

Exercise walk-through

Coordination and response ■ 14.1

eXercise

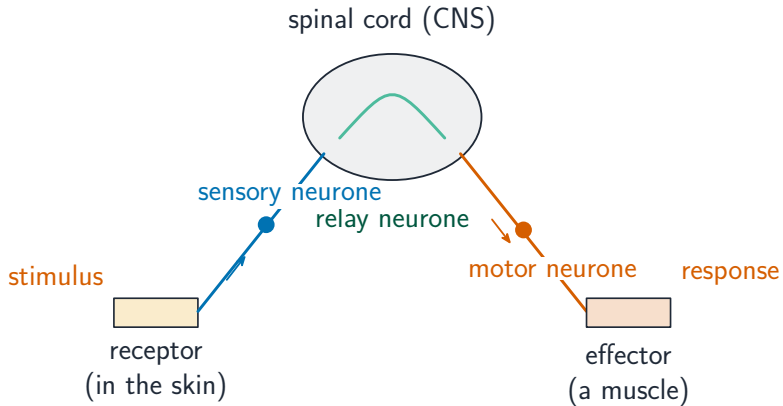
You must be able to

- name the parts of the nervous system and the three neurones
- describe a reflex arc in order
- describe how a synapse works and why impulses go one way

Method — Reflex arc and synapse

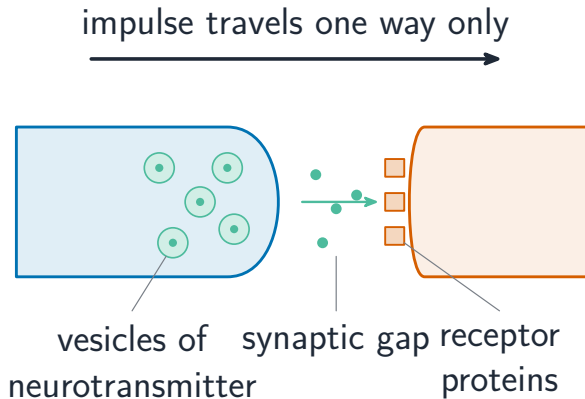
- **CNS** = brain + spinal cord; **PNS** = the nerves.

Method — Reflex arc and synapse



A reflex arc: receptor → sensory → relay → motor → effector

Method — Reflex arc and synapse



A synapse: neurotransmitter diffusing across the gap

Practice 2.1 ■ 2 marks

Name the two parts of the central nervous system.

Solution 2.1

Worked steps

the brain **B1**; the spinal cord **B1**.

Practice 2.2 ■ 1 mark

State the job of a motor neurone.

Solution 2.2

Method: Reflex arc and synapse

Worked steps

to carry impulses from the CNS to an effector **B1**.

Exam-style 3.1 ■ 1 mark

The correct order of a reflex arc is:

A receptor → motor → relay → sensory → effector

B receptor → sensory → relay → motor → effector

C effector → motor → relay → sensory → receptor

D receptor → relay → sensory → motor → effector

Solution 3.1

A receptor → motor → relay → sensory → effector

B receptor → sensory → relay → motor → effector 

C effector → motor → relay → sensory → receptor

D receptor → relay → sensory → motor → effector

Worked steps

B. receptor → sensory → relay → motor → effector.

Exam-style 3.2 ■ 3 marks

A synapse joins two neurones.

- (a) Describe how an impulse crosses a synapse.
- (b) Explain why a synapse makes impulses travel in one direction only.

Solution 3.2

Method: Reflex arc and synapse

Worked steps

- (a) the impulse makes vesicles release neurotransmitter into the gap **M1**; the neurotransmitter diffuses across **M1**; it binds receptors on the next neurone, starting a new impulse **A1**.
- (b) only the first neurone releases neurotransmitter and only the second has receptors **B1**.