

15 Two control systems – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	Write it 3 times (English)
nervous system	_____
neurones	_____
endocrine system	_____
hormones	_____
reflex arc	_____

Recall

The body has two control systems. One is fast and electrical; the other is slower and chemical.

New ideas

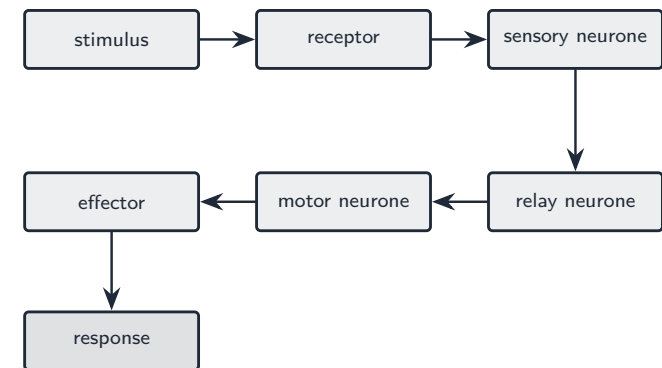
Read these first, then do the Practice.

■ 1 Two systems



- the **nervous system** (nerve cells); sends fast electrical impulses along **neurones**
- the **endocrine system** sends slower chemical **hormones** in the blood.

■ 2 The reflex arc



A **reflex** is a fast automatic response. The **reflex arc** is the path it takes: stimulus → receptor → sensory neurone → relay → motor neurone → effector → response.

Watch out: the nervous system is *fast* and *electrical* (impulses along neurones, short-lived); the endocrine system is *slower* and *chemical* (hormones in the blood, longer-lasting). A reflex is automatic – it can act before the brain is involved.

Practice

Try these in order.

15.1 Which system uses fast electrical impulses?

15.2 What does the *endocrine system* send, and where? [1]

15.3 What is a *neurone*? [1]

15.4 In a *reflex arc*, which neurone carries the message from the receptor? [1]

15.5 What carries out the response at the end of a reflex arc? [1]

15.6 Challenge. Pulling your hand off a hot object happens *before* you feel the pain. Explain how the reflex arc makes this fast automatic response possible. [2]
