

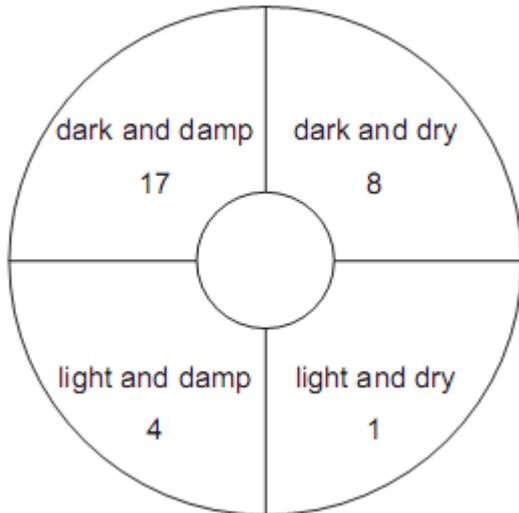
**PPQ 14.7 and 14.8 : Homeostasis and the Skin**

1 Capillaries near the surface of the skin become wider after drinking large amounts of alcohol.

Why does this cause the body temperature to drop?

- A It allows heat to be lost rapidly from the skin.
- B It causes vasoconstriction.
- C It prevents vasodilation.
- D It stops the person from sweating.

2 Thirty woodlice were placed in the centre of a dish with four compartments, each with different conditions. The diagram shows the number of woodlice that had moved into the different compartments after twenty minutes.



What do these results show?

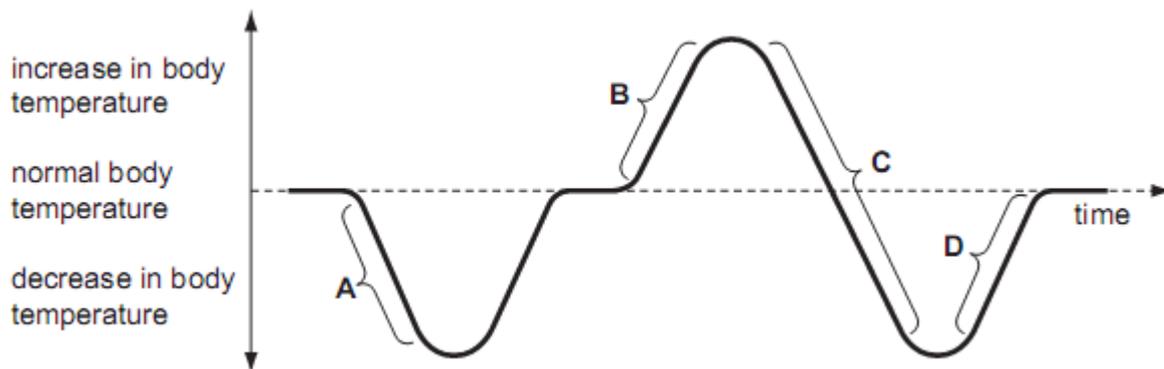
- A Woodlice prefer light and damp conditions.
- B Woodlice prefer light and dry conditions.
- C Woodlice prefer to be in the dark.
- D Woodlice prefer to be in the light.

4 What is true for a runner, at the end of a marathon race, in a hot climate?

- A sweating and vasoconstriction
- B sweating and vasodilation
- C vasoconstriction only
- D vasodilation only

5 The graph shows the variation in a person's body temperature over a period of time.

Which temperature change is likely to cause most sweating?



6 (a) Define the term *homeostasis* .

