

The background is a gradient from light teal to dark blue, featuring several faint, semi-transparent circular patterns. On the left side, there is a large circular scale with numerical markings from 140 to 260 in increments of 10. Other circular elements include dashed lines, solid lines, and arrows, some pointing clockwise and some counter-clockwise, suggesting a theme of rotation or movement.

COORDINATION AND RESPONSE

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VOCAB:

- Coordination means making things happen at the right time by linking up different body activities.
- Stimulus is a change in an organism's surroundings.
- Response is a reaction to that change. Respond to stimuli are caused by EFFECTORS, these are muscles or glands, when nerve cells send impulses to muscles they respond by contracting and relaxing, when sent to glands they respond by secreting substances.
- Transduction- when energy is changed from one form into another.

EXPLORE #1

WHY RESPONSE TO STIMULI IS IMPORTANT FOR THE SURVIVAL OF ORGANISMS?

- Plants and simple invertebrate animals need to be able to respond to their environment.
- Plants grow towards light.
- Insect move towards conditions that are suited to them such as dark and damp soil.
- Complex animals need to detect information from external and internal environment.



EXPLORE #2

IDENTIFY THE MAIN SENSE ORGANS AND THE STIMULUS TRANSDUCED

Sense organ	Stimuli to which they respond	Response
Eyes	Light	Sight
Ears		
Tongue		
Nose		
Skin		

EXPLORE #2

IDENTIFY THE MAIN SENSE ORGANS AND THE STIMULUS TRANSDUCED

Sense organ	Stimuli to which they respond	Response
Eyes	Light	Sight
Ears	Sound, position of body/ movement	Hearing/ balance
Tongue	Chemical (tastes)	Taste
Nose	Chemical (smells)	Smell
Skin	Warmth, cold, touch	Warmth, coldness, pressure, pain, pleasure.

EXAMPLE OF A STIMULUS AND RESPONSE

- A stimulus is a change in an organism's surroundings, and a response is a reaction to that change.

Suppose when you are walking along you see a football coming at high speed towards your head. If your nerves are working properly, you will probably move or duck quickly to avoid contact.

The approaching ball was the **stimulus** and your movement to avoid it hitting you was the **response**. The change in your environment was detected by our eyes, which are an example of a **receptor organ**. The response was brought about by contraction of muscles, which are an **effector organ** (they produce an effect).

Summary:

Stimulus → receptor → Coordination → effector → response



TRY THIS ONE: IDENTIFY THE RECEPTOR AND EFFECTOR

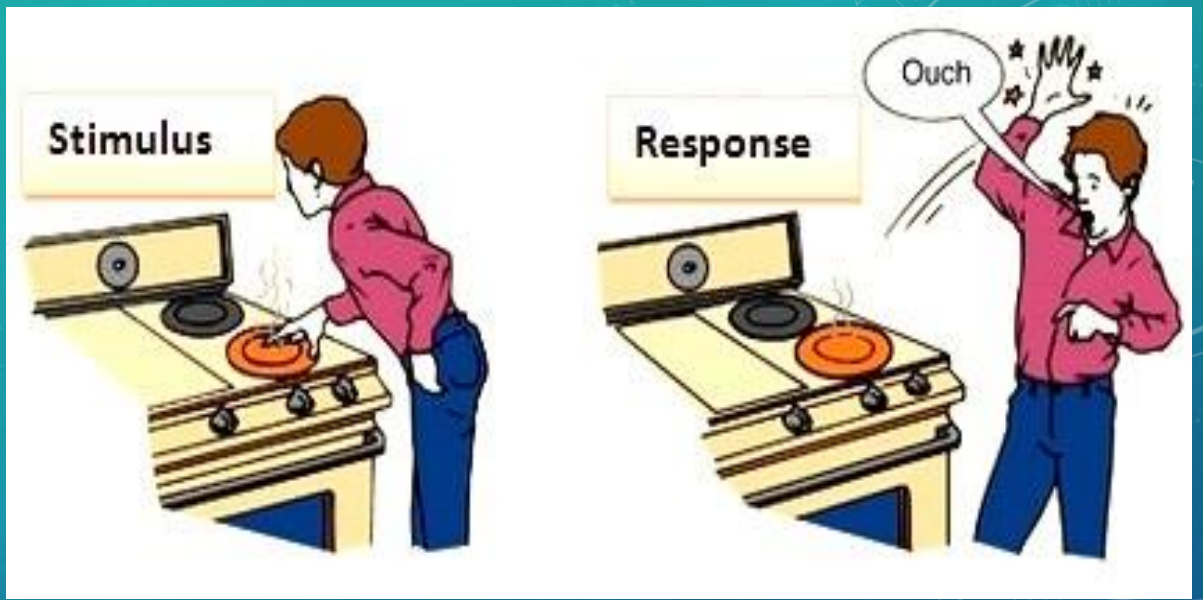
- You are very hungry, and you smell food cooking. Your mouth might begin to ‘water’ in other words secrete saliva.
- The **receptor** for the smell of food was the **nose**, and the **response** was secretion of saliva from glands. Glands secrete (release) chemical substances, and they are the second type of effector organ.



