Inside Three Worms

Read, annotate, and model three body plans

ZOO.4.4 "Create a model comparing acoelomate, pseudocoelomate, and eucoelomate body plans of Platyhelminthes, Nematoda, and Annelida."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline what lies between the body wall and gut in each worm. Circle words that describe where mesoderm lines a cavity, then number the worms from 1, no body cavity, to 3, a fully lined body cavity.

What a Cross Section Reveals

1. Imagine slicing three small worms across the middle and studying each cut end. In every cross section, the outside edge is the body wall, and the digestive tract lies farther in. The key question is what occupies the area between those two structures. An empty-looking region in a drawing may represent a fluid-filled body cavity, not missing tissue. To compare body plans accurately, show where the gut sits, whether a cavity surrounds it, and which surfaces of that cavity touch mesoderm, a layer of tissue formed during development. Those details distinguish three major groups of worms.

2. A planarian is a flatworm in Platyhelminthes. Its body is acoelomate: tissue derived from mesoderm fills the region between the body wall and the gut, leaving no body cavity there. A roundworm in Nematoda has a different layout. Fluid fills a pseudocoelom between its body wall and gut. Mesoderm lines the cavity on the body-wall side, but it does not form a continuous lining around the gut. Both animals have internal organs, but only the roundworm has a fluid-filled body cavity. A cross-section model should not confuse the planarian's gut space with a cavity around its gut.

3. An earthworm belongs to Annelida and has a true coelom. This fluid-filled cavity separates the gut from the body wall, as in the roundworm, but mesoderm lines both sides of the cavity. Mesoderm forms a layer around the gut as well as a layer along the inner body wall. The earthworm's coelom is divided into compartments by partitions between body segments; a simple cross section through one segment can show a cavity around the gut. When you model these animals, matching the position and lining of each cavity matters more than making their outlines look like real worms.

2 ANSWER WITH EVIDENCE

Use the passage

1. In a planarian cross section, what should you show between the body wall and gut? What should you not show there?

2. In a roundworm model, where should you place the pseudocoelom? Which side of it has a mesoderm lining?

3. A model shows an earthworm cavity lined like a roundworm cavity. What lining must you add to correct it?

4. A model shows a fluid-filled cavity lined by mesoderm on both sides. Which phylum does it represent, and what could you add to a lengthwise model of this animal?

3 YOUR TURN

Your own words

Draw three labeled cross sections, one each for a planarian, a roundworm, and an earthworm. Label the body wall, gut, tissue or cavity between them, and any mesoderm lining; below the panels, write one sentence comparing the three cavity plans.

ANSWER KEY

Inside Three Worms

PART 1 · READ AND MARK

Underline what lies between the body wall and gut in each worm. Circle words that describe where mesoderm lines a cavity, then number the worms from 1, no body cavity, to 3, a fully lined body cavity. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	In a planarian cross section, what should you show between the body wall and gut? What should you not show there?	**Show tissue derived from mesoderm filling that region. Do not show a body cavity around the gut.**
2	In a roundworm model, where should you place the pseudocoelom? Which side of it has a mesoderm lining?	**Place the fluid-filled pseudocoelom between the body wall and gut. Mesoderm lines its body-wall side, not the gut side.**
3	A model shows an earthworm cavity lined like a roundworm cavity. What lining must you add to correct it?	**Add a mesoderm lining around the gut so mesoderm lines both sides of the earthworm's cavity.**
4	A model shows a fluid-filled cavity lined by mesoderm on both sides. Which phylum does it represent, and what could you add to a lengthwise model of this animal?	**It represents Annelida. A lengthwise model could show partitions dividing the coelom into compartments between segments.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Planarian panel: The body wall surrounds solid tissue, with the gut inside and no body cavity. Roundworm panel: The body wall surrounds a fluid-filled pseudocoelom, with mesoderm lining its body-wall side but not the gut side. Earthworm panel: The body wall surrounds a fluid-filled coelom, with mesoderm lining both its body-wall and gut sides. The planarian has no body cavity, the roundworm has a cavity lined on one side by mesoderm, and the earthworm has a cavity lined on both sides.

Accept simple shapes if the gut, cavity or solid tissue, and mesoderm linings are correctly positioned. Do not accept a gut opening labeled as a body cavity.