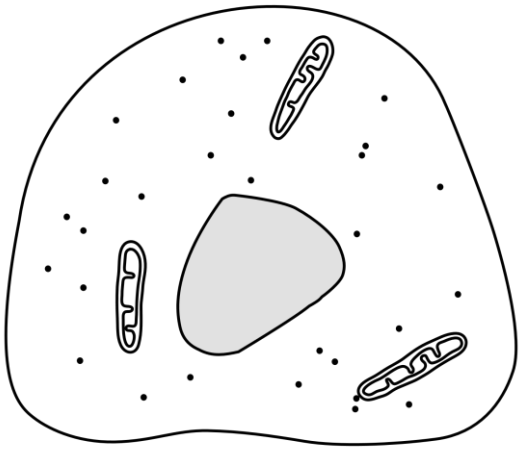
Welcome to Your BTEC Science Journey!

This workbook is designed to help you transition smoothly from your GCSE Science studies into the exciting world of science. As you dive into your BTEC studies, you'll need to bring your curiosity, critical thinking, and problem-solving skills! Let's get started on the right foot with a mix of activities that will prepare you for the future.

Cell structures

1 Review your knowledge of cell structure.

2 Add labels to the diagram of an animal cell:



3 Match cell structures with functions by drawing lines or writing the correct letter in the table.

Cell structure	Match (A–E)
Mitochondria	
Nucleus	
Ribosomes	
Cell membrane	
Cytoplasm	

Function
A Contains genetic material and controls cell activities
B Makes proteins
C Controls what enters and exits the cell
D Site of many cell processes; jelly-like substance
E Produces energy (ATP) for cell functions

Body Systems

4 Match each **body system** to its correct **function** by drawing lines or writing the correct letter in the table.

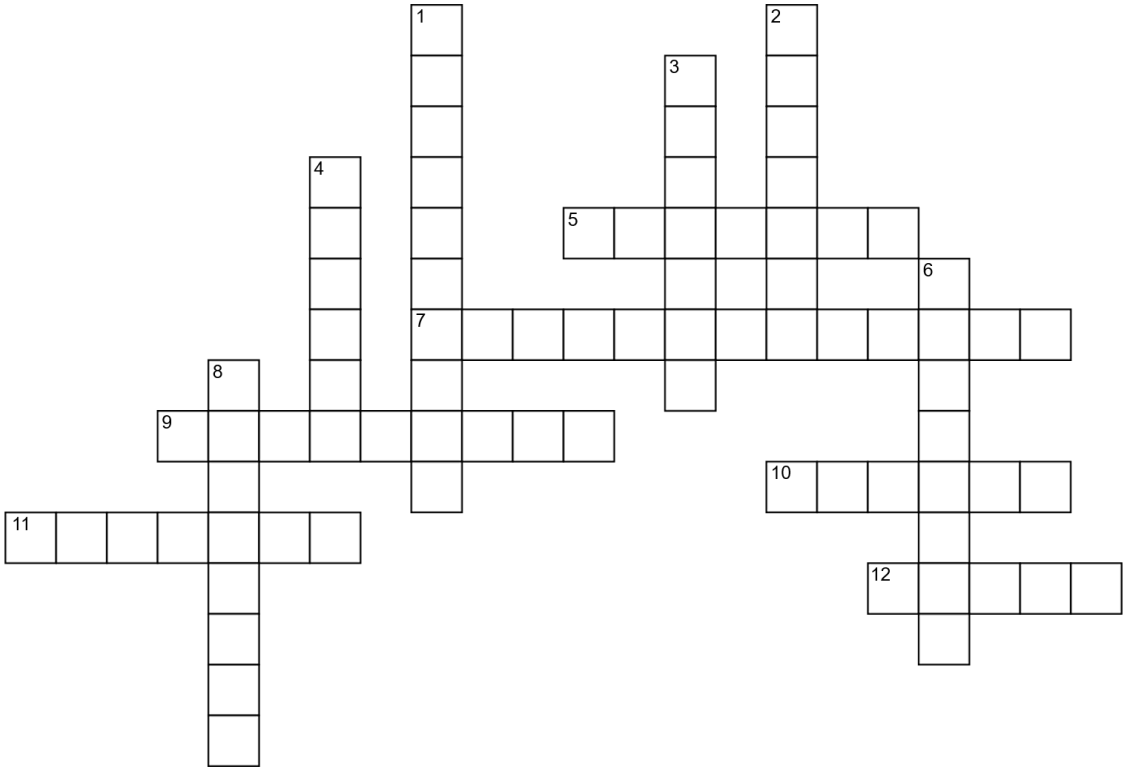
Body System	Match (A–F)
1. Respiratory System	
2. Circulatory System	
3. Digestive System	
4. Nervous System	
5. Muscular System	
6. Skeletal System	