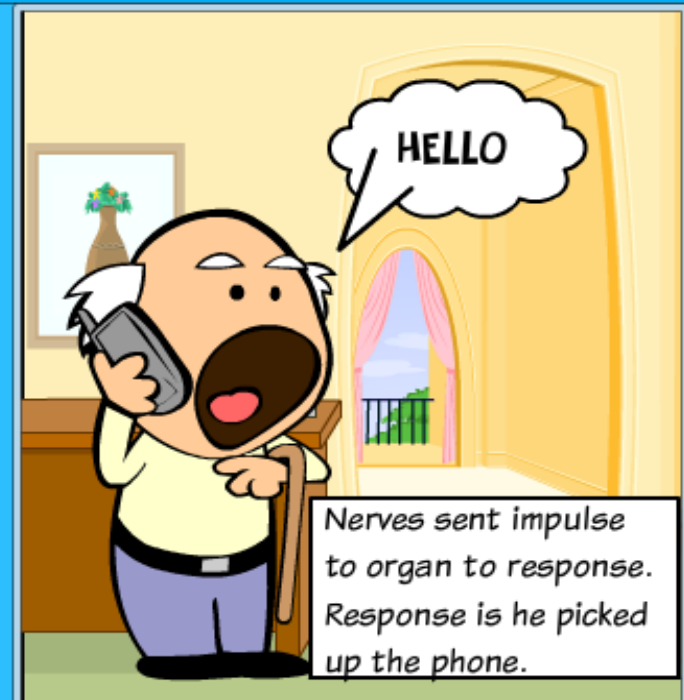
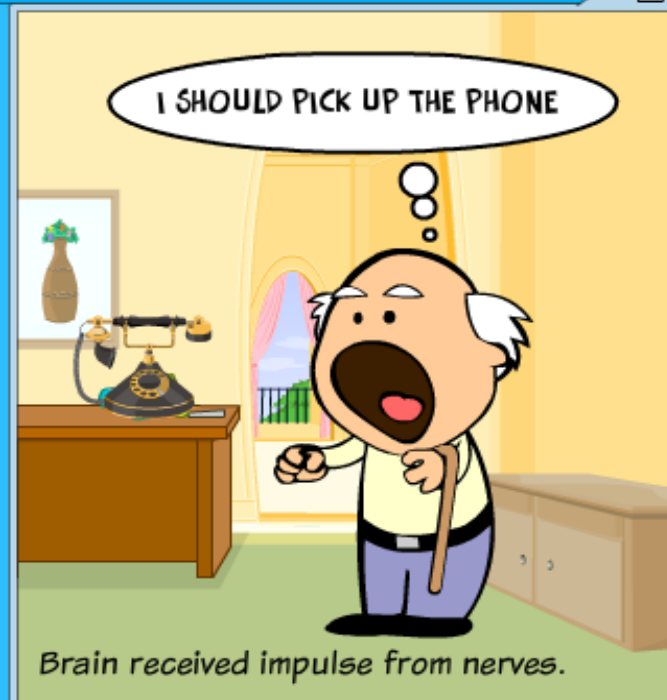
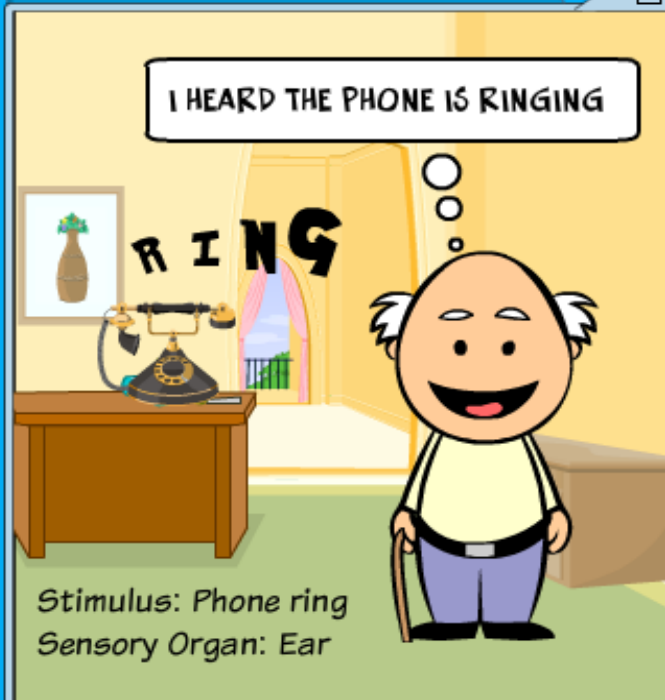
LIST COMMON STIMULUS AND RESPONSE....



