Three Parts, Many Shapes

Find the shared body plan beneath different mollusk forms

ZOO.3.1 "Considering the diversity of mollusks, explain how they all share a common body plan (i.e., mantle, visceral mass, and foot)."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each mention of a mantle, circle each mention of a visceral mass, and number each description of a foot. Use your marks to compare how the same three parts appear in different mollusks.

A Rock, a Burrow, and Eight Arms

1 At low tide, a snail crosses a wet rock, a clam rests beneath the sand, and an octopus slips between stones. Their shapes seem unrelated, but each is a mollusk built from the same three-part body plan. The mantle is a layer of tissue that covers the visceral mass, which contains organs such as the stomach and heart. A muscular foot helps the animal move or grip surfaces, although its form differs widely. Looking for those three parts, rather than for a shell or a familiar shape, reveals what these animals share.

2 The snail's broad foot ripples against the rock, carrying its body forward on a film of mucus. Its visceral mass sits above that foot, and its mantle surrounds the mass and makes the shell that protects it. A buried clam uses a wedge-shaped foot to push into sand instead of crawling over stone. Its visceral mass remains inside the two shell halves, beneath mantle tissue that produces the shells and lines their inner surfaces. The clam's mantle also helps form a chamber where water passes over its gills. Both animals have the same basic parts, despite using their feet in different ways.

3 An octopus has no outer shell, yet its mantle still covers its visceral mass. The mass holds organs that digest food and circulate blood. The octopus's foot has changed form: part of it forms the eight arms that grasp prey, and part forms a funnel beneath the head. By contracting its mantle, the octopus drives water out through that funnel and jets away. A shell, then, is not the test of whether an animal is a mollusk. Compare the snail, clam, and octopus by where their mantle, visceral mass, and foot are found and what those parts do.

2 ANSWER WITH EVIDENCE

Use the passage

1. How do the snail and clam use different forms of the same body part to move?

2. An octopus does not crawl on a broad foot like the snail. What has its foot become, and how does one of those forms help it move?

3. How do the clam and octopus each have a mantle, even though only the clam has an outer shell?

4. A student says an octopus cannot be a mollusk because it has no outer shell. Use all three parts of the shared body plan to explain why that claim is mistaken.

3 YOUR TURN

Your own words

Imagine a shell-less mollusk that lives among wave-washed pebbles. In four or five sentences, describe its mantle, visceral mass, and modified foot, explaining how each helps it live there and why it is still a mollusk.

Three Parts, Many Shapes

PART 1 · READ AND MARK

Underline each mention of a mantle, circle each mention of a visceral mass, and number each description of a foot. Use your marks to compare how the same three parts appear in different mollusks. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How do the snail and clam use different forms of the same body part to move?	**Both use a muscular foot. The snail's broad foot carries it over rock, while the clam's wedge-shaped foot pushes it into sand.**
2	An octopus does not crawl on a broad foot like the snail. What has its foot become, and how does one of those forms help it move?	**Parts of the octopus's foot form its arms and a funnel. It moves by forcing water through the funnel.**
3	How do the clam and octopus each have a mantle, even though only the clam has an outer shell?	**Each has a mantle covering its visceral mass. The clam's mantle produces shell halves, while the octopus's mantle helps drive water through its funnel.**
4	A student says an octopus cannot be a mollusk because it has no outer shell. Use all three parts of the shared body plan to explain why that claim is mistaken.	**An octopus has a mantle covering a visceral mass, and parts of its foot form its arms and funnel. Mollusks share those three parts, not necessarily an outer shell.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

My pebble-dwelling mollusk has a tough, flexible mantle that covers its soft internal organs when waves toss stones around. Its visceral mass contains organs that digest tiny algae scraped from the rocks and circulate blood. Its muscular foot is split into two gripping pads that cling to pebbles as the water surges. It has no shell, but its mantle, visceral mass, and modified foot still fit the shared mollusk body plan.

Accept accurate descriptions that identify the mantle, visceral mass, and modified foot in each comparison. For the open task, invented adaptations may vary, but the mantle must cover the visceral mass and the foot must be a muscular structure adapted for a plausible use.