Function
A Breaks down food for absorption
B Transports oxygen, nutrients, and waste in blood
C Provides structure, support, and protection
D Works with bones to create movement
E Controls movement, senses, and response
F Responsible for breathing and gas exchange

Treating, curing and preventing disease

5 Review your knowledge of the immune response.

6 Fill in the crossword using the clues:



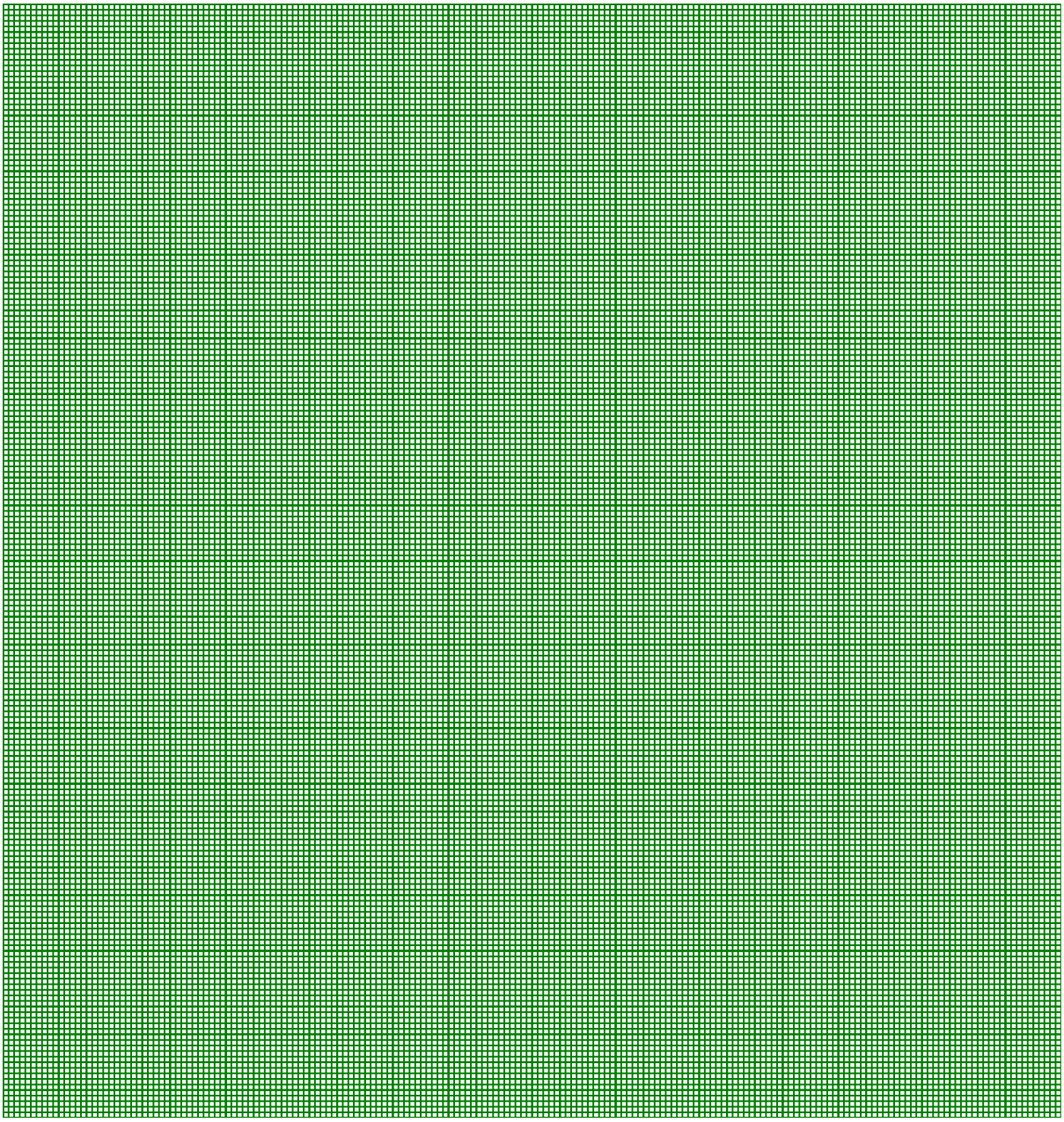
ACROSS
5 and 9 Across Response occurring the first time an organism becomes exposed to a pathogen
7 Similarly shaped or matching
9 See **5 across**
10 and 12 Across Lymphocytes that remain in the body after the immune response to an infection has finished
11 Substances containing disabled antigens of a particular disease, usually given by injection
12 See 10 across
DOWN
1 White blood cells which attack pathogens by producing antibodies
2 Illness affecting plants and animals
3 A protein on the surface of a pathogen that triggers an immune response
4 When a person is not prone to a disease
6 Microorganism that causes disease
8 A protein produced by cells of the immune system

