

## ACTIVITY 4.36

## SIX JOINTED LEGS - INSECTS

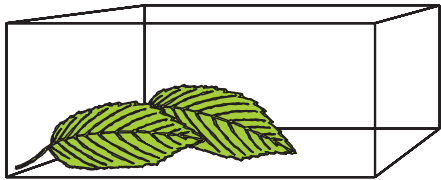
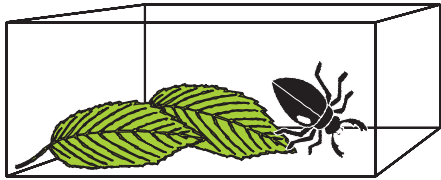
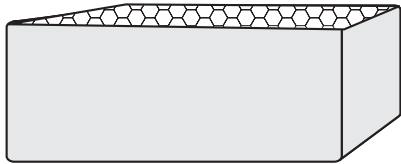
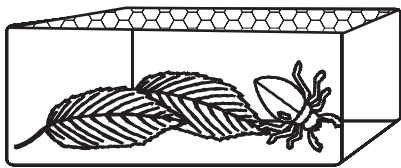
### INTRODUCTION

The word Arthropoda means "jointed legs". Insects, crabs, spiders, millipedes and centipedes are all Arthropoda. There are more different types of Arthropoda on Earth than there are of any other animal. It is easy to keep and study Arthropoda. First, we will study an insect.

#### To keep an insect you need:

- a plastic lunch box with a lid
- petri dish
- propette
- some mesh
- food\*
- an insect\*
- tap water

\* Your teacher will tell you what to do.

<p>1 First put some food for the insect in the lunch box.</p> 	<p>2 Then put one or two insects in the lunch box with the food.</p> 
<p>3 Put a piece of mesh over the lunch box.</p> 	<p>4 Keep the lunch box in a cool place.</p> 

#### To study an insect you need:

- hand lens
- petri dish or vial
- tap water
- forceps
- propette
- insect

#### Step 1

Put the insect onto the petri dish or vial with the lid loosely on.

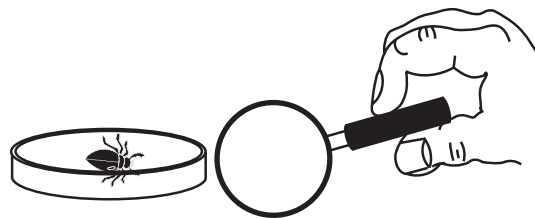


#### Step 2

Complete the following exercise in your notebook.

### Step 3

Use the hand lens to see more clearly when it is necessary.



### HABITAT

- Q1 Where does the insect live; on land or in water?
- Q2 What special structures does the insect have which are suitable for its habitat?

### GENERAL STRUCTURE

- Q3 Is the body smooth or segmented (divided)?
- Q4 If it is segmented, are the segments equally clear on both surfaces?
- Q5 If it is segmented, is the segmentation equally clear on all the body parts?

### BODY DIVISIONS

- Q6 Into how many regions is the body divided?
- Q7 In your notebook, draw an outline sketch of the insect showing body divisions ONLY.

### DETAIL OF SOME PARTS OF THE INSECT

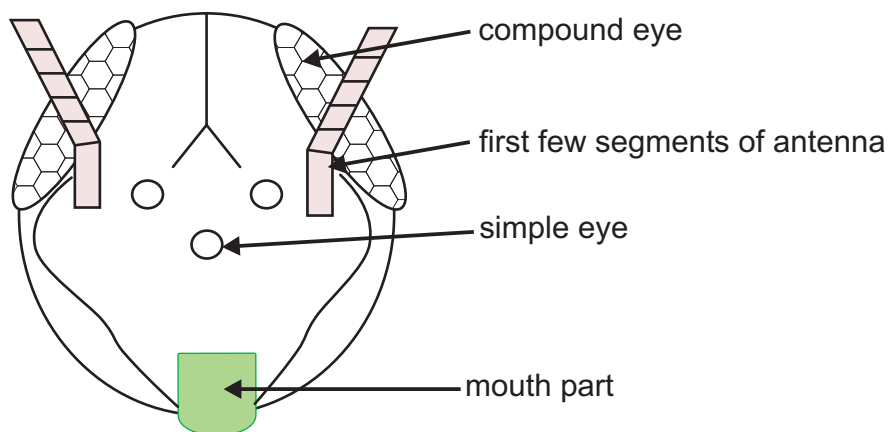
#### I The head

- Q8 How many feelers or antennae are there?
- Q9 Insects have compound eyes which look like a network. How many compound eyes do you see?

