One Plan, Three Lives

Trace how a shared mollusk body plan supports different ways of life.

ZOO.3 "Students will understand the structure and function of phylum Mollusca, and how they adapt to their environments. 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 the three body parts all mollusks share, then circle the different foot forms that help you distinguish a snail, clam, and squid.

A Foot for Every Habitat

1 A snail moves across a tide pool, a clam digs into sand, and a squid darts through open water. They look unlike one another, yet each has a mollusk body plan: a muscular foot, a visceral mass containing internal organs, and a mantle, a tissue layer covering the visceral mass. Their foot changes shape with their lifestyle. In a snail it spreads into a crawling surface; in a clam it pushes into sediment; in a squid it is modified into prey-grabbing arms and a funnel. These animals are eucoelomates because they have a true body cavity completely lined by mesoderm, although that cavity is small in adult mollusks.

2 The mantle builds shells by releasing minerals and proteins onto its outer surface. A snail usually carries one coiled shell, while a clam has two hinged shells that close around its soft body. A squid's shell is reduced to a thin internal support called a pen. Feeding also separates these mollusks. A snail scrapes algae with a radula, a flexible ribbon bearing rows of tiny teeth. A clam lacks a radula: it filters food particles from water that passes over its gills. A squid grasps prey with its arms, bites with a hard beak, and uses a radula to move and break up food.

3 A squid lives where speed and quick decisions matter. Its large eyes detect prey and predators, and pigment cells in its skin change its appearance. If danger closes in, the squid may release a cloud of ink. For rapid escape, its mantle squeezes water from the mantle cavity through the funnel; the squid moves in the opposite direction. The same body plan therefore supports very different lives: a broad foot carries a snail across rock, a digging foot helps a clam hide in sand, and a foot modified into arms and a funnel helps a squid hunt and escape. Body structures, not just habitat, can identify each group.

2 ANSWER WITH EVIDENCE

Use the passage

1. A clam's foot digs, but a squid's foot forms arms and a funnel. Why are both still mollusks and eucoelomates?

2. How does a clam's mantle help form its shell, and how does a squid use its mantle to move?

3. How does the presence or absence of a radula relate to the different ways a snail and a clam feed?

4. How do ink release and the mantle-funnel system help a squid escape a predator?

3 YOUR TURN

Your own words

Write a two-step dichotomous key that separates a snail, clam, and squid using body features from the passage. Give paired choices at each step, then write one sentence explaining how each animal's foot helps it survive.

ANSWER KEY

One Plan, Three Lives

PART 1 · READ AND MARK

Underline the three body parts all mollusks share, then circle the different foot forms that help you distinguish a snail, clam, and squid. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	A clam's foot digs, but a squid's foot forms arms and a funnel. Why are both still mollusks and eucoelomates?	**Both have a foot, visceral mass, and mantle. Both also have a true body cavity completely lined by mesoderm.**
2	How does a clam's mantle help form its shell, and how does a squid use its mantle to move?	**The clam's mantle releases minerals and proteins that build its shell. The squid's mantle squeezes water through its funnel, moving the squid in the opposite direction.**
3	How does the presence or absence of a radula relate to the different ways a snail and a clam feed?	**A snail uses its radula to scrape algae. A clam has no radula and filters food particles from water passing over its gills.**
4	How do ink release and the mantle-funnel system help a squid escape a predator?	**The squid can release a cloud of ink when threatened, then force water through its funnel to move rapidly away.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

1a. Foot forms arms and a funnel: squid. 1b. Foot does not form arms and a funnel: go to 2.
2a. Foot is broad for crawling: snail. 2b. Foot digs into sediment: clam.
A snail's foot helps it cross rock, a clam's foot helps it hide in sand, and a squid's modified foot helps it seize prey and jet away.

Accept other observable body features, such as shell type, if each pair of choices separates the animals without overlap. The final sentence should link each foot form to a useful action.