

Exercise walk-through

8.1

Responses to the Environment

AP Biology

Responses to the environment

Organisms react to survive and keep **homeostasis** :

- **innate** (built in) vs learned behaviour
- a **tropism** : growth toward a cue (light, gravity)
- **signals** coordinate a group (the bee dance)

A lizard basks then shades to hold its temperature – behaviour protecting homeostasis.



Tropisms bend growth toward useful cues

Innate and learned behaviour

the principle	organisms sense and respond in ways that aid survival and reproduction
innate behaviour	inherited and present without experience – reflexes, fixed action patterns, taxis and kinesis
learned behaviour	acquired through experience – habituation, conditioning, imprinting
why innate persists	it is reliable and needs no learning time, which matters when the first mistake is fatal
why learning persists	it adapts to conditions too variable to be worth encoding genetically
communication	signals – chemical, visual, auditory, tactile – coordinate behaviour between individuals

Ask what the environment is like: **stable** environments favour innate responses, **variable** ones favour learning. That framing answers most behaviour questions.

Exercises 2.1-2.3

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]

Exercises 2.1-2.3

2.1 Distinguish innate from learned behavior. [2]

2.1

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

2.2 Give one example of innate behavior. [1]

2.2

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

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

2.3

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

Exercise 3.1

3.1 A behavior present from birth without being taught is

[1]

☐

A learned

B innate

C random

D impossible

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3.1 B

- innate

Exercise 3.2 (a)

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

(a) Classify this behavior.

[1]

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[1]

(a)

- Innate

Exercise 3.2 (b)

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

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(b)

- Reaching the ocean quickly avoids predators on land, so turtles that do it survive and reproduce more, favoring the behavior

Exercise 3.3

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

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3.3

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