Bodies Built Differently

Compare body plans, movement, and lifestyles in three worm phyla

ZOO.4 "Students will describe the evolution of structure and function of phylum Platyhelminthes, phylum Nematoda, and phylum Annelida. Define and describe the closed circulatory system of an annelid..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the body-cavity description for each phylum, circle words that describe movement, and write P beside each named parasite. Use your marks to compare structure and lifestyle.

Three Worms at a Streambank

1 Imagine sorting three animals from a streambank: a planarian gliding under a stone, a tiny roundworm wriggling in damp soil, and an earthworm tunneling nearby. Their shapes hint at three distinct body plans, not three steps in a single line of descent. Planarians belong to Platyhelminthes, flatworms with no fluid-filled cavity between the gut and body wall. Tissue fills that space, an arrangement called acoelomate. Nematodes, or roundworms, have a fluid-filled pseudocoelom that is not fully lined by mesoderm. Annelids, including earthworms, have a true coelom fully lined by mesoderm and divided by internal walls in many species.

2 Body plans shape how animals move and process food. A planarian uses cilia and muscles to glide; its branched gut has one opening, and dissolved gases cross its thin body surface. A roundworm's fluid-filled cavity works with its tough outer cuticle and lengthwise muscles to produce side-to-side thrashing. Its digestive tract has a mouth and an anus. In an earthworm, separate fluid-filled compartments support more controlled contractions of circular and lengthwise muscles. Repeated segments can specialize while neighboring segments keep moving. Its complete digestive tract runs through the segments, allowing food to move in one direction.

3 An earthworm also has a closed circulatory system: blood stays inside vessels as it carries materials between body tissues and exchange surfaces. Flatworms and roundworms lack this vessel-based system. Lifestyle is a separate comparison from body plan. Free-living animals obtain food from their surroundings without living in or on a host; planarians and many soil roundworms do this. Parasites live in or on hosts and draw resources from them. Tapeworms are parasitic flatworms that absorb nutrients across their body surface, while hookworms are parasitic roundworms that feed in an animal's intestine. Earthworms loosen soil as they tunnel, which can help roots grow.

2 ANSWER WITH EVIDENCE

Use the passage

1. Compare the spaces between the gut and body wall in a planarian, a roundworm, and an earthworm. How does the roundworm use its space to move?

2. How do the digestive tracts of a planarian and an earthworm differ? What does the earthworm's tract allow food to do?

3. What makes an earthworm's circulatory system closed, and how does this system differ from those of flatworms and roundworms?

4. Compare how a free-living planarian and a parasitic tapeworm obtain food. What does this show about lifestyle within Platyhelminthes?

3 YOUR TURN

Your own words

In three panels, sketch and label cross sections of a planarian, a roundworm, and an earthworm. Show the body wall, gut, body-plan name, and any cavity and its lining, then write one sentence under each panel linking its inner layout to movement described in the passage.

ANSWER KEY

Bodies Built Differently

PART 1 · READ AND MARK

Underline the body-cavity description for each phylum, circle words that describe movement, and write P beside each named parasite. Use your marks to compare structure and lifestyle. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Compare the spaces between the gut and body wall in a planarian, a roundworm, and an earthworm. How does the roundworm use its space to move?	**A planarian has tissue instead of a cavity, a roundworm has a fluid-filled pseudocoelom, and an earthworm has a true coelom. The roundworm's cavity works with its cuticle and lengthwise muscles to produce side-to-side thrashing.**
2	How do the digestive tracts of a planarian and an earthworm differ? What does the earthworm's tract allow food to do?	**A planarian's branched gut has one opening, while an earthworm's complete tract runs through its segments. Food can move in one direction through the earthworm.**
3	What makes an earthworm's circulatory system closed, and how does this system differ from those of flatworms and roundworms?	**Its blood stays inside vessels as it carries materials. Flatworms and roundworms lack this vessel-based system.**
4	Compare how a free-living planarian and a parasitic tapeworm obtain food. What does this show about lifestyle within Platyhelminthes?	**A planarian obtains food from its surroundings without a host. A tapeworm lives in a host and absorbs nutrients across its body surface, showing that flatworms can be free-living or parasitic.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Planarian panel: Sketch a body wall and gut with tissue filling the space between them; label it acoelomate and note that there is no cavity. A planarian glides using cilia and muscles without a fluid-filled cavity for support.
Roundworm panel: Sketch a body wall and gut separated by a fluid-filled cavity that is not fully lined by mesoderm; label it pseudocoelomate. This cavity works with the cuticle and lengthwise muscles during side-to-side thrashing.
Earthworm panel: Sketch a body wall and gut separated by a cavity fully lined by mesoderm; label it eucoelomate. Fluid-filled compartments within its segments support controlled muscle contractions.

Accept clear sketches that distinguish no cavity, a cavity not fully lined by mesoderm, and a cavity fully lined by mesoderm. Movement sentences should connect each animal to the movement features stated in the passage.