Mandatory investigation 17.1

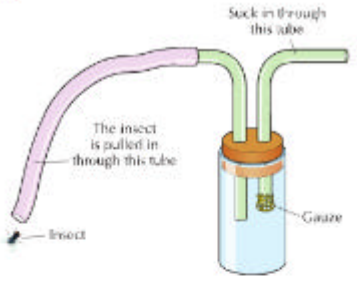
(a) To study a local habitat

The study of the habitat should be written up as a report to cover the following steps:

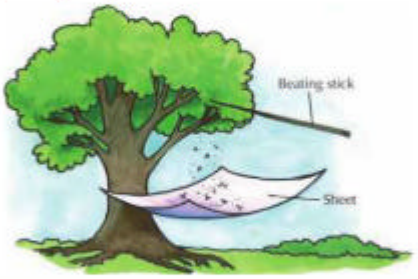
1. Make a simple outline **map** of your habitat. Record the position of north.
2. Record the **environmental factors** affecting the habitat.
3. **Collect** and **identify** at least five plants and five animals in the habitat.
4. Use a **quadrat** to examine the **variety of organisms** present.
   See *Mandatory investigation 17.1(b)*.
5. Use a **line transect** to investigate the **distribution of organisms** across contrasting areas of the habitat, e.g. from sunny to shade.
   See *Mandatory investigation 17.1(c)*.
6. Use the information gathered to find examples of the following from the habitat:

   (i) food chains, (ii) a food web (HL only), (ii) competition, (iv) adaptation and (v) interdependence (HL only).

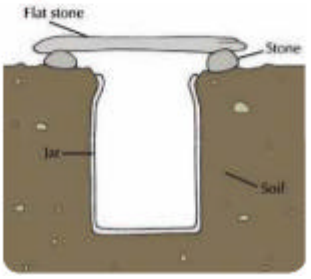
(1) Pooter



(2) Beating tray



(3) Pitfall trap



Exam Question

Junior Certificate Science Higher Level Examination Question

Many species of plant are protected in National Parks. The manager of one of these parks is asked to measure the frequency with which a protected species occurs in a habitat within a park.

Describe how this might be carried out. Include a diagram of any equipment that might be used.

A: The frequency of a plant means how common it is in the area. In this case it would be impossible for the park manager to count every one of the protected plants. Instead s/he takes a number of samples and from these an estimate of the frequency of the plants can be made.

Method

1. **Throw a quadrat over your shoulder at random.**
2. **Note if the protected species is present.**
3. **Repeat a large number of times in different locations.**
4. **Record the results in a table.**

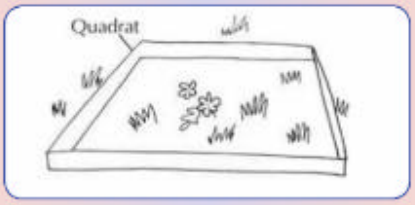


Fig. 17.5 You must give a diagram to get full marks for this question.

(b) To show the variety of plants in a habitat using a quadrat

Apparatus required: quadrat; clipboard; pen; recoding sheet

Also required: plant identification book/plant key

Method

1. Throw a pencil over your shoulder at random (take care that there is no one behind you).
2. Place the quadrat where the pencil lands.
3. Record the names of the types of plants present inside the quadrat boundary, as in *Table 17.3*. The actual numbers of plants does not matter.
4. The quadrat should be thrown at least ten times. The more times you throw the quadrat, the more accurate your results will be.
5. You can use the information gathered to calculate the percentage frequency of a particular plant. For example, if dandelions are found in six out of ten quadrats, then you would expect 60 dandelions to occur in 100 quadrats. Therefore we can say dandelions have a 60 per cent frequency.
6. Use your results to draw a bar chart. This makes your results easier to understand. It also makes it simpler to compare with the types of plants present in other habitats.

PLANT	QUADRAT NUMBER										TOTAL	PERCENTAGE FREQUENCY
	1	2	3	4	5	6	7	8	9	10		
Dandelion		√	√		√		√	√	√		6	60%

Table 17.3 Results for a quadrat survey.

(c) To investigate the distribution of plants using a line transect

Apparatus required: a length of rope marked off at intervals; stakes; clipboard/recording sheet/pen

Also required: plant identification books and keys

Method

1. Lay the marked rope across an area of change in the habitat, see *Fig. 17.4*. Mark this line on your map of the habitat. Stake the rope at either end.
2. Record the name of any plant which is touching or under the rope at each station (*Table 17.4*).

STATION NUMBER	NAME OF PLANT
1	Hawthorn tree
2	Fern
3	None – path
4	Short grass
5	Dandelion
6	Tall grass

Table 17.4