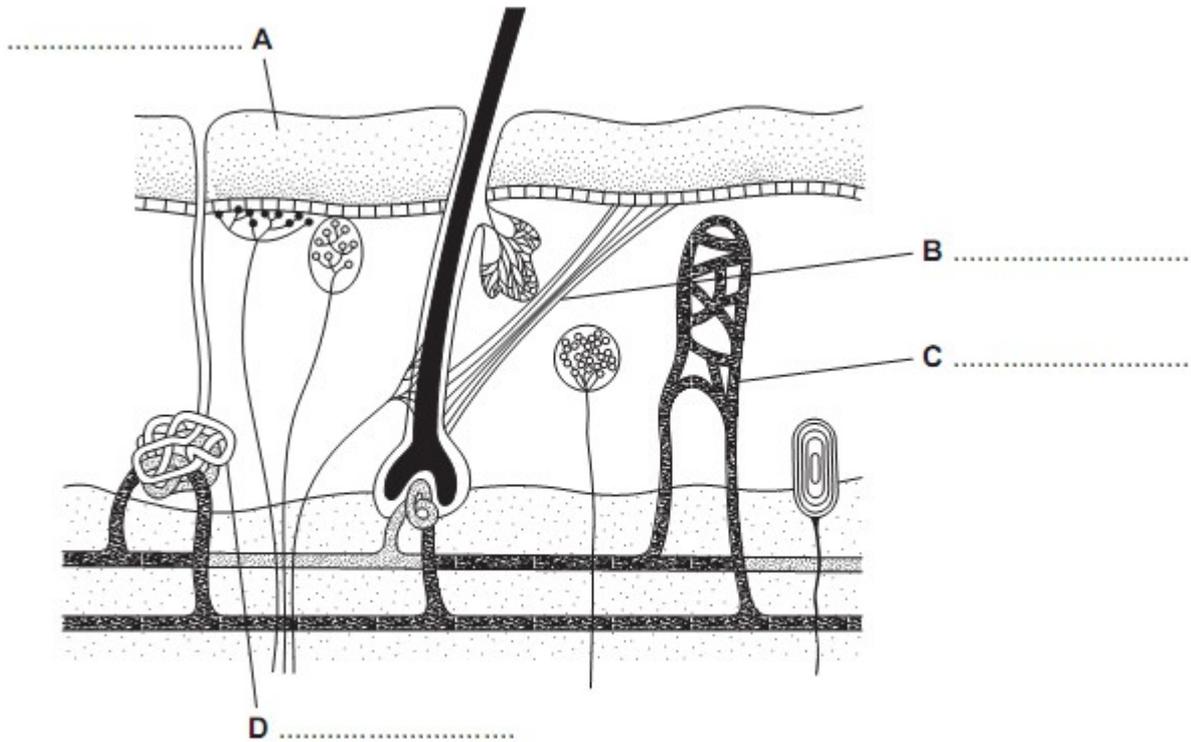
..... [2]

(b) It has been suggested by some scientists that the iris reflex is an example of homeostasis.

.....  
Describe this reflex and explain why it might be considered to be a homeostatic mechanism.  
.....

..... [3]  
[Total: 5]

7 (a) Fig. 3.1 shows a section through the skin.



**Fig. 3.1**

(i) On Fig. 3.1 label structures A, B, C and D.  
Write your answers on Fig. 3.1. [4]

(ii) State two types of stimuli that the skin is able to detect.

1.

2. [2]

(b) Explain how sweat glands assist in the control of body temperature. [3]

[Total: 9]

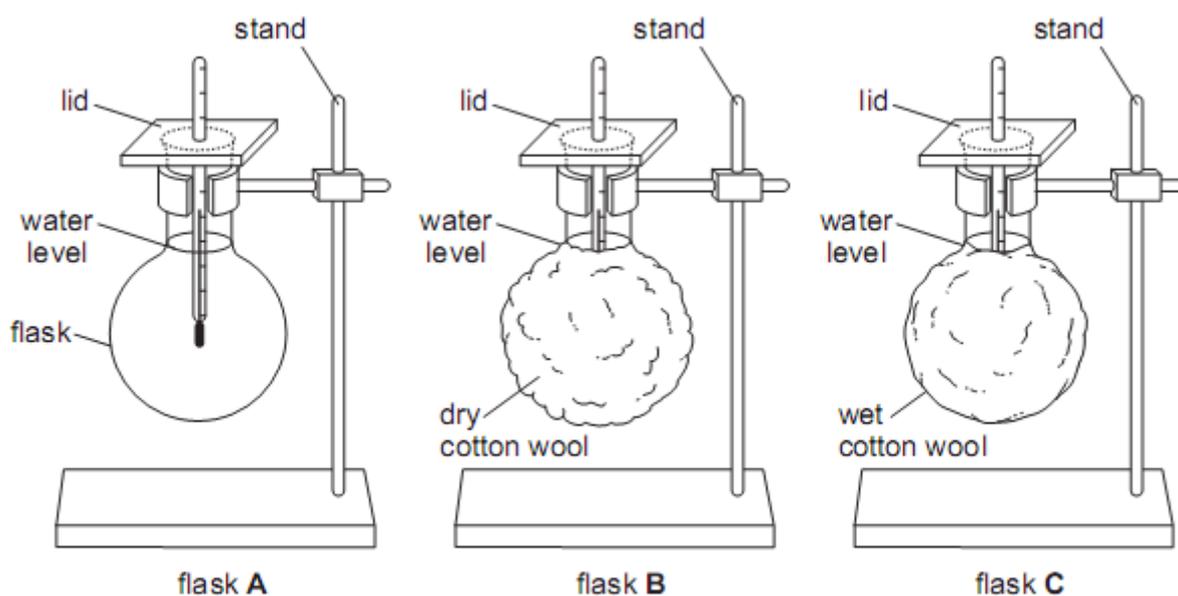
**8** Humans and other mammals are able to maintain a relatively constant body temperature, despite widely ranging environmental temperatures. Mammals, unless adapted to living in water, seem to prefer not to get wet.