Insects also have simple eyes which are more difficult to see.

Look for the insect's mouthparts at the front of its head.

The figure below shows a diagrammatic view of an insect's head seen from the front.



## Step 4

Study the figure. Use it as a model and draw your insect's head in detail showing compound eyes, simple eyes, antennae, mouthparts.

### II The Thorax

- Q10 Look at the ventral (under) surface of the insect. Into how many parts is the thorax divided?
- Q11 The legs are attached to the thorax. How many legs does the insect have?
- Q12 Are all the legs the same? Answer this question fully.
- Q13 Watch the insect for a while. Does it use the legs only for walking or does it use the legs for other things? Answer this question as fully as possible.
- Q14 How many wings does the insect have?
- Q15 Are the wings all the same? Answer this question as fully as possible.
- Q16 In your notebook, draw one leg and one wing of your insect.

### III The Abdomen

- Q17 Look at the abdomen from the side. You may see little holes on some of the segments. These are the spiracles or breathing holes of the insect. Which segments have spiracles?
- Q18 Why do you think we would not see spiracles on all insects?

## WHAT THE INSECT DOES

### I How the insect moves

#### Step 5

Watch the insect carefully. Find out which legs are on the ground at the same time when it walks. In other words, does the insect move its first two legs, then the next, then the next; or does it move all the legs on one side and so on?

### II How the insect eats

#### Step 6

Continue to watch the insect carefully.

- Q19 What does the insect eat?
- Q20 How does food get into the insect's body? Does it use its legs, does it "lap" like a dog and so on?

### III How the insect breathes

#### Step 7

Continue to watch the insect carefully.

Q21 Does the abdomen move?

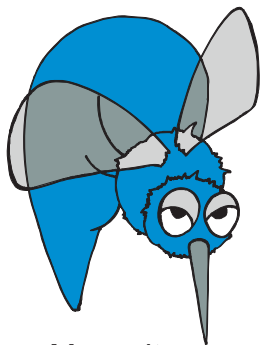
Q22 Do the spiracles move?

#### Something to think about

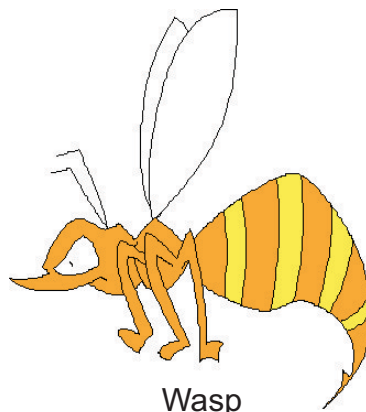
Q23 There are many more insects on Earth than any other animal. From what you have learned about insects, why do you think insects are so plentiful? Answer the question by talking about:

- ◆ what insects look like and their size
- ◆ where they live
- ◆ how they move
- ◆ what they eat
- ◆ how they find out about their surroundings

Q24 An artist drew the following cartoon pictures of insects. Write a letter to the artist explaining how each picture should be changed so that it is more accurate.



Mosquito



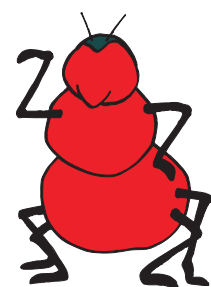
Wasp



Ladybird



Dragonfly



Ant

**INTRODUCTION**

You have already learned that spiders and scorpions, like insects and crustaceans are Arthropoda. Many spiders and scorpions are poisonous so we will study them outside instead of keeping them in the laboratory.

**To find spiders**

\* Your teacher will tell you what to do.

Observe the spiders and their behaviour. **DO NOT ANNOY THEM. DO NOT TOUCH THEM.**

**What to do:**

- Step 1**        Observe the spider without worrying it.  
**Step 2**        Complete the exercise below in your notebook.  
**Step 3**        Use the hand lens to see more clearly when it is necessary.

