

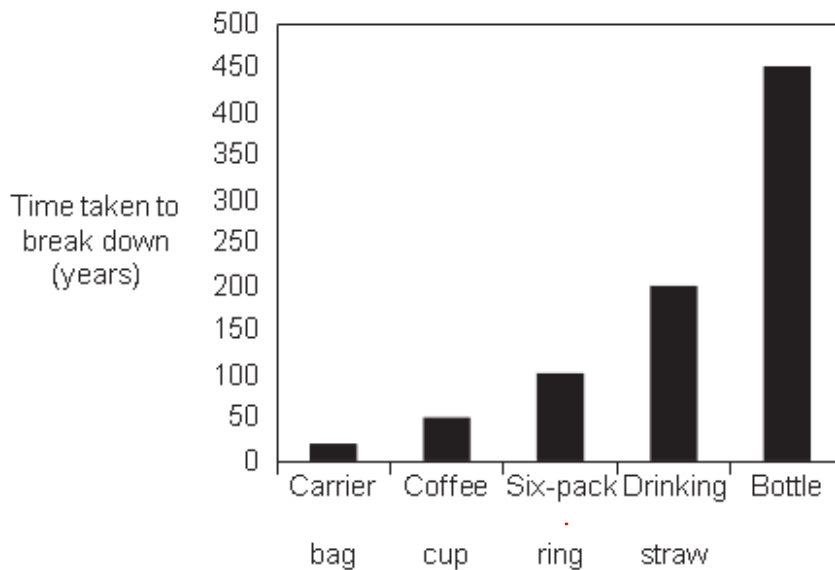
GCSE Biology B (Twenty First Century Science)
J257/02 Depth in Biology (Foundation)

Question Set 8

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1 (a) Plastic pollution in the sea is a big problem.

The bar chart shows how long it takes for different types of plastic litter to break down in the sea.



(i) Which type of plastic litter takes the longest time to break down, and how long does it take? *bottle, taking 450 years.* [2]

(ii) A crisp packet takes 80 years to break down in the sea.

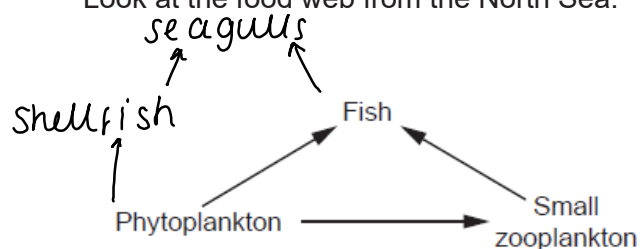
Which types of litter, shown on the bar chart, will break down faster than a crisp packet?

Tick (✓) **two** boxes.

- Carrier bag
- Coffee cup
- Six-pack ring
- Drinking straw
- Bottle

[1]

(b) Look at the food web from the North Sea.



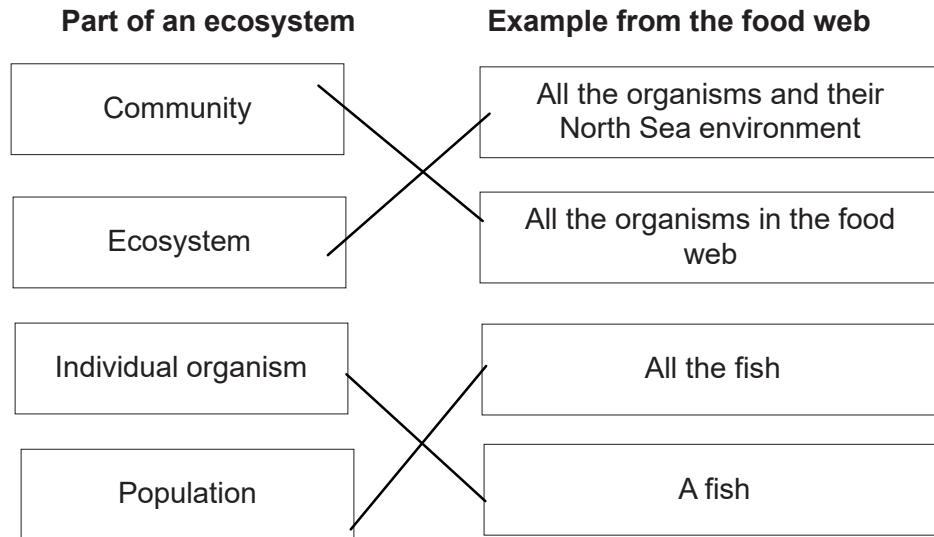
(i) Add the following information to the food web above:

- Phytoplankton are eaten by shellfish.
- Shellfish and fish are eaten by seagulls.

[2]

(ii) Draw straight lines to join each **part of an ecosystem** to the correct **example from the food web**.

[3]



(iii) Phytoplankton are producers.

Zooplankton, fish, shellfish and seagulls are all consumers.

Describe the differences between a producer and a consumer.

[3]

producers can photosynthesise, and use energy from the sun to make their own food. Consumers cannot do this, and have to eat producers or other consumers to get the energy they need. Producers are normally simple insects or animals. The number of producers are much greater than the number of consumers.

Plastic litter in the sea breaks down into very small pieces of plastic.

Fish cannot tell the difference between very small pieces of plastic, phytoplankton and small zooplankton.

Phytoplankton and small zooplankton are digested by enzymes in a fish's gut.

Explain why very small pieces of plastic in the sea could cause fish to die.

[4]

fish are likely to ingest the plastic particulates, as they mistake them for plankton. However, the fish does not have the enzymes to digest the plastic, and so over time they will collect in the stomach and intestine, preventing the digestion and absorption of real food. This causes them to die.

Explain why very small pieces of plastic in the sea could cause fish to die.

(v) Humans eat fish caught from the North Sea.

Explain why very small pieces of plastic in the North Sea could be dangerous for humans.

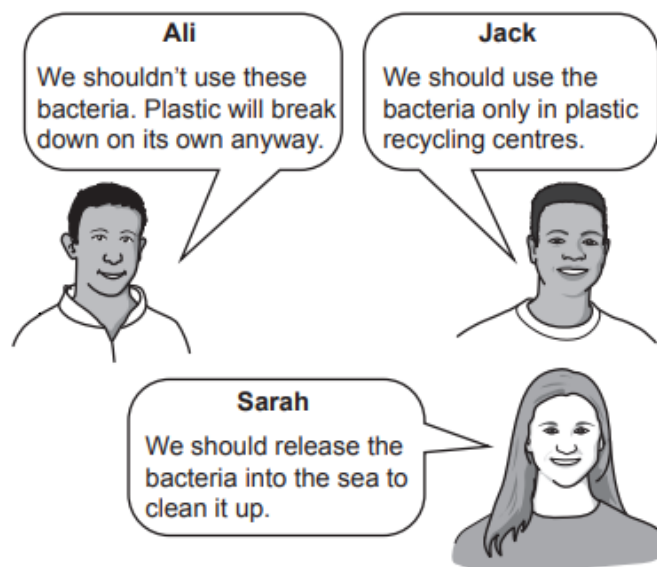
[2]

As fish in the North Sea are ingesting plastic pieces, when we eat these fish, we take in the plastic they have accumulated. This is likely to be a considerable amount to cause health problems, as the amount of plastic multiplies up the food chain.

(c) Scientists have discovered some bacteria in a rubbish dump.

These bacteria break down plastic into very small pieces. The pieces can be used to make new plastic products.

People have suggested different ways of using these bacteria.



Whose suggestion would have benefits for the sea **and** minimise the possible risks? **Jack's** suggestion.

Explain your answer.

[3]

More space will be available in recycling centres, and more plastics will be repurposed, which means less will end up in the ocean. The suggestion does not expose sea life to this bacteria, which protects the ecosystem and minimises risk.

Total Marks for Question Set 8: 20

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