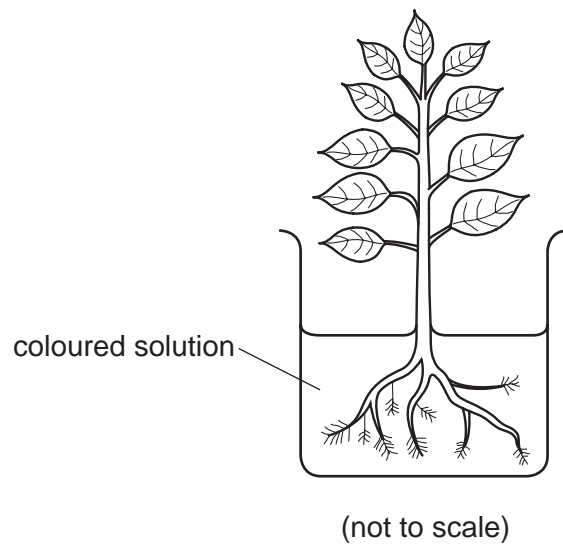


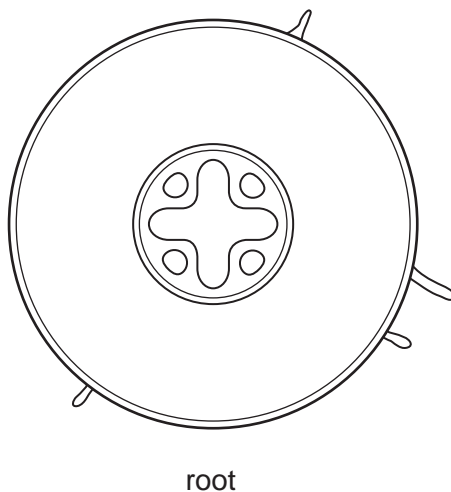


- 1 Fig. 1.1 shows a young plant with its roots submerged in a container filled with a solution containing mineral salts and a coloured dye.



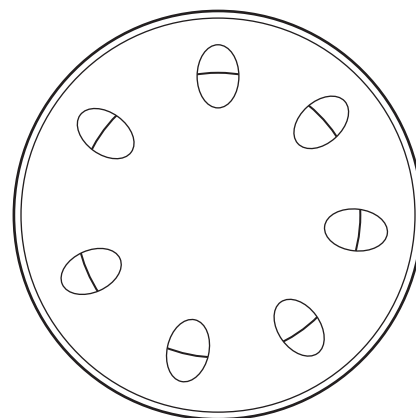
**Fig. 1.1**

Fig. 1.2 shows a section of a root and Fig. 1.3 shows a section of a stem.



root

**Fig. 1.2**



stem

**Fig. 1.3**

- (a) (i) Shade in the tissue to identify where the coloured solution may be found in the section of the root, Fig. 1.2 and stem, Fig. 1.3.

[2]

- (ii) Name the tissue, in both Fig. 1.2 and Fig. 1.3, that you have shaded.

[1]

- (b) (i) Name the structures through which most of the solution will be absorbed into the roots.

..... [1]

- (ii) Indicate by means of an arrow on Fig. 1.1, **one** place where these structures are shown. [1]

- (c) Describe how you would compare the rate of uptake of the coloured solution by the plant in Fig. 1.1 with another plant that has had its roots cut off.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [6]

[Total: 11]

- 2 Fig. 2.1 shows the upper surface of an animal.

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Fig. 2.1

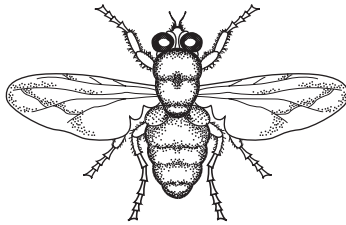
- (a) Make a large drawing of the body of this animal and the leg labelled **X**.

Label **one** of the eyes and **two** features of the back leg.

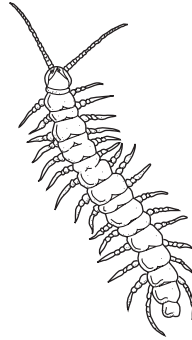
[6]

Figs. 2.2, 2.3 and 2.4, show other examples of the same group (phylum). Each belongs to a different sub-group (class).