EXAMPLES



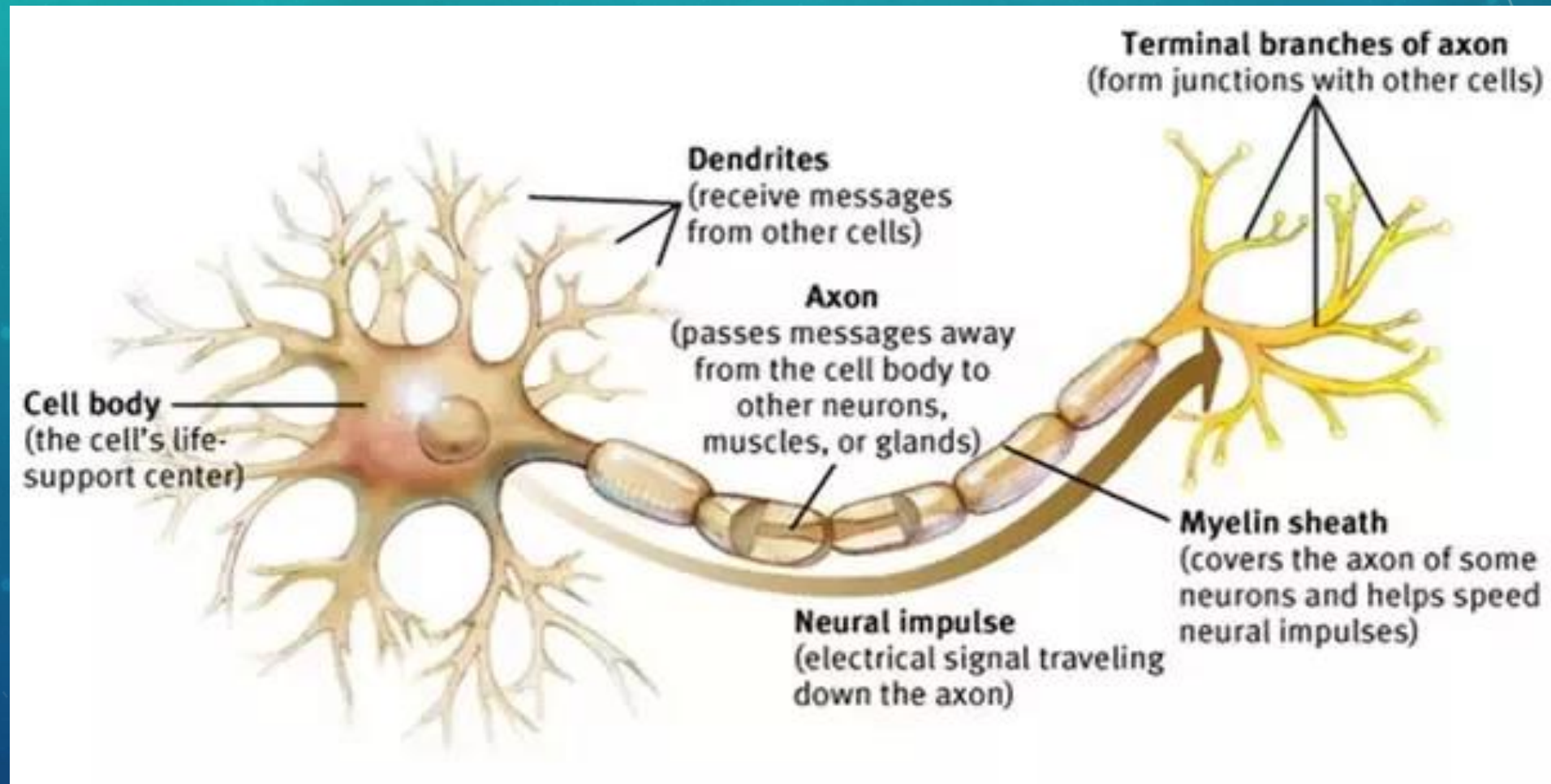
SENSORY RESPONSE



CREATE A PICTORIAL DRAWING OF A STIMULUS AND RESPONSE. IN PAIRS.

- 10 minutes to draw
