

This is the **Foundation Separate** version — Higher Tier content has been removed.

The nervous system allows rapid, specific responses to changes in the internal and external environment.

- CNS: brain and spinal cord. PNS: all other nerves
- Sensory neurone: receptor → CNS. Relay: within CNS. Motor: CNS → effector
- Reflex arc: bypasses brain → faster response. Pathway: receptor → sensory → relay → motor → effector
- Synapse: neurotransmitters cross synaptic cleft → bind receptors on post-synaptic membrane → new impulse
- Signals only travel in ONE direction at synapse (receptors only on post-synaptic side)
- Brain regions: cerebral cortex (thought), cerebellum (coordination), medulla (automatic functions)

Key Terms

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|------------------------|--|
| Synapse | Gap between neurones — crossed by neurotransmitters |
| Reflex arc | Rapid automatic response pathway — bypasses brain |
| Cerebral cortex | Outer brain region — conscious thought, memory, language |
| Cerebellum | Brain region — coordination and balance |

■ **Exam Tip:** Synapses ensure one-way transmission. Reflexes bypass the brain. The medulla controls automatic functions (breathing, heart rate) — damage is life-threatening.