

# What is the Spinal Cord?

## Worksheet

The spinal cord is the cable of nerve tissue running from the medulla oblongata to about the L1-L2 vertebra, organized into 31 segments that give rise to spinal nerves and mediate both brain-directed movement and local reflexes.

## Questions

1. Where does the adult spinal cord end?

- A) At the skull base
- B) Around L1-L2 vertebra
- C) At the sacrum
- D) At the coccyx

2. How many total pairs of spinal nerves exit the spinal cord?

- A) 12
- B) 24
- C) 31
- D) 42

3. Which tissue type carries long-distance signals up and down the spinal cord?

- A) Gray matter
- B) White matter
- C) Cerebrospinal fluid
- D) Dura mater

4. The knee-jerk reflex bypasses the brain because it is processed by:

- A) The cerebellum
- B) The hypothalamus
- C) A spinal reflex arc
- D) The occipital lobe

5. A doctor taps the patellar tendon and the leg kicks out automatically, before the patient can consciously react. What mechanism explains this?

6. An injury severs the spinal cord at the L3 level. Which body region loses function while the arms remain normal?

7. In an adult, the spinal cord physically ends around which vertebral level, even though the vertebral column continues lower?

8. Define: How many pairs of spinal nerves does the spinal cord give rise to?

9. Define: What is gray matter in the spinal cord?

10. Define: What is white matter in the spinal cord?

## Answer Key

1. B) Around L1-L2 vertebra - The conus medullaris marks the spinal cord's end near L1-L2 in adults.
2. C)  $31 - 8 \text{ cervical} + 12 \text{ thoracic} + 5 \text{ lumbar} + 5 \text{ sacral} + 1 \text{ coccygeal} = 31 \text{ pairs}$ .
3. B) White matter - White matter's myelinated tracts (ascending sensory, descending motor) transmit long-distance signals.
4. C) A spinal reflex arc - Reflex arcs are wired entirely within the spinal cord for a fast, automatic response.
5. This is a spinal reflex arc Sensory neuron enters the spinal cord, synapses directly with a motor neuron The signal never has to reach the brain, so the response is fast Answer: the patellar (knee-jerk) reflex arc
6. L3 is within the lumbar segments, which control the hips and legs Signals above the injury (cervical/thoracic, arms, chest) remain intact Answer: the legs and lower body lose function; the arms are unaffected
7. The spinal cord (conus medullaris) ends around L1-L2 Below that, only nerve roots (cauda equina) continue inside the canal Answer: approximately L1-L2
8. 31 pairs: 8 cervical, 12 thoracic, 5 lumbar, 5 sacral, 1 coccygeal.
9. The H-shaped inner region containing neuron cell bodies and synapses.
10. The outer region of myelinated axon tracts carrying signals up (sensory) and down (motor).

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