**HABITAT**

- Q1     Where do we find spiders in nature?  
Q2     In what ways is the body of the spider suitable for its habitat?

**GENERAL STRUCTURE**

- Q3     What shape is the body?  
Q4     Is the body flattened in any way?  
Q5     Is the body clearly segmented all over or not?  
Q6     How many legs does the spider have?

**WHAT THE SPIDER DOES****How the spider moves**

- Q7     Which of the following words best describes the way the spider moves? [**You may select as many words as you like**] run, jump, hop, scuttle, shuffle, dash, leap, flap, hurtle, walk.

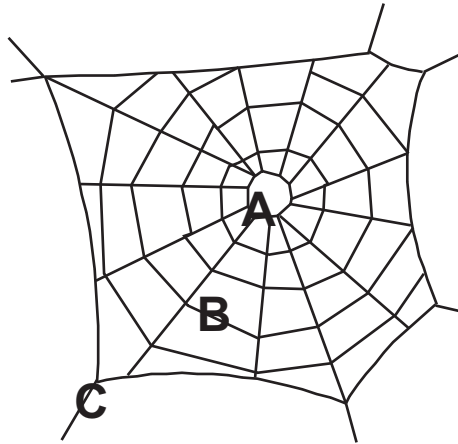
**How the spider eats**

- Step 4**        Watch the spider carefully and answer the questions below.  
Q8     What does the spider eat - meat or vegetation?  
Q9     Where does the food come from?  
Q10    How does food get into the spider's body? Does it use its legs, does it use its mouthparts, does it chew its food?

## Webs

Not all spiders spin webs. Those spiders which do spin webs use a special kind of silk for their webs. If you are watching a web-spinning spider, you can see what it does in its web.

**Step 5** Draw a picture of your spider's web. Mark A, B and C in the positions shown underneath.



Each day, record where on the web you saw the spider; for example A (in the centre), B (in the body of the web) C (on the margin of the web).

Q11 Where does the spider spend most of its time?

## Activity 4.38 EVEN MORE JOINTED LEGS - CRUSTACEANS

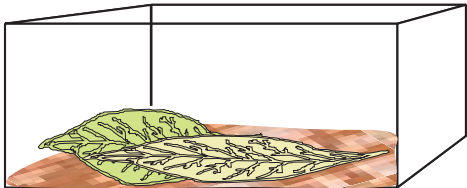
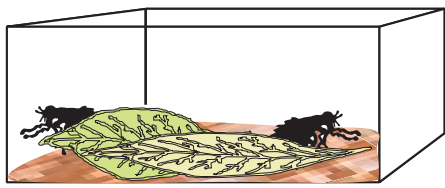

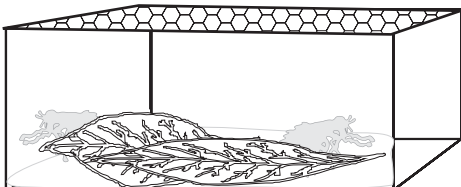
### Introduction

You may have already learned that crabs and other crustaceans are also Arthropoda. Most crustacea live in water, but some live on land. We will now study a land crustacean eg a woodlouse.

### To keep a woodlouse you need:

- a plastic lunch box with a lid
- one or more woodlice
- propette
- tap water
- some mesh
- petri dish
- soil
- leaf litter\*
- stones

\* Your teacher will tell you what to do.

<p>1. First put some soil, stones and leaf litter for the woodlouse in the lunch box.</p> 	<p>2. Then put one or two woodlice in the lunch box with the other material.</p> 
<p>3. Put a piece of mesh over the lunch box.</p> 	<p>4. Keep the lunch box in a cool place.</p> 

### To study a woodlouse you need:

- hand lens
- tap water
- petri dish or vial
- forceps
- propette
- fallen leaves from a tree
- woodlouse

## HABITAT

- Q1 Where do you think you would find a woodlouse in nature?  
Q2 In what ways is the body of the woodlouse suitable for its habitat?

## GENERAL STRUCTURE

- Q3 What shape is the body?  
Q4 Is the body flattened sideways or upper to lower surfaces?  
Q5 Is the body smooth or segmented (divided)?