Three flasks were set up as shown in Fig. 1.1. Each flask represents a hot mammal cooling down.

Flask A had nothing around the flask. This represents a hairless mammal.

Flask B had a dry covering of cotton wool around the flask. This represents a mammal with dry fur.

Flask C had a wet covering of cotton wool soaked in water around the flask. This represents a mammal with wet fur.



**Fig. 1.1**

Each flask was covered with a lid through which a thermometer was suspended. The bulb of the thermometer was immersed in the water, but did not touch the sides of the flask.

Each flask was filled with an equal volume of hot water.

The temperature of the water in each flask was measured as it cooled.

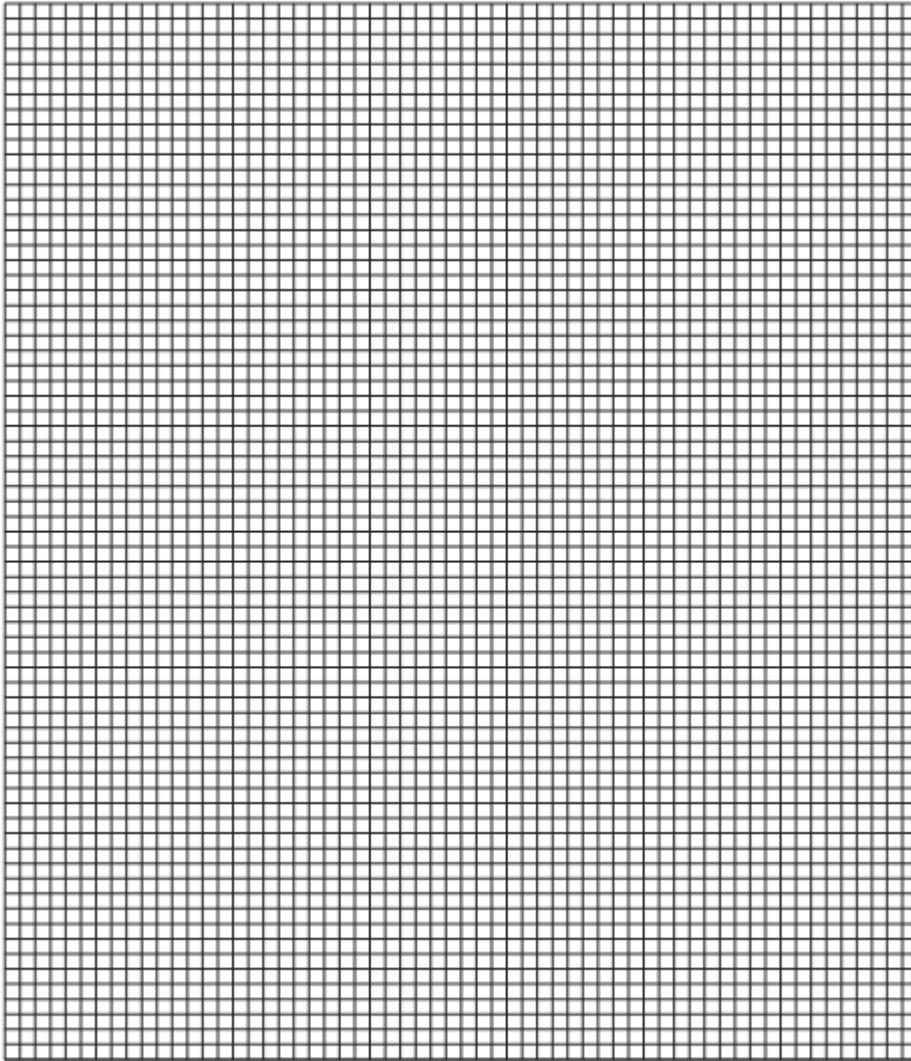
Readings were taken every 2 minutes and recorded in Table 1.1.

A laboratory clock was used to check the time.

**Table 1.1**

temperature / °C			
time / min	flask A	flask B	flask C
0	70	70	70
2	66	68	64
4	61	67	58
6	58	65	52
8	50	61	42
10	45	60	40

(a) (i) On the same axes plot a graph of the three sets of results. [5]



(ii) Compare cooling of the water in the three flasks.

flask A compared with flask B.

.....  
flask B compared with flask C.

.....  
flask C compared with flask A.

..... [3]

(iii) Explain what has happened to produce these results

.

..... [3]

(b) (i) Describe three ways in which this investigation was a fair test.

(ii) Describe two improvements which would increase the accuracy and reliability of this investigation.

..... [2]