- The other five minutes will be used to present
- 10 seconds each pair.

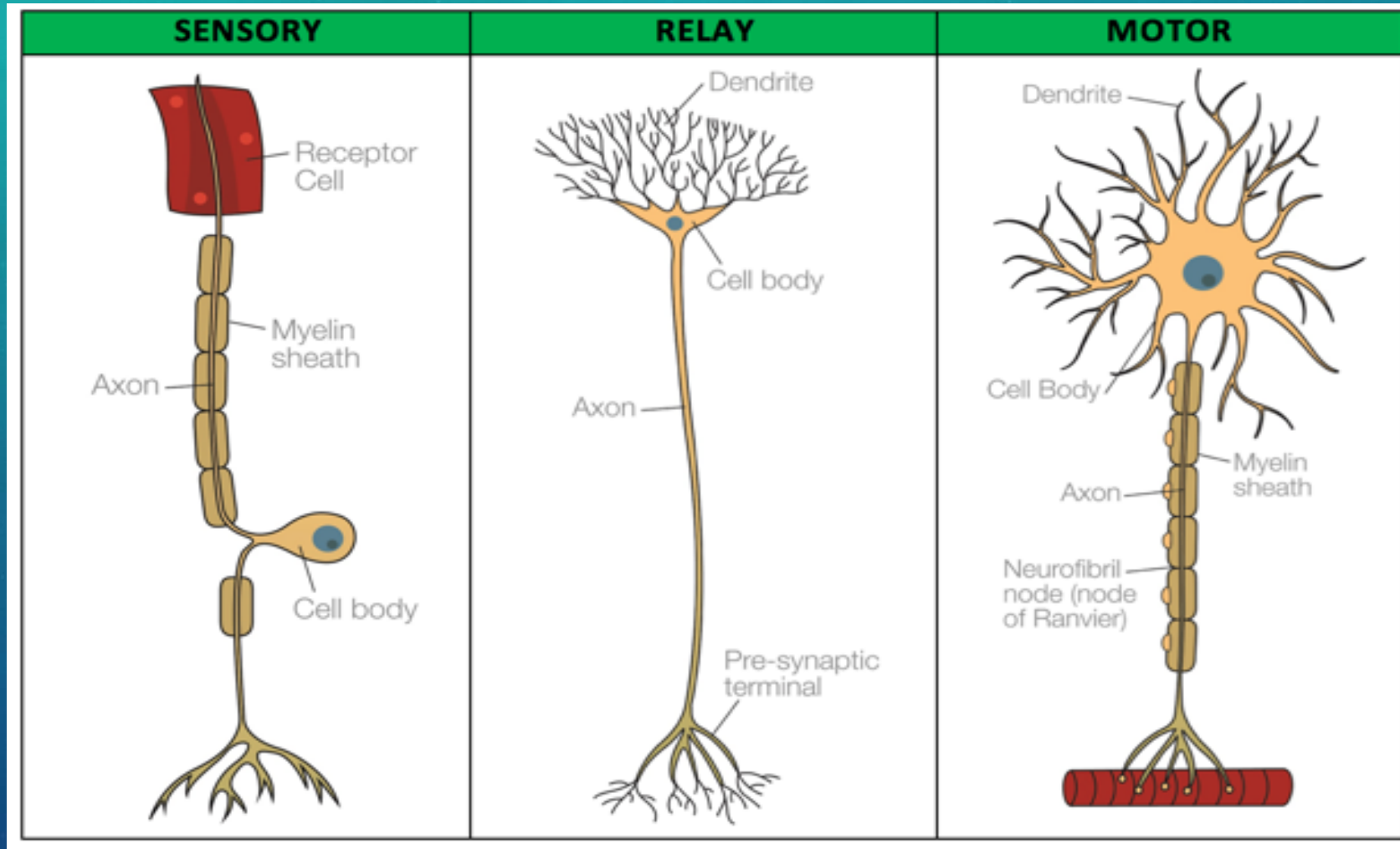
WHAT IS THE CELL THAT IS INVOLVED IN THE NERVOUS SYSTEM?