## DETAIL OF SOME PARTS OF THE WOODLOUSE

### The Head and Thorax

- Q6 How many feelers or antennae are there?  
Q7 How many eyes do you see?  
Q8 The legs are attached to the thorax. How many legs does it have?  
Q9 Are all the legs the same?

### The Abdomen

- Q10 Are the segments of the abdomen roughly the same or very different from each other?

## WHAT THE WOODLOUSE DOES

### How the woodlouse moves

- Q11 Which of the following words best describes the way the woodlouse moves? (You may choose as many words as you like) run, jump, hop, scuttle, shuffle, dash, swim, flap, fly, walk.

### How the woodlouse eats

Watch the woodlouse carefully.

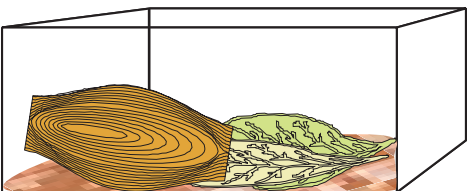
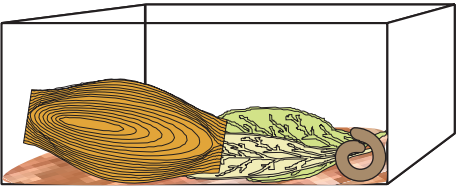

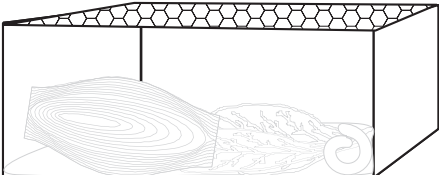
- Q12 What does the woodlouse eat?  
How does food get into the woodlouse's body? Does it use its legs, does it "lap" like a dog and so on?



**INTRODUCTION**

You may already have learned that millipedes and centipedes, like insects, spiders and crustaceans are Arthropoda. Most centipedes are poisonous so we will study a millipede. Your teacher will tell you how to obtain a millipede.

**A To keep a millipede**

<p>1 First place some soil, twigs, bark and leaf mould in the lunch box.</p> 	<p>2 Next, put a millipede in the lunchbox with the other things.</p> 
<p>3 Cover the lunch box with mesh.</p> 	<p>4 Keep the lunch box in a cool, dark place.</p> 

Observe the millipede and its behaviour.

**What to do:**

- ◆ Observe the millipede without worrying it.
- ◆ Complete the exercise in your notebook.
- ◆ Use the hand lens to see more clearly when it is necessary.

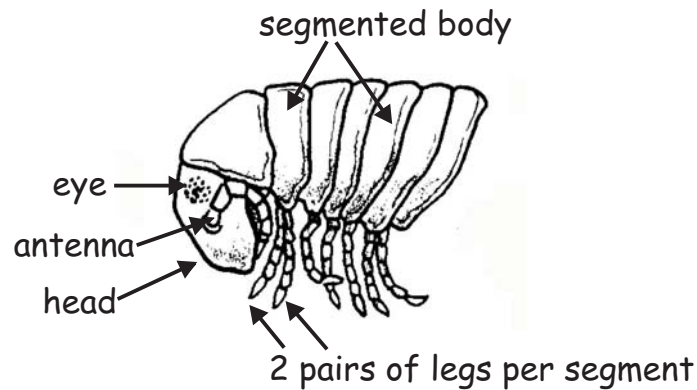
**HABITAT**

- Q1 Where do you think you would find a millipede in nature?
- Q2 In what ways is the body of the millipede suitable for its habitat?

## GENERAL STRUCTURE

- Q3 What shape is the body?  
Q4 Is the body clearly segmented all over or not?  
Q5 Is the body clearly divided into parts like the body of an insect?  
Q6 How many legs does the millipede have on each segment?

## DETAIL OF SOME PARTS OF THE MILLIPEDE



The figure above shows the side-view of the front part of the millipede. Look at your millipede and find the head, eye, antenna, segments and two pairs of legs per segment.

## WHAT THE MILLIPEDE DOES

### How the millipede moves

- Q7 Does the millipede use all the legs at once?

### How the millipede eats

- Q8 What does the millipede eat?

### Getting out of trouble

- Q9 Touch the millipede's body softly. What does it do?

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