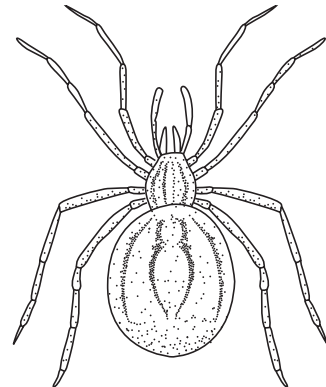
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**Fig. 2.2**



**Fig. 2.3**



**Fig. 2.4**

[these animals are not all drawn to the same scale]

**(b) (i)** Name the main group (phylum) to which these animals belong.

..... [1]

**(ii)** Describe **one** feature that is characteristic of **all** these animals.

..... [1]

**(iii)** Complete the table to indicate **one** special feature which makes each sub-group (class) different from all the others.

Fig. 2.2	Fig. 2.3	Fig. 2.4

[3]

**(iv)** Name each sub-group (class).

Fig. 2.2 .....

Fig. 2.3 .....

Fig. 2.4 ..... [3]

[Total: 14]

- 3 Fig. 3.1 was set up with a number of respiring maggots placed in the large test tube. The apparatus was left for 20 minutes and then a drop of coloured liquid was introduced into the capillary tube as shown.

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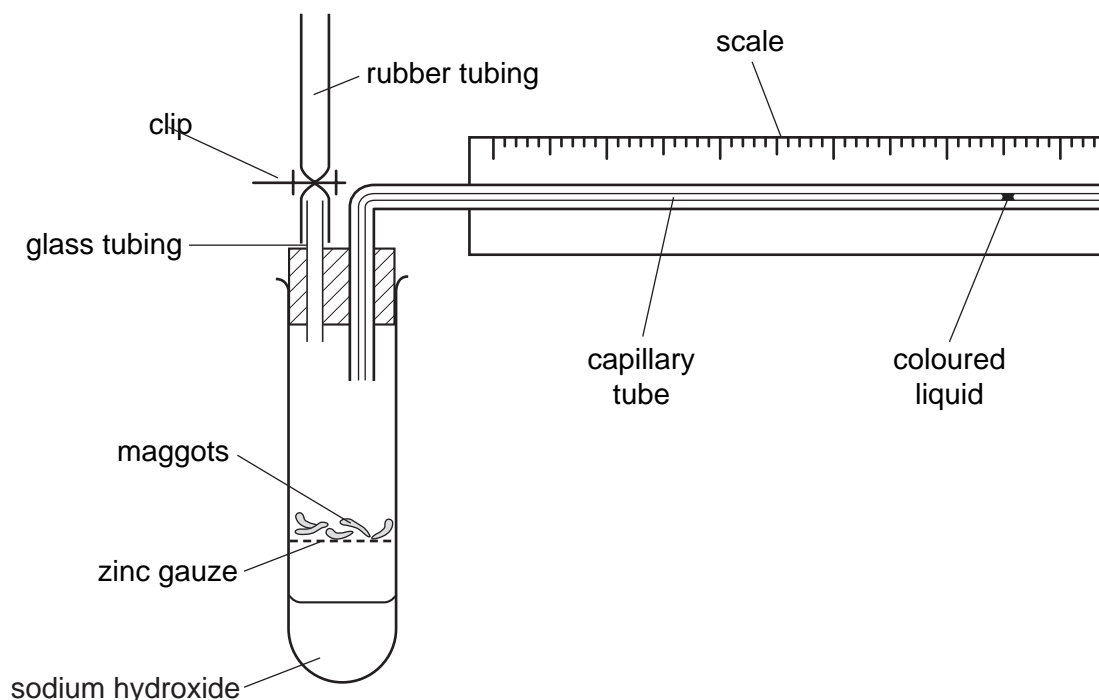


Fig. 3.1

During the next 5 minutes, the drop of coloured liquid moved along the capillary tube. The sodium hydroxide absorbs carbon dioxide.

- (a) (i) Explain why the drop of coloured liquid moved towards the test tube.

.....

.....

.....

.....

..... [3]

- (ii) Describe a suitable control for this investigation.

.....

.....