STRUCTURE OF A NEURON

Structure and function	Sensory neurone	Motor Neurone
Cell body – contains nucleus, cytoplasm and cell organelles	Near end of neurone close to where it enters spinal cord	At start of neurone inside the spinal cord.
Dendrites: thin, branched extensions of the cell body which carry impulses to the cell body	Found at ends of neurone	Extensions of the cell body
Axon- long thin fibre that carries impulses away from the cell body	Short	Very long (up to 1m in legs)

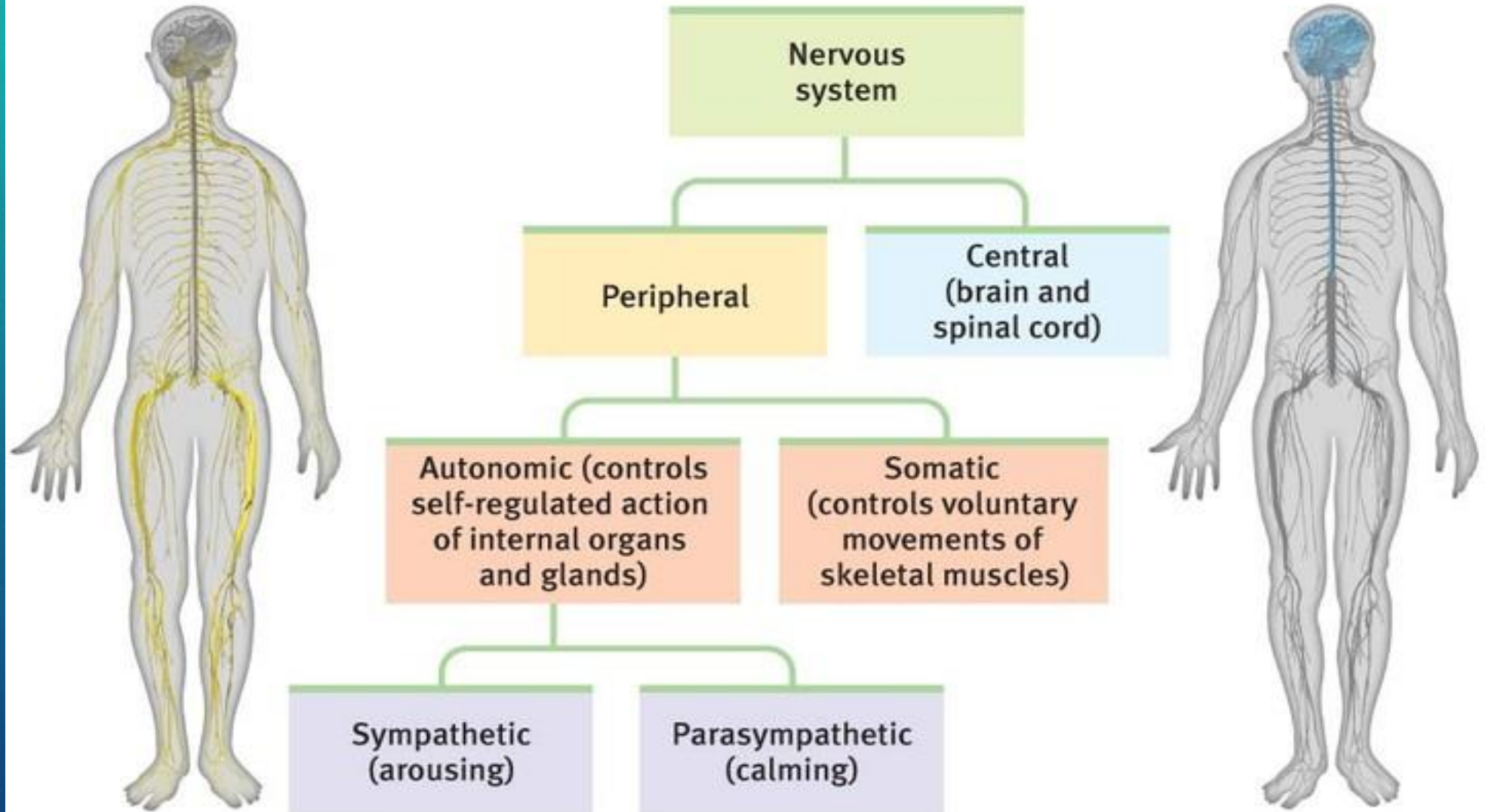
TYPES OF NEURONES



PERIPHERAL AND CENTRAL NERVOUS SYSTEM

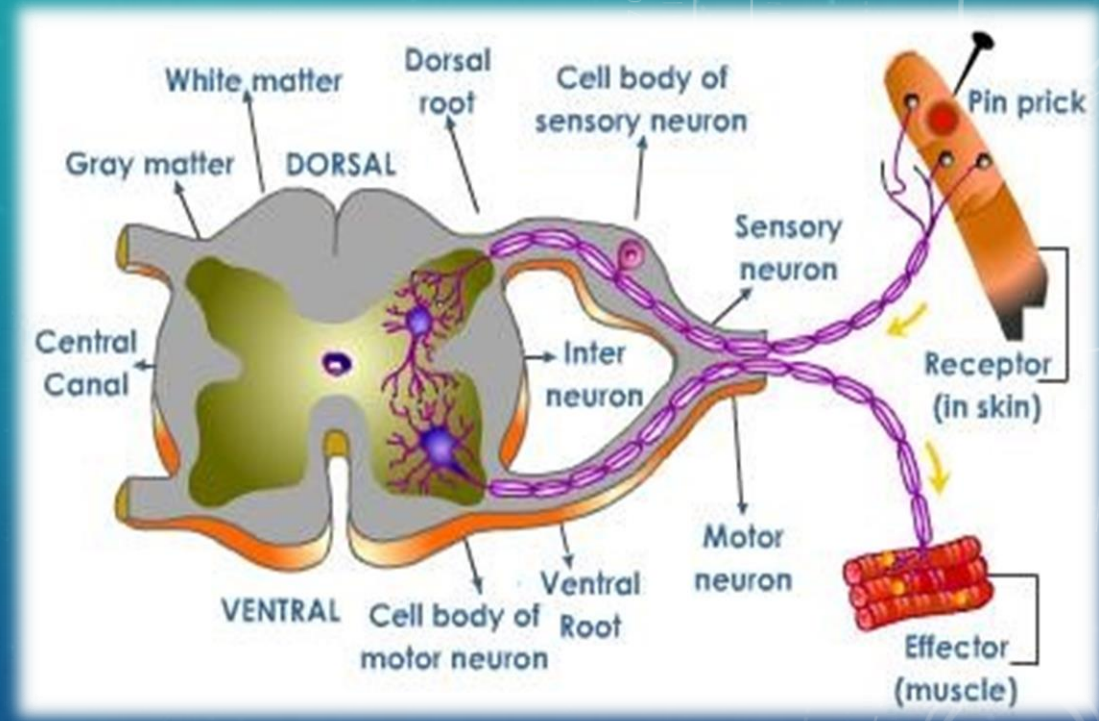
Peripheral nervous system

Central nervous system

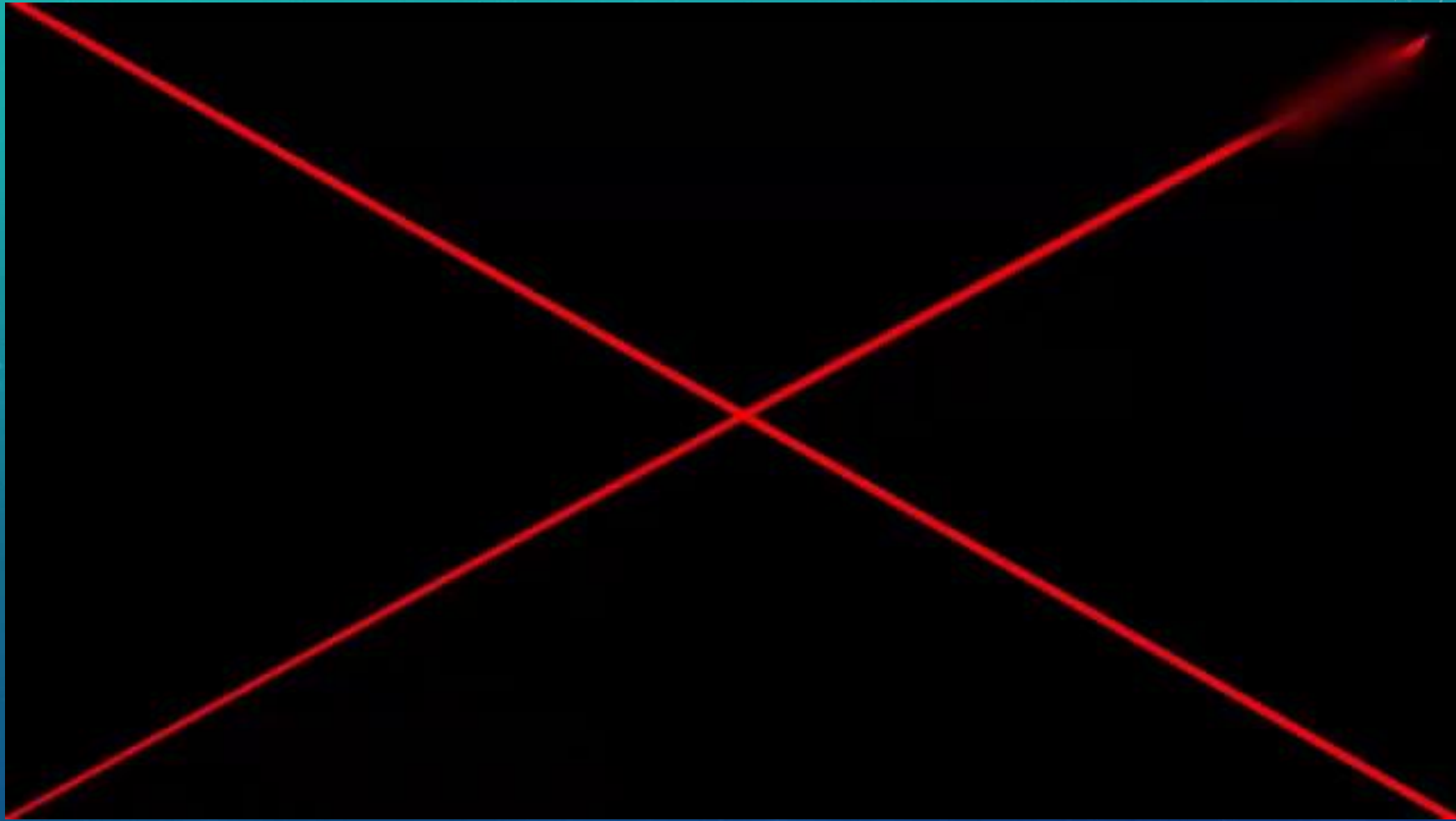


PROCESS OF COORDINATION:

- Receptors in sense organs are linked to the peripheral nervous system. Their role is to detect stimuli and pass impulses to the various control centres in the body. The brain interprets impulses and sends nerve impulses through the spinal cord, through the nerves to the effectors so that they can respond to the stimuli.



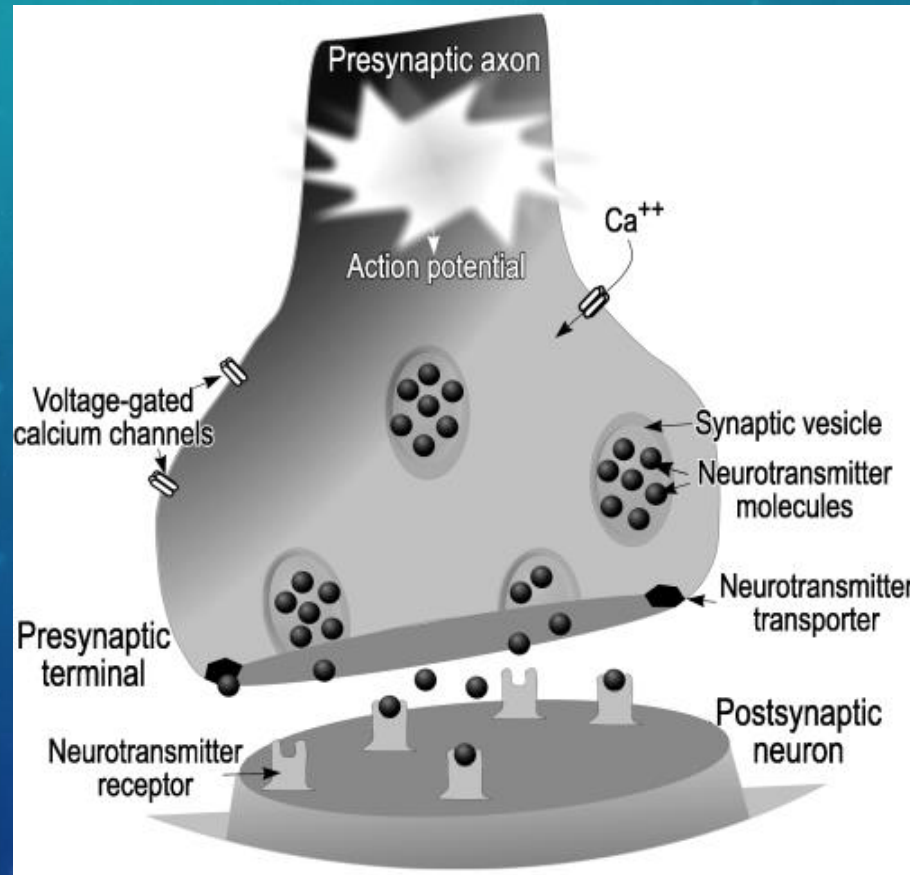
VIDEO ON NERVOUS SYSTEM ANSWER QUESTIONS



TRANSMITTING IMPULSES:

Electrical signal → chemical signal → electrical signal.

- **Stimulus/ receptor** → sensory neuron → CNS → Motor neuron → response/ effector.



QUESTIONS:

- Label the following events as stimulus or response.
- 1. Shark swims toward the direction of the smell of blood.
- 2. Plant grows toward the direction of the sunlight.
- 3. A bat hears the flapping wings of an insect.
- 4. A person feels the heat of a hot stove.
- 5. A dog chases a running rabbit.