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## Constructing food chains

Use the following information to construct a food chain for each of the habitats and answer the question that follows.

### Habitat 1

In the pond there are some very big carnivorous fish. The water in the pond is coloured green with small microscopic plants. Small fish feed on water fleas.

#### Question

What will happen if someone catches some of the big fish?

### Habitat 2

A well-fed hawk sits in a tree. Rabbits run around on the grass.

#### Question

What will happen if the grassland is turned into a concrete car park?

### Habitat 3

Beetles are found among the leaves. An owl hoots happily and spits out some bones and fur. Small shrews are plentiful.

#### Question

What will happen if a hawk starts to prey on the shrews?

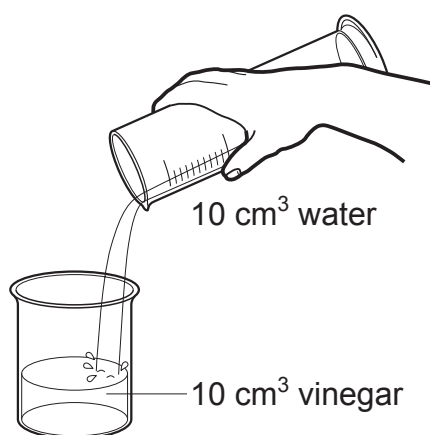
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**Answer the following questions. Your answers should describe what happens to the particles of the matter described in each question.**

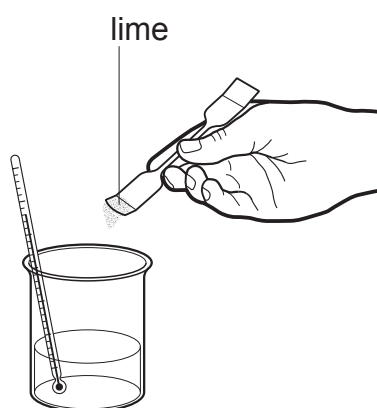
- 1** Explain the following processes by describing what happens to the particles of matter in each case.
  - (a) Clothes drying on a line.
  - (b) Sugar dissolving in a cup of coffee.
  - (c) Condensation forming on a cold night.
- 2** A gas tap in a laboratory is turned on. Explain, in terms of particles, why everyone in the laboratory can smell the gas within a few minutes.
- 3** Explain why an inflated balloon always goes down in a few days.
- 4** If a bucket of water is left outside, the water in it slowly disappears into the air.
  - (a) Explain why this happens.
  - (b) Explain why all the water does not disappear immediately but some remains in the bucket for quite a long time.
- 5** If seawater is left in a beaker, the water level slowly goes down and crystals appear at the bottom and around the edges. As the water level goes down further these crystals get bigger. Explain what is happening.
- 6** If you suck air into a syringe and put your finger firmly over the bottom, it is possible to push the plunger of the syringe some way in. If you suck water in instead of air, it is not possible to push in the plunger. Explain this difference.

## Neutralising vinegar with lime

- 1 Prepare the diluted vinegar as shown from  $10\text{ cm}^3$  vinegar and the same amount of water. Stir well with the glass rod.



Diluting the vinegar



Adding the lime

- 2 Prepare about 12 very small pieces of pH paper by cutting up one page from a pH paper booklet.
- 3 Find the pH of the vinegar by putting a drop of the solution on the pH paper. Write the result in a table like the one shown here.

Number of spatula measures of lime	Temperature	Colour of mixture with indicator paper	pH

- 4 Add one small spatula measure of lime as shown in the diagram, stir and take the pH again. Write the result in the table.
- 5 Keep repeating step 4, using the same amount of lime each time, until the pH has risen to about 12 and does not change any more.
- 6 Plot a graph showing how the pH of the vinegar changes as you add the lime.

