

Exercise walk-through

Food Chains and Food Webs ■ 1.11

eXercise

You must be able to

- distinguish a **food chain** 食物链 from a **food web** 食物网
- trace energy flow and read arrows correctly
- predict the effect of removing a species

Method — Chains vs webs

A **food chain** is a single line of who-eats-whom. A **food web** links **many** chains into a realistic picture of feeding relationships.

Method — Arrows show energy flow

The arrow points **from** the organism eaten **to** the organism that eats it — it shows the direction energy flows (prey → predator).

Method — Removing a species

Because species are connected, **removing** one has knock-on effects: its prey may increase, and its predators lose a food source. A **keystone species** has an outsized effect.

Method — A worked prediction

If foxes are removed from a web, rabbits (their prey) may increase, over-grazing plants; species competing with rabbits may decline.

Practice 2.1 ■ 1 mark

What is the difference between a food chain and a food web?

Solution 2.1

Method: Chains vs webs

Worked steps

A food chain is a single line of feeding; a food web links many chains together **B1**.

Practice 2.2 ■ 1 mark

In a food chain, which way does the arrow point?

Solution 2.2

Method: Chains vs webs

Worked steps

From the organism eaten to the one that eats it (prey $\rightarrow$ predator) **B1**.

Practice 2.3 ■ 1 mark

What is a keystone species?

Solution 2.3

Method: Removing a species

Worked steps

A species with an outsized role whose removal greatly affects the community **B1**.

Exam-style 3.1 ■ 1 mark

In a food web, an arrow from a rabbit to a fox shows that

- A** the rabbit eats the fox
- B** energy flows from the rabbit to the fox
- C** they do not interact
- D** the fox is a producer

Solution 3.1

Method: Arrows show energy flow

- A the rabbit eats the fox
- B energy flows from the rabbit to the fox** 
- C they do not interact
- D the fox is a producer

Worked steps

B — energy flows from the rabbit to the fox.

Exam-style 3.2 ■ 2 marks

In a food web, hawks eat both snakes and mice.

- (a) Predict what happens to the mouse population if hawks are removed.
- (b) Explain why a food web is more realistic than a single food chain.

Solution 3.2

Method: Chains vs webs

Worked steps

(a) With fewer predators, the mouse population is likely to increase **M1** **A1**. (b) Most organisms eat and are eaten by several species, which a web shows but a single chain does not **B1**.

Exam-style 3.3 ■ 2 marks

Explain why removing a keystone species can have a large effect on a food web.

Solution 3.3

Method: Removing a species

Worked steps

A keystone species affects many others (e.g. by controlling prey numbers); removing it lets some populations grow and others shrink, changing the whole web **M1** **A1**.