

Surface Area to Volume Ratio

Question Paper

Level	A Level
Subject	Biology
Exam Board	Edexcel
Topic	Exchange and Transport
Sub Topic	Surface Area to Volume Ratio
Booklet	Question Paper

Time Allowed: 14 minutes

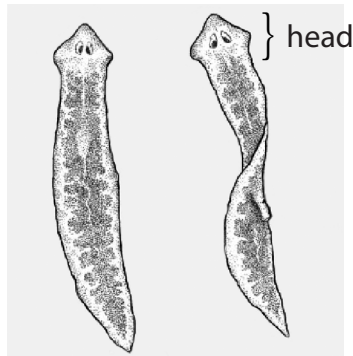
Score: /11

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	77.5%	70%	62.5%	57.5%	45%	<45%

- 1 Some species of flatworm are found in freshwater streams. Flatworms obtain oxygen from the water through the surface of their bodies. The diagram below shows the structure of flatworms.



Flatworms

Magnification $\times 10$

- (a) Using the diagram and your knowledge of gas exchange surfaces, explain how the structure of a flatworm is adapted to obtain oxygen from the water.

(2)

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(b) The table below shows the relationship between the temperature of water and the solubility of oxygen in water.

Temperature of water / °C	Solubility of oxygen in water / mg dm ⁻³
0	14.6
5	12.8
10	11.3
15	10.2
20	9.2
25	8.6
30	7.5
35	6.9
40	6.4

(i) Describe the relationship between the temperature of the water and the solubility of oxygen in water.

(2)

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(ii) Using the information in the table and your knowledge of gas exchange and enzymes, suggest why flatworms are often found in water at a temperature of about 15°C .

(3)

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(c) Flatworms do not have a heart or a circulatory system.

Explain why many animals need a heart and a circulatory system.

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