Enzymes

Review how enzymes work. A student investigated the activity of the enzyme pepsin (found in the stomach) at different pHs. The table shows their results:

pH	Enzyme activity (units / min)
1	1.0
2	6.5
3	7.5
4	5.0
5	2.5
6	0.8
7	0.2

7 Use a line graph to plot the student's results.



8 Experimental details

In the experiment:

(a) What was the **independent variable**?

(b) What was the **dependent variable**?

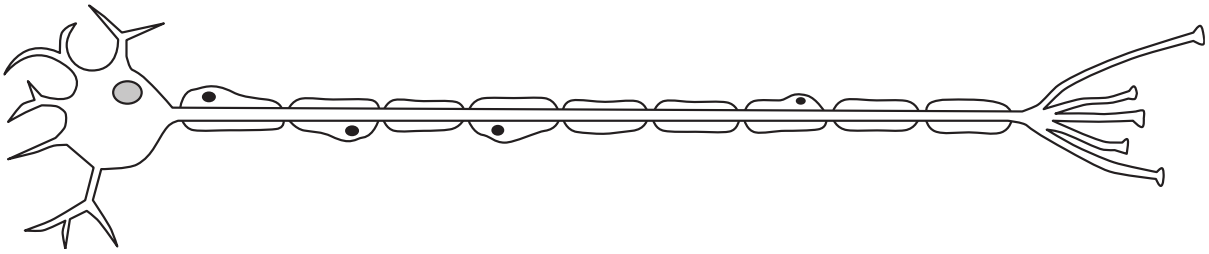
(c) Name **two control variables** for this experiment.

(d) Suggest one **improvement** to increase the experiment's reliability.

