

8.1 Responses to the Environment

Name: _____ Class: _____ Date: _____

Total: 11 marks

KEY WORDS innate 先天 • learned 后天 • population 种群

Objective

Build the skills to answer exam questions on **responses to the environment** — behavior.

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)

1 Worked examples

Study these first. Each one shows the method for a question type used later — follow the steps and you can do the Practice and Exam-style questions yourself.

■ 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).

■ Behavior aids survival

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

■ 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.

■ A worked judgement

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

2 Practice

Now apply the methods above.

2.1 Distinguish innate from learned behavior. [2]

2.2 Give one example of innate behavior. [1]

2.3 How does helpful behavior spread in a population? [1]

3 Exam-style questions

3.1 A behavior present from birth without being taught is [1]

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

3.2 Baby sea turtles crawl toward the ocean immediately after hatching.

(a) Classify this behavior. [1]

(b) Explain how such a behavior improves survival and could be favored by selection. [2]

3.3 Explain the difference between innate and learned behavior, giving one example of each. [3]

Solutions

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

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

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

3.1 B — innate.

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

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