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2 The total amount of glucose in the blood of a human is normally used and replaced every 30-40 minutes although this rate of turnover depends on the varying needs of the body.

(a) Under what circumstances will the body's demand for glucose be at a maximum?

.....

(1)

(b) An average meal provides 90 g of glucose. The mass of glucose contained in the blood is 4.5 g.

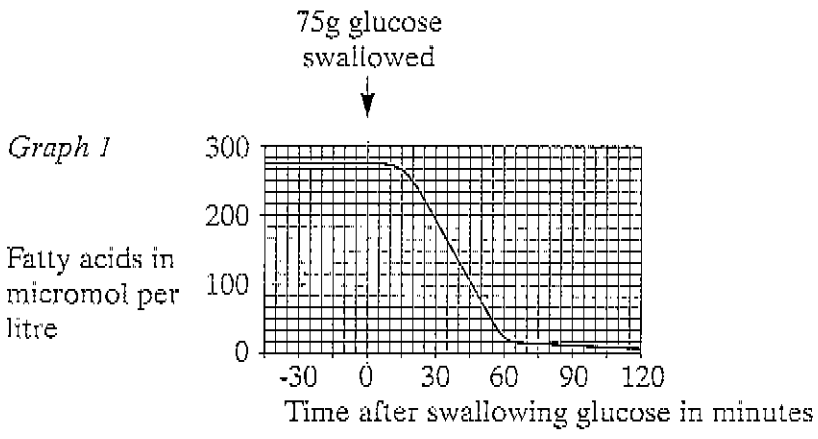
By how many times would an average meal raise the blood glucose concentration if all the glucose entered, and remained in, the blood?

.....

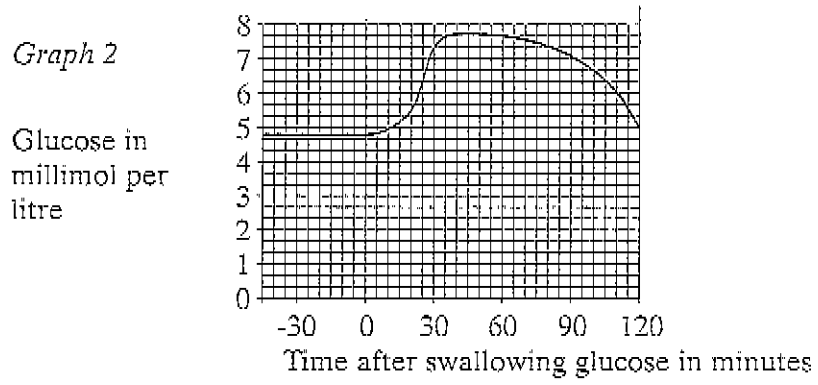
(1)

Graphs 1, 2 and 3 show the concentrations of fatty acids, glucose and insulin in the blood before and after a person had eaten 75 g of glucose after 24 hours without food.

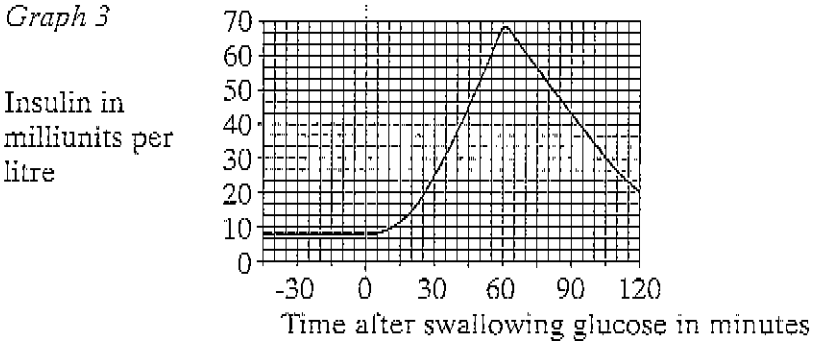
Graph 1



Graph 2



Graph 3



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(c) Give **two** reasons to account for the fall in blood glucose concentration between 60 and 120 minutes after swallowing 75 g of glucose.

(i) .....

(ii) ..... *(2)*

(d) Explain the rise and fall in insulin concentration.

.....

.....

..... *(3)*

(e) (i) Account for the high concentration of fatty acids in the blood prior to swallowing the glucose.

..... *(1)*

(ii) Account for the rapid decline in fatty acid concentration after the glucose was swallowed.

.....

.....

..... *(2)*

(f) Explain why, following the swallowing of the glucose, the fatty acid concentration took longer to start to change than the glucose concentration.

.....

.....

..... *(2)*

(12)

Turn over ▶