A1 · Homeostasis, neurons and the reflex arc · Practice key

This is the worked key. Every practice question is worked step by step.

Worked examples

Read these first. There is one for each kind of question in this lesson.

Example 1 · Trace a reflex arc

A cook touches a hot pan and the hand pulls away. Trace the reflex arc.

1. Find the stimulus and the receptor: heat, detected by a receptor in the skin.
2. Follow the sensory neuron to the spinal cord.
3. An interneuron in the spinal cord passes the nerve impulse on.
4. A motor neuron carries it to the effector.
5. The effector is an arm muscle. It contracts.

Answer: Receptor, sensory neuron, interneuron, motor neuron, effector (arm muscle).

Example 2 · Name a part of a neuron from its job

Which part of a neuron carries nerve impulses away from the cell body?

1. Dendrites carry nerve impulses toward the cell body.
2. The axon carries them away.

Answer: The axon.

Practice

Questions 1 to 4 are easy. Questions 5 to 8 are medium. Questions 9 and 10 are harder.

EASY

1. State what homeostasis is.

1. It is keeping conditions inside the body steady.
2. Body temperature is one example.

EASY

2. Name the part of a neuron that carries nerve impulses toward the cell body.

1. Nerve impulses arrive at the dendrites.
2. The dendrites carry them toward the cell body.

EASY

3. Name the cells that make the myelin sheath.

1. The myelin sheath is made of wrapped cells.
2. They are Schwann cells.

EASY

4. Name the kind of neuron found only in the brain and spinal cord.

1. It links sensory neurons to motor neurons.
2. It is the interneuron.

MEDIUM

5. Explain what a node of Ranvier is and why it matters.

1. It is a gap between two segments of the myelin sheath.
2. A nerve impulse jumps from node to node.
3. So the nerve impulse travels faster.

MEDIUM

6. Compare a sensory neuron with a motor neuron. Give the direction each one carries nerve impulses.

1. A sensory neuron carries nerve impulses from a receptor to the central nervous system.
2. A motor neuron carries them from the central nervous system to an effector.

MEDIUM

7. Explain the difference between a neuron and a nerve.

1. A neuron is one nerve cell.
2. A nerve is a bundle of many axons.

MEDIUM

8. Dust touches your eye and you blink. Name the stimulus, the effector and the response.

1. The stimulus is the dust touching the eye.
2. The effector is the eyelid muscle.
3. The response is the blink.

HARDER

9. A disease destroys the myelin sheath of motor neurons. Predict the effect on movement. Explain.

1. Without the sheath, nerve impulses cannot jump from node to node.
2. They travel slowly or stop.
3. Movement becomes slow and weak.

HARDER

10. A person steps on a sharp stone. The foot lifts before the person feels pain. Explain why the foot moves first.

1. Lifting the foot is a reflex. Its reflex arc goes through the spinal cord only.
2. The message to the brain takes longer.
3. So the foot moves before the pain is felt.