..... [2]

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**Question 3 continues on page 8**

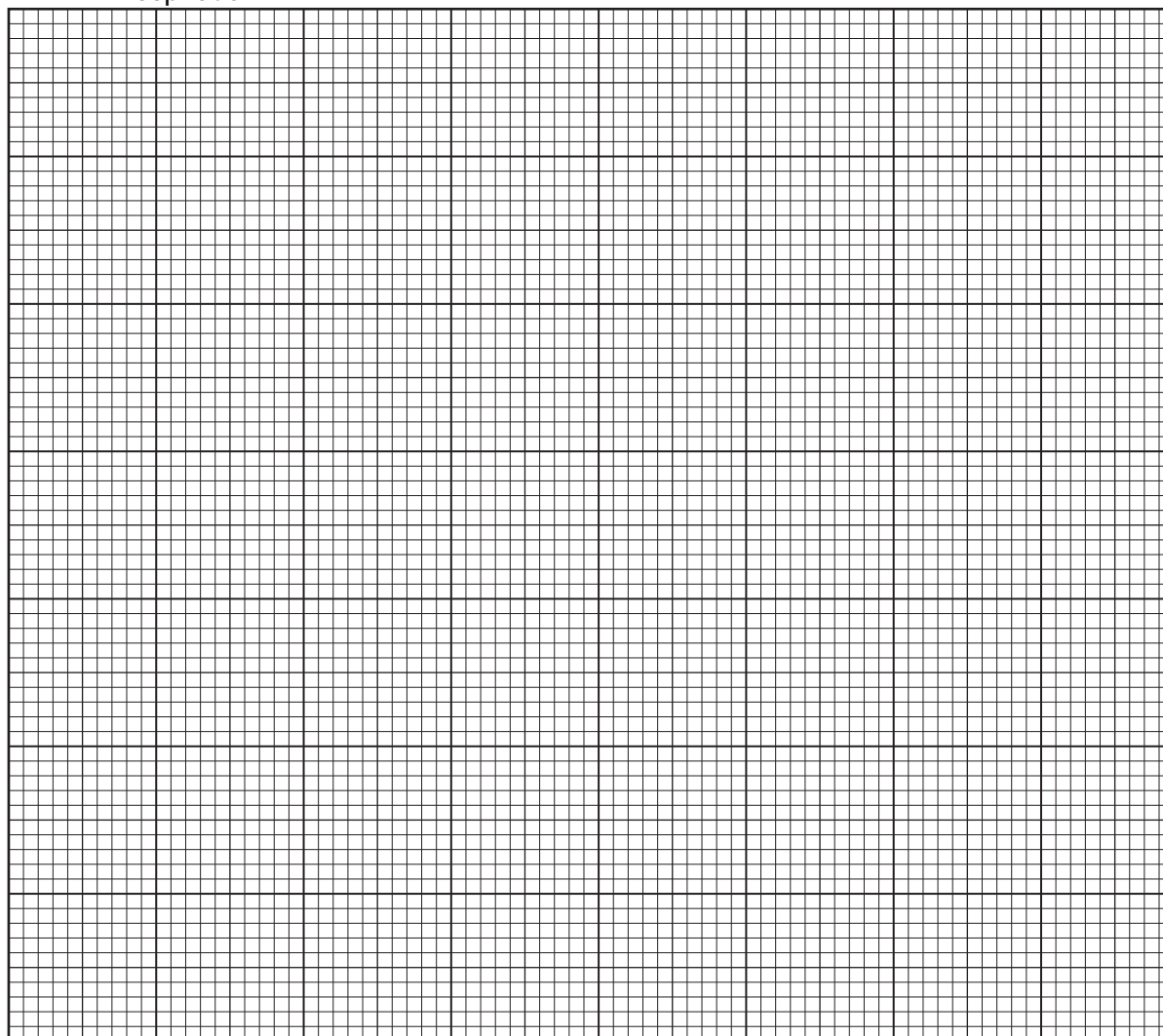
A second sample of maggots was used in an experiment to show the effect of different temperatures on respiration. The distance that the drop of coloured liquid moved along the capillary tube was measured over a period of 60 seconds at each temperature. The drop of coloured liquid was moved back to the start of the capillary tube before each reading was taken. The results are shown in Table 3.1.

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Use*

**Table 3.1**

temperature / °C	distance moved by drop of coloured liquid / mm
20	41
25	63
30	96
35	168
40	120

- (b) (i)** Using the results given, plot a graph to show the effect of temperature on respiration.



[5]



- (ii) With reference to your graph, describe the effect of temperature on the respiration of the maggots.

*For  
Examiner's  
Use*

.....

.....

.....

..... [3]

- (iii) Explain the results at 35°C.

.....

.....

.....

..... [2]

[Total: 15]

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*Copyright Acknowledgements:*

Question 2      Fig. 2.1 © <http://perso.wanadoo.fr/laurent.marzec/pisidia.htm>

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