

Exercise walk-through

Responses to the Environment ■ 8.1

eXercise

You must be able to

- distinguish **innate** 先天 from **learned** 后天 behavior
- explain how behaviors improve survival and reproduction
- give examples (taxis, migration, learned responses)

Method — Innate vs learned

- **Innate behavior** is **inherited** and present from birth (e.g. a spider spinning a web, reflexes).
- **Learned behavior** develops from **experience** (e.g. a rat learning a maze).

Method — Behavior aids survival

Behaviors that help an organism find food, avoid predators, or reproduce raise its **fitness**, so they are favored by natural selection.

Method — Examples

- **Taxis** — moving toward or away from a stimulus (e.g. moth toward light).
- **Migration** — moving seasonally to better conditions.
- **Learned** — associating a sound with food.

Method — A worked judgement

A newly hatched sea turtle heading to the ocean without being taught is **innate**; a dog sitting on command is **learned**.

Practice 2.1 ■ 2 marks

Distinguish innate from learned behavior.

Solution 2.1

Method: Innate vs learned

Worked steps

Innate behavior is inherited/present from birth; learned behavior develops from experience **B1** **B1**.

Practice 2.2 ■ 1 mark

Give one example of innate behavior.

Solution 2.2

Method: Innate vs learned

Worked steps

Any one: reflex, web-spinning, sea turtle heading to the ocean **B1**.

Practice 2.3 ■ 1 mark

How does helpful behavior spread in a population?

Solution 2.3

Worked steps

Individuals with the helpful behavior survive and reproduce more, passing on the behavior **B1**.

Exam-style 3.1 ■ 1 mark

A behavior present from birth without being taught is

- A** learned
- B** innate
- C** random
- D** impossible

Solution 3.1

A learned

B innate 

C random

D impossible

Worked steps

B — innate.

Exam-style 3.2 ■ 1 mark

Baby sea turtles crawl toward the ocean immediately after hatching.

- (a) Classify this behavior.
- (b) Explain how such a behavior improves survival and could be favored by selection.

Solution 3.2

Method: Behavior aids survival

Worked steps

(a) Innate **B1**. (b) Reaching the ocean quickly avoids predators on land, so turtles that do it survive and reproduce more, favoring the behavior **M1** **A1**.

Exam-style 3.3 ■ 3 marks

Explain the difference between innate and learned behavior, giving one example of each.

Solution 3.3

Method: Innate vs learned

Worked steps

Innate is inherited and present from birth (e.g. a reflex); learned develops through experience (e.g. a dog trained to sit) **M1** **M1** **A1**.