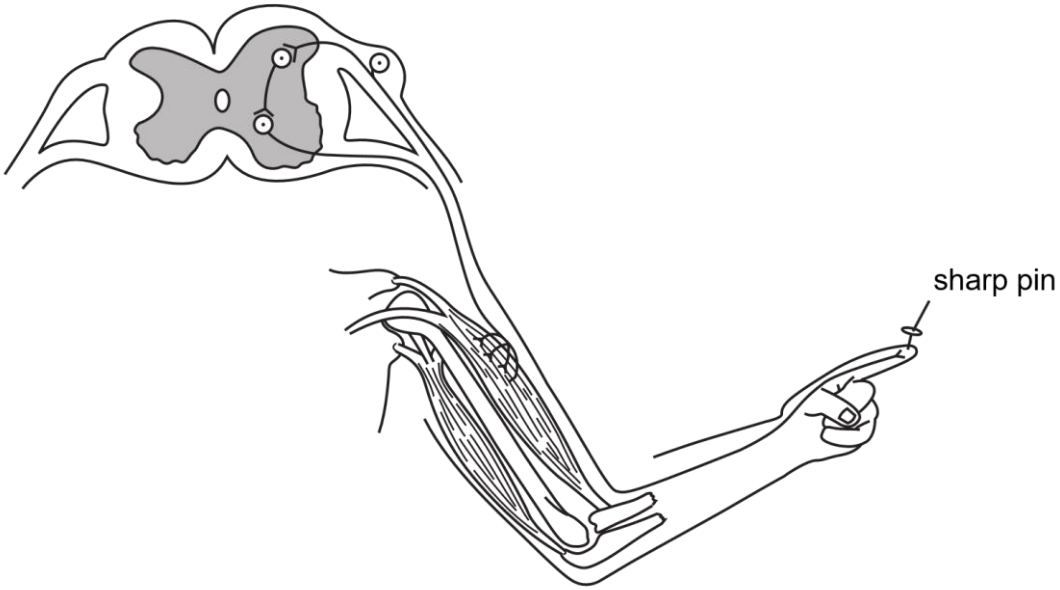
The nervous system

Use this website to revise nerves and nervous system.

9 Add labels to the diagram



10 The diagram shows a reflex arc, label the motor neurone, sensory neurone, relay neurone and receptor



11 Fill in the table with words from the word bank in the correct order:

Stimulus

↓

↓

Effector

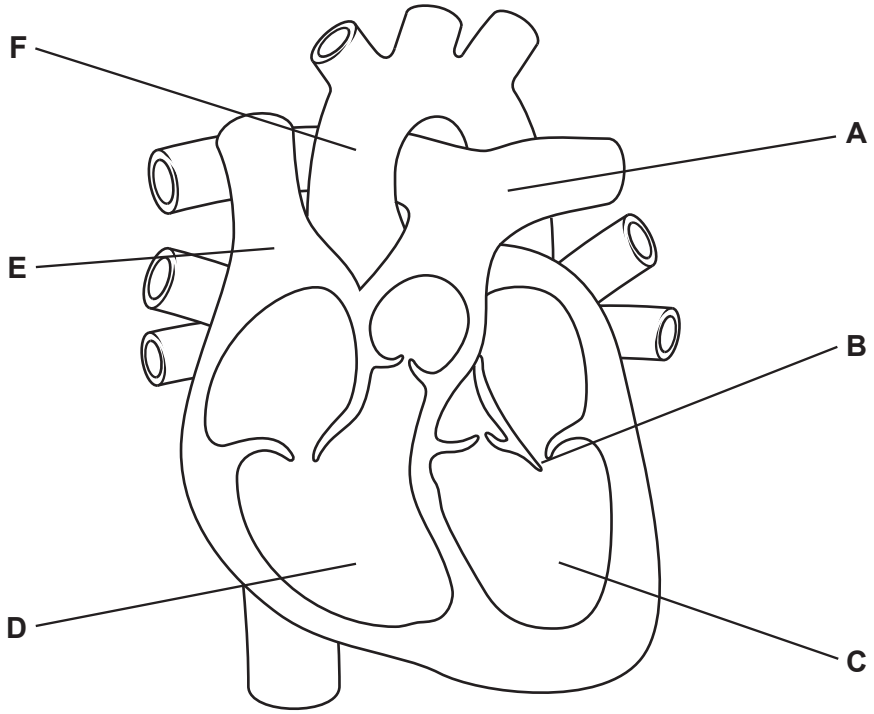
Word bank:

Relay neurone
Sensory neurone
Motor neurone
Receptor

The circulatory system

Review the heart and circulatory system here.

12 The diagram shows the human heart.



The table shows some information about the heart. Use the diagram to complete the table.

Label letter	Name of part labelled	Description of part labelled
A	pulmonary artery	takes blood to the .....
B	.....	prevents backflow of blood in the heart
.....	vena cava	has a thin wall and a large ..... to transport blood at low pressure

13 The diagram shows the circulatory system. Name vessels A to D